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Environmental

Environmental

Environment Summary

Basic approach

Contributing to regional and global environmental conservation is a pivotal mission of the Daigas Group, which conducts business mainly in the field of energy. Being seriously aware of the close linkage between all its activities and the environment, the Daigas Group will respond to environmental issues, including climate change, develop and promote innovative technologies, address the most critical challenge of working out low-carbon/carbon-neutral energy solutions, achieve more efficient use of energy, raw materials, and other resources, and avoid and reduce any impact on biodiversity.

As for our climate change countermeasures, we announced our commitment to achieving carbon neutrality by 2050 through the publication of our “Carbon Neutral Vision” in January 2021 and “Energy Transition 2030” in March 2023, and based on knowledge we have gained from our new initiatives, we outlined our approaches and specific strategies for the energy transition by 2030.

Since then, we have actively pursued future-focused initiatives by developing various renewable energy power sources, launching and promoting multiple e-methane* production projects, and advancing innovative technologies to facilitate decarbonization efforts.

At the same time, due to rising international geopolitical risks, such as Russia's invasion of Ukraine and escalating tensions in the Middle East, we are facing a growing demand for achieving both energy supply stability and carbon neutrality. In light of the acceleration of our future-oriented activities and the evolving landscape of the energy business, we have formulated Energy Transition 2050 in February 2025, which presents more detailed energy transition roadmap for achieving carbon neutrality by 2050 and outlines solutions for co-creating value for a sustainable future with stakeholders.

Furthermore, in our Medium-Term Management Plan 2026, we have positioned providing carbon neutral energy as one of our material issues, and we will accelerate our efforts to achieve carbon neutrality.

*Synthetic methane produced from hydrogen and CO₂

Specific initiatives

Policy and promotion system

To achieve our medium- to long-term vision, measures, and targets in the environmental field and in line with the Daigas Group Environmental Policy and other bylaws, important environmental matters are monitored by the Environment Subcommittee and the Sustainability Committee, reported to and deliberated by the Sustainability Council (Management Meeting), and submitted to the Board of Directors.

Theme	Items to be addressed	Specific initiatives																								
Environmental management ➡ P.031 Environmental targets ➡ P.037	- Strengthening environmental governance - Maintenance and continuation of the environmental management system - Follow-up and raising awareness toward achievement of environmental targets - Enhancing environmental compliance	Initiatives undertaken in FY2025.3 - Continued operation of the environmental management system - Monitored the environmental impacts in the value chain - Developed environmental human resources through e-learning (5,882 people)																								
Climate change measures ➡ P.038 Disclosure based on the TCFD Recommendations ➡ P.049 Contribution by development of technologies ➡ P.063	- Contribution to carbon neutrality - Reduction of CO₂ emissions from the Group's own business activities - Reduction of CO₂ emissions from customers' activities and their value chains - Contribution to CO₂ emissions reduction in society as a whole - Utilization of unused energy	Initiatives undertaken in FY2025.3 - Operating LNG carriers efficiently and increasing the use of low-emission vehicles - Accelerating low-carbon/carbon-neutral solutions by using natural gas and facilitating more widespread use of highly energy efficient and high-value-added equipment - Providing environmental value by disseminating high-quality solutions in the fields of information, real estate, and materials - Response to CDP's climate change																								
	Materiality Provide carbon neutral energy	<table> <tr> <th>Environmental targets</th><th>KPIs based on the materiality</th><th>FY2025.3 materiality results</th></tr> <tr> <td>CO₂ emissions of the Daigas Group</td><td></td><td>23.44 million t (8.58 million t less than FY2018.3)*1</td></tr> <tr> <td>Avoided emissions*2</td><td></td><td>6.29 million t</td></tr> <tr> <td>Contribution to developing renewables capacity on a global basis</td><td></td><td>3.70 GW</td></tr> <tr> <td>Percentages of renewables in our power generation portfolio in Japan</td><td></td><td>30.4%</td></tr> <tr> <td>CO₂ emissions reduction in the Group company offices and vehicles</td><td></td><td>50%</td></tr> <tr> <td>Promotion of e-methane practical application</td><td></td><td>Conducting a detailed FEED study in the e-methane supply chain projects</td></tr> <tr> <td>Promotion of methanation technology development</td><td></td><td>The first phase of SOEC GI funds business completed and the second phase implementation plan formulated</td></tr> </table>	Environmental targets	KPIs based on the materiality	FY2025.3 materiality results	CO ₂ emissions of the Daigas Group		23.44 million t (8.58 million t less than FY2018.3)*1	Avoided emissions*2		6.29 million t	Contribution to developing renewables capacity on a global basis		3.70 GW	Percentages of renewables in our power generation portfolio in Japan		30.4%	CO ₂ emissions reduction in the Group company offices and vehicles		50%	Promotion of e-methane practical application		Conducting a detailed FEED study in the e-methane supply chain projects	Promotion of methanation technology development		The first phase of SOEC GI funds business completed and the second phase implementation plan formulated
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*1 CO₂ emissions in the domestic supply chain (Scope 1, 2 and 3).

*2 Calculate the estimated effect of CO₂ emissions reduction in one year of the target FY by introducing high efficiency facilities and low carbon energy, etc. to customer side and the company's business activities in and after FY2018.3.

Theme	Items to be addressed	Specific initiatives
Contributing to creating a resource recycling society ➡ P.052	- Promoting 3R efforts in business activities - Promoting 3R efforts in the value chain - Plastic resource recycling activities - Chemical substance management in business activities	Environmental targets - Osaka Gas (including Network Company and core energy business companies) (1) Recycling rate of industrial and general waste: 98% or higher, (2) PE pipe recycling rate: 100%, (3) Gas meter recycling rate: 100% - Affiliates (1) Recycling rate of industrial and general waste: 92%* or higher - Promoting 3R efforts concerning used equipment collected from customers or business activities * Due to changes in the boundary, the target was revised in April 2025. Initiatives undertaken in FY2025.3 - Osaka Gas (including Network Company and core energy business companies) (1) 98.5%, (2) 100%, (3) 100% - Affiliates (1) 96.4%
Biodiversity ➡ P.055	- Promoting ecosystem conservation efforts - Efforts to minimize impact on natural capital - TNFD response	Environmental targets - Identifying risks and promoting conservation initiatives through biodiversity impact assessments - Conserving the environment by promoting reuse of soil excavated during gas piping works: Recycling rate of soil excavated during piping works 99% or higher Initiatives undertaken in FY2025.3 Continued efforts to avoid or reduce impacts on biodiversity in the value chain - Management of ballast water - Conservation of native seeds, seedlings, and rare species - Utilization of native seeds and seedlings in urban development business - Recycling rate of soil excavated during piping works: 99.7% - Education and training on biodiversity provided for local communities and customers
Water resources ➡ P.062	- Efforts to minimize impact on natural capital - Response to water risks	Environmental targets - Identifying water risks through water stress impact assessments and promoting water resources conservation - Preventing water pollution: Violation of environmental regulations related to water pollution: 0 Initiatives undertaken in FY2025.3 - Water usage reduced through water saving in operations - Violation of environmental regulations related to water pollution: 0
Green procurement and purchase ➡ P.104	Promotion of green procurement and purchase	Initiatives undertaken in FY2025.3 81 suppliers registered with the Green Partner Initiative

Environmental Management

Principle and Outline

The Daigas Group has established and operated an environmental management system (EMS) in line with the Daigas Group Environmental Policy, aiming for its achievement. The Policy declares our commitment to addressing climate change and other environmental issues, stating that we will work to further reduce environmental impact, prevent pollution, and protect the environment including biodiversity.



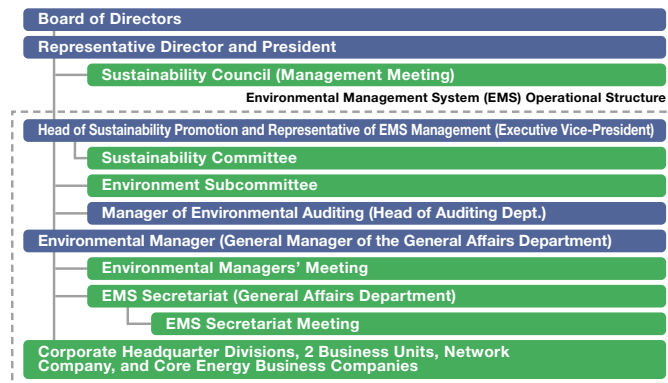
Environmental Governance Promotion Structure

To carry out appropriate and robust activities toward sustainability under the leadership of the Representative Director and President, the Daigas Group has established the Sustainability Council, which comprises executives and deliberates sustainability action plans and reports, and the Sustainability Committee chaired by the Head of Sustainability Promotion (Director and Senior Executive Officer), who supervises the Group's sustainability activities. The Sustainability Committee meets three times a year to discuss and report to the Board of Directors on important matters, including the status of performance against sustainability management targets and business plans that are expected to have a significant financial impact due to climate change.

In addition, the Environment Subcommittee has been set up to advance environmental management in coordination with the Sustainability Committee. Under the supervision of the Head of Sustainability Promotion, Osaka Gas operates a company-wide integrated environmental management system (EMS) based on ISO 14001 to ensure that all employees reduce the environmental impact of our business activities and comply with environmental laws and regulations.

Domestic Daigas Group companies also operate under EMS standards, such as ISO 14001 and the Daigas Group Environmental Management System "OGEMS" and others.

■ Environmental Management Promotion Structure

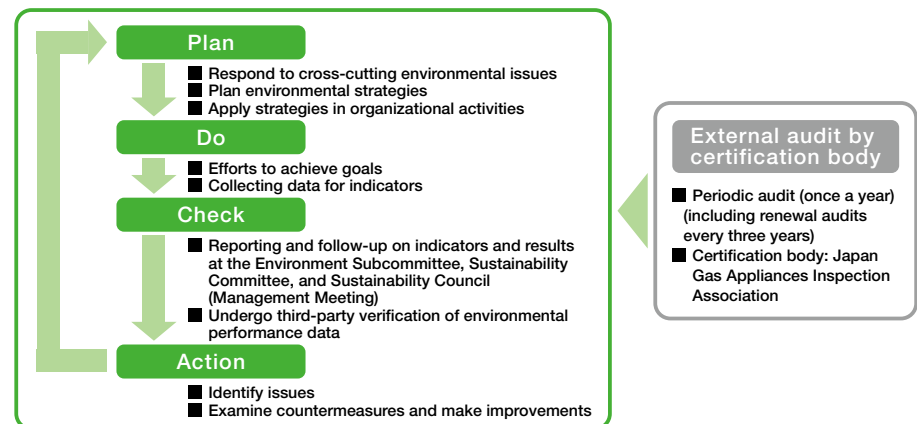


How the Daigas Group's Environmental Management System Works

To reduce the environmental impact of its Group-wide business activities, the Daigas Group has set medium-term environmental targets in its Long-Term Management Vision 2030 and other plans and manages progress in achieving the targets. The environmental targets include those for CO₂ emissions reduction, more widespread use of renewable energy, waste reduction and recycling, and promotion of the recycling of excavated soil. We also annually calculate GHG emissions that affect climate change from the activities throughout our Group's value chain and use that data to advance our efforts to reduce GHG emissions. These targets and the results of our efforts to achieve the targets are managed by following a PDCA (plan-do-check-act) cycle, which utilizes the mechanism of the EMS.

Please see [P.049](#) for information on the climate change-related framework.

■ PDCA Cycle Utilizing the Mechanism of EMS



Remuneration system for executives with environmental value taken into account

Osaka Gas at its Board of Directors meeting held on December 23, 2021 resolved that remuneration for the executives would reflect the sustainability indicators* achievement coefficient of the previous fiscal year in order to help short- and medium- to long-term improvements in corporate value. The resolution took effect with remuneration for July 2023 and thereafter, paid based on the results for FY2023.3.

From FY2025.3 onward, the sustainability indicators achievement coefficient includes the achievement of the target for providing carbon neutral energy and other non-financial (materiality) indicators included in the Medium-Term Management Plan 2026. Please see [P.129-P.130](#) for officer remuneration system.

* ESG indicators was renamed to the sustainability indicators in FY2026.3.

ISO 14001 Certification Acquisition Status

In FY1998.3, Osaka Gas launched efforts to acquire certification of each business unit's compliance with ISO 14001, a set of international standards for EMSs, resulting in seven business-unit-specific EMSs covering the entire Company by FY2006.3. In FY2007.3, the Company began to work to integrate all the different EMSs into a unified one and obtained certification of its Company-wide compliance with ISO 14001 in December 2007. Since 2009, the Company has undergone triennial ISO 14001 renewal audit and has continued to obtain integrated certification in response to organizational restructuring, including the transfer of functions to three Core Energy Business Companies in 2020 and Osaka Gas Network Co., Ltd. in 2022.



Certificate of Registration for ISO 14001



External audit meeting for renewal of ISO 14001 certification

All affiliates in Japan completed EMS building and certification

As a general rule, all affiliates in Japan have constructed and operate an EMS, and these efforts are based on the Group common rules "Environmental Management Rules."

The EMSs introduced by affiliate companies include ISO 14001 and an EMS established under the leadership of local governments as well as the Daigas Group Environmental Management System (OGEMS), a voluntary EMS that functions in a similar way to such an EMS.

Violations of Laws and Fines

Osaka Gas was not subject to any administrative sanctions during FY2025.3 for violations of environmental laws and regulations.

Environmental Communication

Environmental education

Various events during the Environment Month

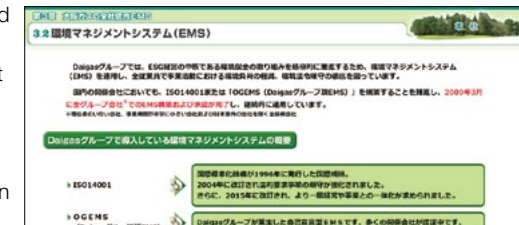
Every year in June, designated as Environment Month, employees of the Daigas Group engage in various environmental activities. Among them are energy-saving efforts at offices, environmental preservation activities, environmental education both inside and outside the Company, and participation in regional environmental events such as cleaning activities. By participating in these activities, each and every employee comes to recognize the great connection existing between his or her activities, and their impact on the environment. Such activities provide the Group with opportunities to continue efforts to build an environmentally harmonious society.

E-learning and collective training programs for employees

The Daigas Group provides e-learning and collective training programs as part of operating the environmental management system to ensure that employees are capable of keeping up with the environmental initiatives.

In the ISO Environmental Education Course via e-learning, employees learn basic knowledge about the environment, details of group initiatives, and knowledge of environmental laws and regulations.

In addition, in collective training programs, employees learn about the latest trends in environmental issues and practical examples of initiatives, increasing their awareness of the environment.



E-learning

Environmental awareness-raising activities

Environmental communication based on expertise we have accumulated through business activities

As a corporate group operating in a community-based manner, the Daigas Group believes that its good relationships with local communities is an indispensable foundation for its management. In addition to disseminating knowledge on energy conservation and information useful for familiar energy conservation activities through media such as the "My Osaka Gas" membership site, we are also striving to foster the next generation through "energy and environmental education" and other programs that leverage expertise the Group has cultivated through its business activities.

Verified by a third party A third-party verification has been conducted by Bureau Veritas Japan Co., Ltd.

Environmental Impact throughout the Daigas Group Value Chain

Main materials and fuels

Amount of LNG procured	6,051 thousand tons
	The figure above includes the amounts of the items listed below: ● Materials of city gas ● Fuels at LNG terminals ● Fuels for power generation by Group companies
LPG used for calorific adjustment of city gas	217 thousand tons

Procurement of materials and fuels (Business activities by companies outside the Group)

LNG, natural gas City gas use/power generation use/marketing use	LPG City gas use/marketing use
Coal, biomass Power generation use	Other purchased goods Materials/consumable goods/capital goods/gas equipment for sale/electricity/gasoline and others

Amount of energy used

City gas	1,432 million m³ (including gas whose calorific value has yet to be adjusted)
Purchased electricity	509 million kWh
Other energy sources	13,849 TJ

Amount of vehicle fuel used

Gasoline	1,302 kl
City gas	27 thousand m³
Diesel	790 kl

Business activities by Osaka Gas

City gas production/supply	Business office
Power generation	Heat supply
LBS business	Others*

* Engineering/energy services/renovation/maintenance service/R&D etc.

Sales, waste disposal (Business activities by companies outside the Group)

Commuting, business trips	Waste disposal
Product shipment	Leasing of assets
Outlets providing sales support to Osaka Gas	

Sales volume of main products

Gas	6,650 million m³
Electricity	16,982 million kWh

Use at customer site

City gas	Gas appliances
Electricity	Chemical products
LNG	Services

GHG (scope 3*1)

	Emissions (1,000 t-CO ₂ e)
LNG, natural gas	3,386
LPG, coal, biomass	260
Other procurement items	1,047
Total	4,693

Breakdown of Scope 3 categories

*1 Category 1–4 (purchased products, capital goods, fuel procurement, upstream transportation)

*2 Category 5–7, 9, 12–14 (waste, business trips, commuting, leased assets, product shipment, end-of-life treatment of sold products, franchises)

*3 Category 11 (use of sold products)

GHG (scope 1 and 2)

	Emissions (1,000 t-CO ₂ e)	
	Scope 1	Scope 2
City gas production/Business office (including supply)	45	107
Power generation	4,056	22
Heat supply	57	31
LBS and others	281	175
Total	4,440	335

Waste

	Generated	Recycled
General waste	906 t	96%
Industrial waste	92,392 t	96%
Excavated soil	574,000 t	100%
PE pipe	119 t	100%
Used gas appliances recovered	1,320 t	91%

Amount of water intake and water discharge Stated on □□P.062

GHG (scope 3*2)

Emissions (1,000 t-CO ₂ e)
100

GHG emissions due to energy consumption arising from various activities, including commuting of employees, business trips, transportation of products, business activities at outlets that provide sales support to Osaka Gas, disposal of own waste, disposal of product waste, and leasing of assets.

GHG (scope 3*3)

	Emissions (1,000 t-CO ₂ e)
Combustion of city gas	13,899
Combustion of LNG	954
Total	14,853

Companies subject to the calculation of GHG emissions: 68 companies in total, including Osaka Gas Co., Ltd., 2 overseas subsidiaries and 67 companies among 163 consolidated subsidiaries, are subject to calculation of GHG emissions. Those housed in office buildings as tenants and whose environmental data are difficult to grasp and whose environmental effects are minimal and overseas companies, except two companies, are not subject to such calculation.

Please refer to □□P.034 for CO₂ emission factors used.

Calculation of environmental impacts in the value chain on P.033

■ CO₂ emission factors used (GHG scopes 1 and 2)

- Electricity: 0.65 kg-CO₂/kWh (Average emission factor of thermal power plants in FY2014.3, stipulated in the Plan for Global Warming Countermeasures issued by the government in 2025)
- City gas: 2.09 kg-CO₂/m³ (based on Osaka Gas data)
- Others: Factors listed under the Law Concerning the Promotion of Measures to Cope with Global Warming

■ Sources of emission factors used for calculating CO₂ emissions (GHG scope 3)

- Production and transmission of city gas: “Life cycle evaluation of city gas” on the website of the Japan Gas Association
- Production and shipment of LNG: Calculation of life cycle greenhouse gas emissions of LNG and City Gas 13A (papers presented at research presentation meetings of the 35th Meeting of the Japan Society of Energy and Resources, June 2016)
- Production and shipment of LPG and coal: Future forecast for life cycle greenhouse gas emissions of LNG and City Gas 13A (Energy and Resources, Vol. 28, No. 2, March 2007)
- Other main emission factors: Emission factors for calculating supply-chain greenhouse gas emissions, etc. (Database Ver. 3.5) published in March 2025 by the Ministry of Environment

LCA comparison of GHG emissions by fossil fuel (CO₂ equivalents)

The chart below uses life cycle assessment (LCA^{*1}) to show a comparison of fossil fuel greenhouse gas emissions (as carbon dioxide equivalents), covering all processes from production to combustion. LNG is the cleanest energy of all fossil fuels in terms of GHG emissions.

■ Greenhouse Gas Emissions Comparison (g-CO₂/MJ, Total Calorific Value)

	Coal ^{*2}	Oil ^{*2}	LPG ^{*2}	LNG ^{*2}	City gas 13A ^{*3}
Production	4.58	4.06	4.94	8.62	7.63
Transport	1.71	0.79	1.80	1.83	1.48
Domestic manufacturing	–	–	–	–	0.50
Infrastructure	0.11	0.08	0.11	0.05	0.34
Combustion	88.53	68.33	59.85	49.40	50.96
Total	94.93	73.26	66.70	59.90	60.91
Ratio	160	122	111	100	

^{*1} LCA

Life Cycle Assessment. A comprehensive quantitative method of survey, analysis, and evaluation for best assessing the amount of environmental impact of products and services. The assessment covers all processes related to products and services from resource extraction to waste disposal including production, transportation, consumption, recycling, and disposal.

^{*2} Source

Future Forecast for Life Cycle Greenhouse Gas Emissions of LNG and City Gas 13A (Energy and Resources, Vol. 28, No. 2, March, 2007)

^{*3} Source

Emission factors related to the production and transportation of city gas: “City Gas’s Life Cycle Assessment” on the Japan Gas Association’s website. However, for domestic manufacturing, the figures are based on the Company’s emissions in FY2025.3.

Environmental Accounting

FY2025.3 results of environmental accounting

In FY2001.3, we introduced environmental accounting, which we see as an important tool for quantifying environmental costs and economic benefits toward more efficient environmental activities and continuous enhancement of our environmental performance. Regarding environmental conservation costs for FY2025.3, environmental investment increased from the previous fiscal year mainly due to an increase in environmental R&D-related investment, while expenses decreased from the previous fiscal year mainly due to a decrease in the amount of green purchasing. In terms of internal economic effects, cost reduction progressed due to reducing and recycling excavated soil.

We will continue to follow up on our environmental initiatives in monetary terms to ensure efficient environmental investment and expenses.

(1) Environmental conservation costs

Environmental conservation costs item			Investment (million yen)			Expense (million yen)		
Details			FY2023.3	FY2024.3	FY2025.3	FY2023.3	FY2024.3	FY2025.3
In-house activities	Global environment	Capital investment in and management and labor costs incurred by energy conservation, efficient energy use, the protection of the ozone layer, etc.	48	68	761	597	493	905
	Pollution prevention	Capital investment in and management and labor costs incurred by the prevention of air, water, and noise pollution	6	5	72	31	33	36
	Resource recycling	Capital investment in and management and labor costs incurred by the reduction and recycling of excavated soil, waste management, etc.	2	0	4	20	21	31
	Environmental management	Costs of green purchasing, environmental education, the development of environmental management systems, the operation of environmental organizations, etc.	0	0	0	4,320	4,265	5,497
	Other	Greening at plants, environmental preservation grants, etc.	2	7	2	15	18	22
Environmental impact reduction at customers' sites	Environmental R&D	Cost of researching and developing technologies for environmental impact reduction, environmentally sustainable products, etc.	128	174	185	156	136	187
Environmental impact reduction by recycling	Recycling of used gas appliances	Cost of collecting and recycling sold gas appliances, their packaging, etc.	0	0	0	37	16	36
Social contribution activities		Costs of voluntary greening, environmental advertising, the disclosure of environmental information, etc.	22	0	0	115	138	119
Total			208	253	1,025	5,291	5,119	6,833

(2) Internal economic benefits

	Economic benefits (million yen)		
	FY2023.3	FY2024.3	FY2025.3
Saving from reducing and recycling excavated soil	1,836	2,585	2,563
Sales of valuable resources (LNG cold heat)	195	218	564
Saving from conserving energy, resources, etc.	-940	-69	254
Total	1,091	2,734	3,382

(3) Environmental conservation results

	Impact per output			Total amount			Reduction		
	Unit	FY2024.3	FY2025.3	Unit	FY2024.3	FY2025.3	Unit	FY2024.3	FY2025.3
NOx emissions from LNG terminals in the city gas business	mg/m ³	2.53	1.66	t	16.55	11.02	t	101.05	72.25
COD at all LNG terminals	mg/m ³	0.40	0.39	t	2.60	2.62	t	8.66	9.09
CO ₂ emissions from LNG terminals	g-CO ₂ /m ³	17.37	18.44	1,000 t-CO ₂	115.43	122.63	1,000 t-CO ₂	0.00	0.00
CO ₂ emissions from other sites	g-CO ₂ /m ³	4.68	4.44	1,000 t-CO ₂	31.07	29.55	1,000 t-CO ₂	29.80	31.36
Excavated soil for final disposal	t/km	0.00	0.00	1,000 t	0.63	0.15	1,000 t	39.90	38.42
General waste for disposal	g/m ³	0.00	0.00	t	11.11	13.63	t	985.79	983.87
Industrial waste for disposal (including used gas appliances)	g/m ³	0.03	0.02	t	218.67	134.48	t	1,213.28	-5,450.24

(4) Social benefits of environmental conservation efforts (monetary value)

	FY2023.3 monetary value (million yen)	FY2024.3 monetary value (million yen)	FY2025.3 monetary value (million yen)
NOx emissions from LNG terminals in the city gas business	34	36	26
COD at all LNG terminals	14	13	14
CO ₂ emissions from LNG terminals ²	0	0	0
CO ₂ emissions from other sites	121	105	110
Excavated soil for final disposal	491	883	850
General waste for disposal	3	3	3
Industrial waste for disposal (including used gas appliances)	38	37	-167
Total	702	1,077	836

Environmental Targets

Principle and Outline

In March 2024, the Daigas Group announced Medium-Term Management Plan 2026, in which we presented our key strategy, positioning the 2024-2026 period as a period to be focused on contributing to the energy transition toward achieving carbon neutrality in 2050 and building a foundation to accelerate our initiatives for a carbon neutral society.

In addition, we revised the Daigas Group Biodiversity Promotion Policy and the Daigas Group Environmental Policy in April 2024, with reference to the National Biodiversity Strategy and Action Plan of Japan 2023-2030 formulated based on the launch of the Taskforce on Nature-related Financial Disclosures (TNFD) in June 2021 and Kunming-Montreal Global Biodiversity Framework, which was adopted at the 15th Conference of the Parties to the Convention on Biological Diversity (COP15) held in December 2022.

Based on these policies, we have established environmental targets. The results of initiatives undertaken in FY2025.3 are presented below.

■ The Daigas Group Environmental Targets and Results Osaka Gas underwent a third-party verification by Bureau Veritas Japan Co., Ltd. (Verified items are indicated with an asterisk [*].)

Field	Indicators	Targets	Target fiscal year	FY2025.3 results
Climate change	CO ₂ emissions of Daigas Group*	Net-zero CO ₂ emissions	2051.3	24.42 million tons
		27.02 million tons* ¹ Domestic: 5 million tons less than FY2018.3.	2031.3	Domestic: 23.44 million tons (8.58 million tons less than FY2018.3)
	Avoided emissions* ²	10 million tons	2031.3	
		7 million tons	2027.3	6.29 million tons
	Renewable energy development contribution	5 GW	2031.3	3.70 GW
		4 GW	2027.3	
		Nearly 50%	2031.3	30.4%
		Nearly 30%	2027.3	
	CO ₂ emissions reduction in the Group company offices and vehicles	100%	2031.3	50%
		67%	2027.3	
Resource recycling	Promotion of e-methane practical application	1% e-methane in gas grid	2031.3	Conducting a detailed FEED study in the e-methane supply chain projects
		Final investment decisions in e-methane supply chain PJ	2027.3	
	Promotion of methanation technology development	Establishing a pilot-scale (400 Nm ³ /h class) SOEC technology	2031.3	The first phase of SOEC GI funds business completed and the second phase implementation plan formulated
		Transition to the second phase of SOEC GI funds business	2027.3	
	Osaka Gas, core energy business companies, and Osaka Gas Network	Industrial and general waste*	Every year until 2031.3	98.5%
		Polyethylene (PE) pipes*		100%
		Gas meters*		100%
	Affiliates	Industrial and general waste*		96.4%
	Value chain	Promoting 3R efforts concerning used equipment collected from customers or business activities		Continuously implementing 3R promotion
Biodiversity	Identifying risks and promoting conservation initiatives through biodiversity impact assessments		Every year until 2031.3	Conducting an analysis and assessment in line with the LEAP approach recommended by the TNFD
	Conserving the environment by promoting reuse of soil excavated during gas piping works*	Recycling rate of soil excavated during piping works: 99% or higher		99.7%
Water resources	Identifying water risks through water stress impact assessments and promoting water resources conservation		Every year until 2031.3	Conducting an analysis and assessment in line with the LEAP approach recommended by the TNFD.
	Preventing water pollution	Violation of environmental regulations related to water pollution: 0		Violation of environmental regulations related to water pollution: 0

*1 Emissions in domestic supply chain (Scopes 1, 2 and 3)

*2 Calculate the estimated effect of CO₂ emissions reduction in one year of the calculation FY by introducing high efficiency facilities and low carbon energy, etc. to customer side and the company's business activities in and after FY2018.3.

*3 Due to changes in the boundary, the target was revised in April 2025.

Actions for Climate Change

Principle and Outline

The Daigas Group believes that climate change represents an important management challenge, and that initiatives to reduce CO₂ 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 CO₂ 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.

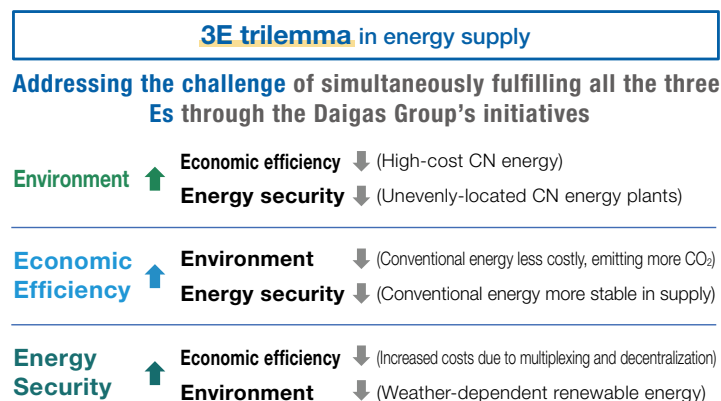
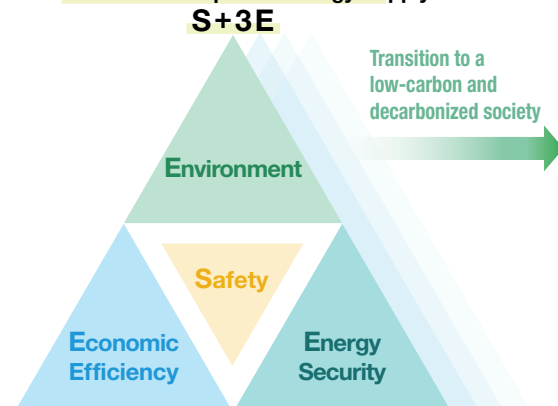
However, switching to environmentally friendly energy currently leads to increased costs and reduced supply stability when the supply chain is not yet established. This relationship is referred to as the “3E trilemma,” and the Daigas Group will challenge itself to satisfy all three Es simultaneously. In particular, because Japan is not blessed with natural resources and has a low energy self-sufficiency rate of 12.6%, it relies on energy imports from overseas. As a result, it is necessary to pay close attention to 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



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)

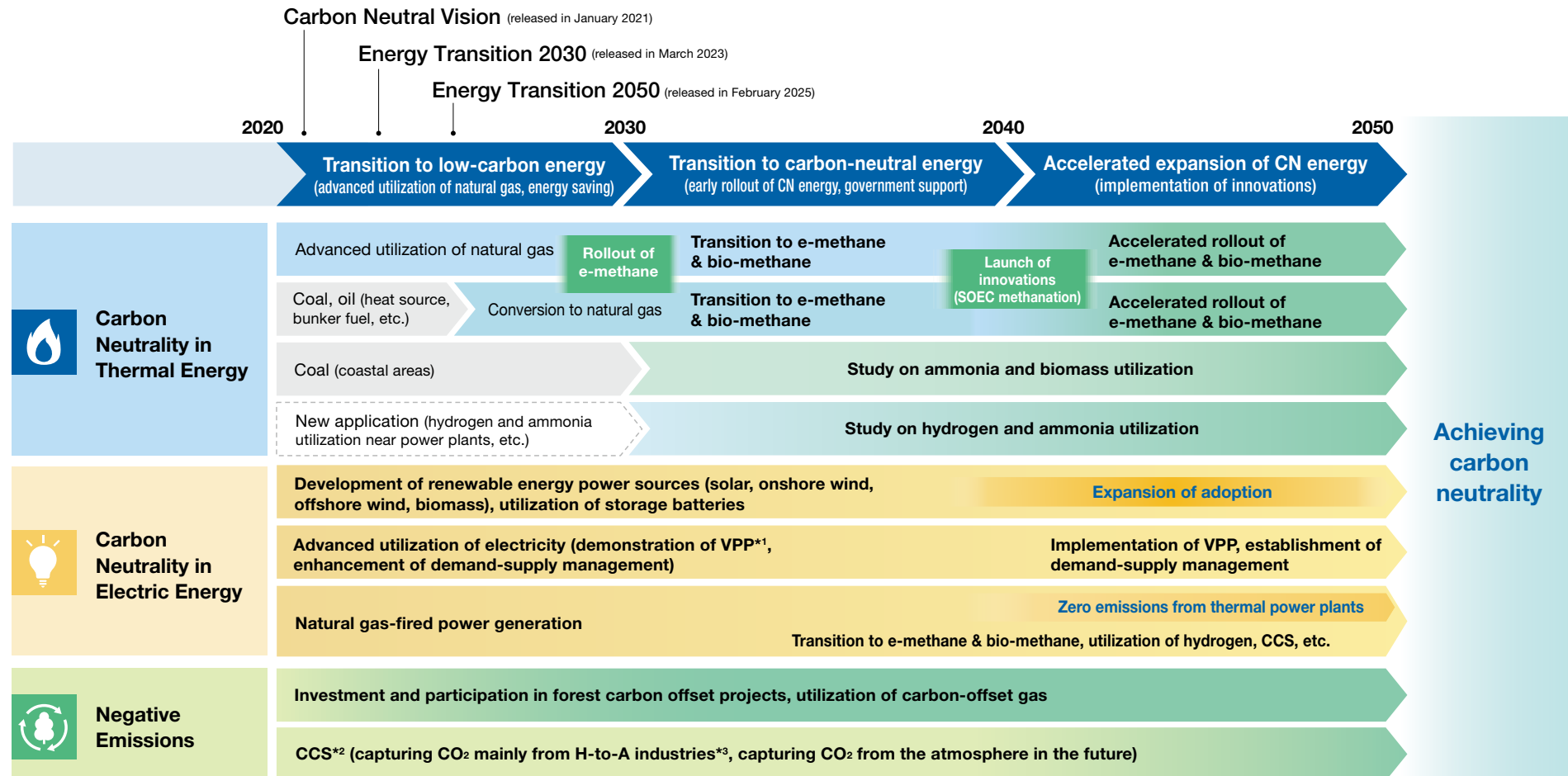
Japan’s energy self-sufficiency: 12.6%^{*2}
→ Reliance on energy imports

^{*1} S+3E: Safety, Energy Security, Economic Efficiency, and Environment ^{*2} FY2023.3 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

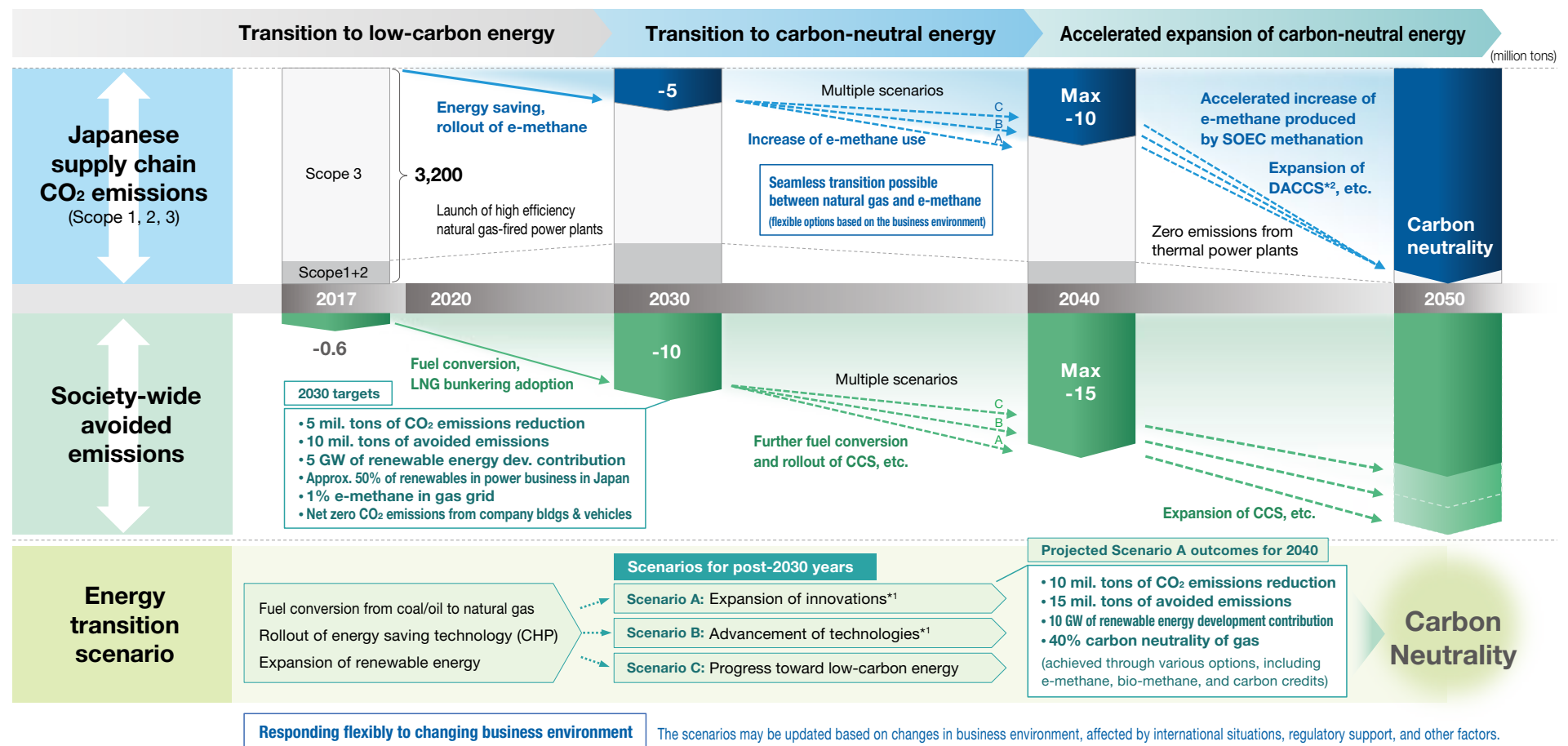
^{*3} H-to-A (Hard-to-Abate) industry: Sectors in which CO₂ emissions reduction is challenging

Roadmap to CO₂ Emissions Reduction

The Daigas Group has formulated a CO₂ 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 for 2040, 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.



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

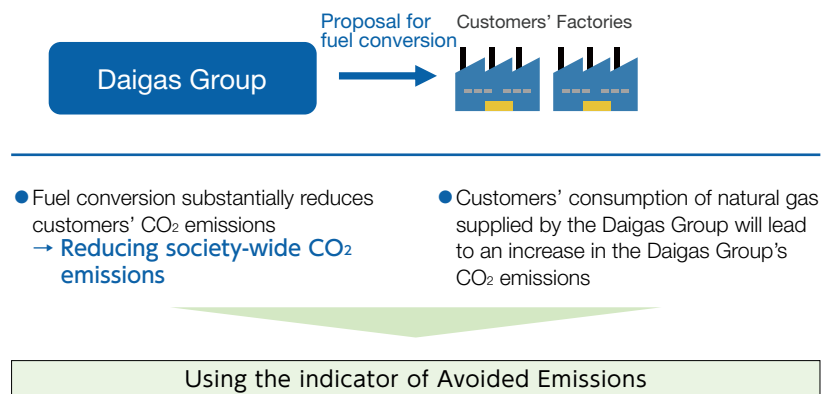
*2 Direct Air Carbon Capture and Storage: Technology that combines DAC for separating and capturing CO₂ with CCS for underground storage.

Approach to Avoided Emissions in Society

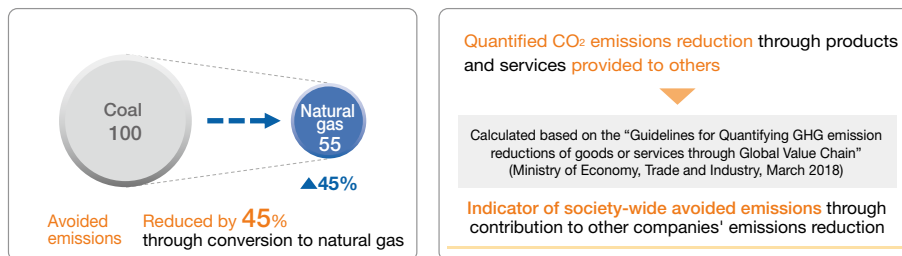
As we move toward providing carbon neutral thermal energy, one effective measure during the transition period is fuel conversion from coal and oil to natural gas, which leads to certain reduction of carbon. For example, simply switching from coal to natural gas can reduce CO₂ emissions per unit of heat 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 CO₂ emissions throughout society.

Meanwhile, although society's overall CO₂ emissions will decrease significantly, this fuel conversion will increase the use of natural gas, which appears to increase CO₂ emissions throughout the Group's supply chain. This reduction in CO₂ 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 CO₂ 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)

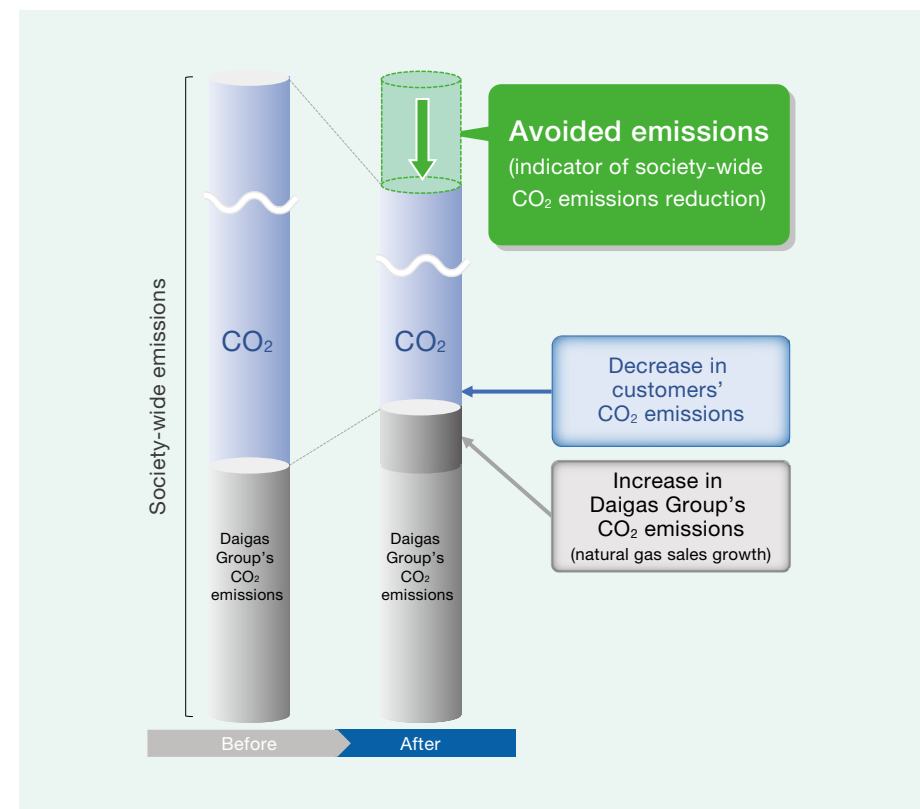


CO₂ Emissions Per Same Calorific Value*² What is "Avoided Emissions"?



*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 CO₂ emission is calculated for such systems that contribute to the reduction of CO₂ emissions in society as a whole.

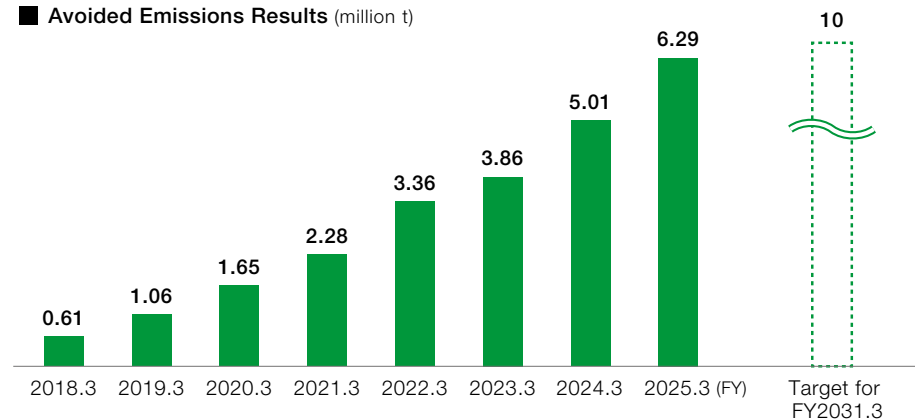
The Daigas Group contributed to a 6.29-million-ton CO₂ emissions reduction, as revealed by the results of calculations of the effect of reducing CO₂ emissions in FY2025.3 (FY2025.3 results) achieved by using the systems listed below that the Daigas Group has introduced since FY2018.3 at customer sites 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. The calculation results were validated by a third-party review by Bureau Veritas Japan Co., Ltd.

■ Calculation Method

	Low-carbon/ carbon-neutral system	Reduction effect calculation method	Baseline concept		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	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
	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		Expanded and advanced use of natural gas  Fuel conversion High-efficiency water heater	Fuel conversion: Amount developed × Difference in CO ₂ emission factor Gas-powered air conditioning: Capacity sold × Reduction per unit capacity	Emissions comparison with other fuels Substitution for conventional air conditioners
	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		 Gas-powered air conditioning	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

■ Avoided Emissions Results (million t)



* Calculated using the average electricity emission factor of thermal power given in the Plan for Global Warming Countermeasures (2025): 0.65 kg-CO₂/kWh (FY2014.3)

Efforts to achieve net zero emissions regarding the Group's CO₂ 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 GHG Protocol, an international emission accounting standard. The methodology of the calculation and its results have been certified by an independent organization to verify their reliability and accuracy.

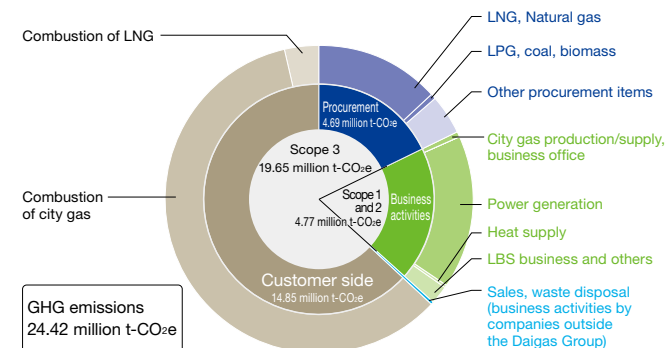
Combined GHG emissions by the Daigas Group and value chain companies, measured by CO₂, totaled about 24.42 million tons in FY2025.3. The sum breaks down into about 4.77 million tons, or about 20%, for GHG emitted through business activities by the Daigas Group (Scope 1 and Scope 2), and about 19.65 million tons, or about 80%, emitted by others in our value chain (Scope 3). GHG emissions from city gas and LNG combustion on the customer side amounted to 14.85 million tons in the reporting year in terms of CO₂, accounting for about 61% of the total. GHG emissions through electricity generation, as measured in terms of CO₂ in the year, amounted to 4.08 million tons, 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 4.69 million tons, as measured in terms of CO₂ in the year, accounting for about 19% of the total emissions. The procurement of energy sources, especially LNG, accounted for over 80% 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.

* CO₂ emissions in the domestic supply chain (Scope 1, 2 and 3) amounted to 23.44 million tons.

GHG Emissions from the Value Chain (FY2025.3 results)

Please see P.033 for detailed data.



Companies subject to the calculation of GHG emissions:
68 companies in total, including Osaka Gas Co., Ltd. and 67 companies among 163 consolidated subsidiaries are subject to calculation of GHG emissions. Those housed in office buildings as tenants and whose environmental data are difficult to grasp and whose environmental effects are minimal are not subject to such calculation. Also excluded from the calculation are overseas companies, except two companies.

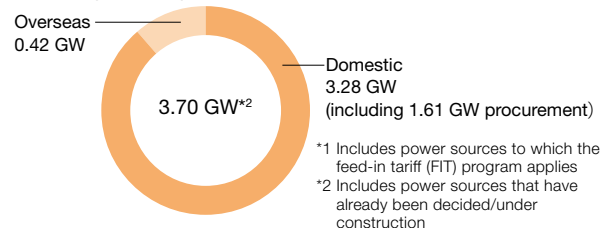
Reduction of CO₂ Emissions from the Group's Own Business Activities—Facilitating the Development of Renewable Energy Sources

The Daigas Group aims to raise by FY2031.3 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.

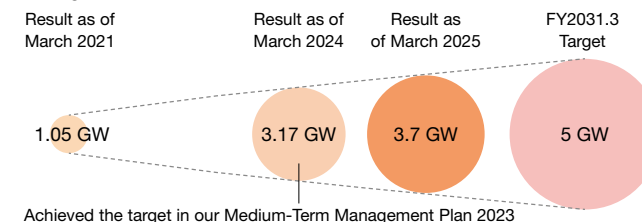
In FY2025.3, the percentage of renewables in our power portfolio was 30.4%, and renewable power development contribution was 3.7 GW.

The Hyuga Biomass Power Plant started commercial operation in October 2024, followed by the Aichi Tahara Biomass Power Plant in November. In addition, 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} (FY2025.3)



Contribution to Developing Renewables Capacity on a Global basis: Targets and Results



Reducing CO₂ 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 CO₂ emissions within the Group with measures such as reducing the CO₂ emissions from our offices and company vehicles and adopting cryogenic power generation at our LNG terminals. In FY2025.3, the Materials Business also advanced efforts to reduce CO₂ emissions by installing power generation equipment that utilizes waste heat at its activated carbon factory in India.

CO₂ 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 CO₂ emissions at customers' sites. We are seeking to assist customers in reducing their CO₂ 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 CO₂ emissions from logistics.

Efforts to reduce CO₂ 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. Osaka Gas became the first city gas company to start a Shore-to-Ship^{*1} LNG fuel supply business for ships in April 2025, aiming to reduce the carbon footprint of marine fuel.

Since 2019, the Company has been supplying LNG fuel to ships using the Truck-to-Ship method^{*2}, and with the launch of the Shore-to-Ship supply business, we are now able to supply LNG fuel with two methods. In addition, we plan to start a Ship-to-Ship^{*3} LNG fuel supply business for ships in the Osaka Bay and Setouchi area in FY2027.3. This will enable LNG fuel supply in a variety of ways, contributing to a stable and flexible LNG fuel supply. In the future, we aim to decarbonize 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 LNG is supplied to an LNG-fueled ship moored at a quay from an LNG tanker truck parked at the pier.

^{*3} 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.

■ LNG bunkering methods



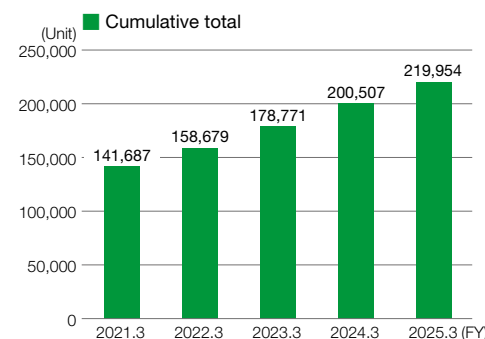
Approaches at customer sites to reduce CO₂ emissions through the introduction of high-efficiency decentralized system

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 CO₂ 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.

“ENE-FARM type S,” launched in April 2020, attains the highest power generation efficiency in the world^{*1} of 55%^{*2}. Moreover, the main unit has improved in durability and has been significantly downsized. It is equipped with the industry’s first electric water-heating mode, which allows customers to use hot water heated by a built-in electric heater even when the supply of city gas is interrupted. As these features were highly regarded, “ENE-FARM type S” won the 7th Japan Resilience Award (2021)^{*3} and other awards. In addition, with our IoT connection services, which provide even greater convenience and security, we have developed the “EF Failure Sign Monitoring System.” This system can monitor for signs of failure in a timely manner using “ENE-FARM” operating data, and it won a grand prize in FY2025.3 Japan Gas Association Technology Award.

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 the end of January 2020)

^{*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).

^{*3} A system organized by the Association for Resilience Japan that discovers, evaluates, and awards advanced activities related to resilience which are being developed throughout Japan in order to build a resilient society for the next generation. The award was held for the seventh time in FY2022.3.

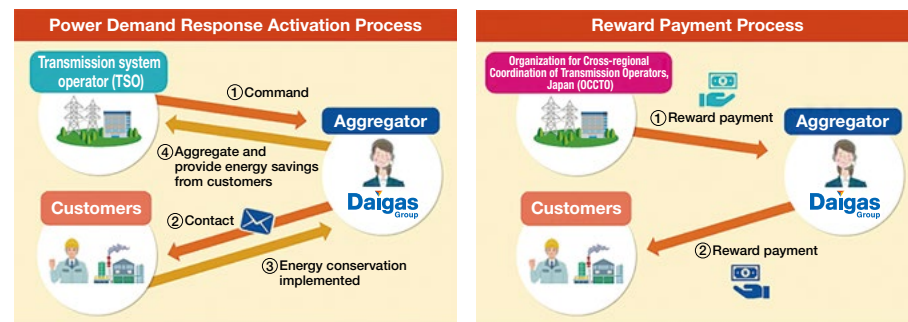
Initiatives to Reduce Future Energy Consumption

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 FY2025.3, this service has been implemented at approximately 243 locations.

* 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.



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

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 CO₂ storage. Our goal is to separate and capture CO₂ from exhaust gas emitted from the manufacturing plants and utility facilities of Mitsui Chemicals, Inc.'s Osaka Works, with the aim of utilizing CO₂ (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 CO₂ emissions from factories with Shell's global network and expertise relating to CO₂ liquefaction and transportation and CCS to conduct a feasibility study of a CCS value chain that envisions collecting and liquefying captured CO₂, 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 CO₂ storage, to design a CCUS value chain and assess its economic feasibility, consisting of CCS, including capturing CO₂ 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 CO₂ storage with Mitsubishi Heavy Industries, Ltd.'s expertise in CO₂ capture, liquefied CO₂ transportation, and CO₂ management (CO₂NNEX®*), we are conducting a business feasibility assessment of CCUS, consisting of CCS, including CO₂ capture measures, CO₂ transportation by ship, and underground storage, as well as reusing it as e-methane.

Through these initiatives, we aim to build a CO₂ value chain and promote the expansion of carbon recycled fuel applications.

* CO₂NNEX: trademark owned by Mitsubishi Heavy Industries, Ltd.

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 FY2025.3, we developed a carbon credit quality assessment system using generative AI with the aim of significantly improving the transparency and reliability of the carbon credit market. With this system, companies and investors can select high-quality credits and achieve effective emission reductions. It also helps avoid the risk of greenwashing and improve corporate environmental performance.

This system uses generative AI to analyze carbon credit creation project plans and assess their quality by assessing the consistency between the standards established for actual credit certification and those set by initiatives and rating agencies. We have confirmed that the system's accuracy is high when compared with past assessments by rating agencies and other organizations. By utilizing AI, we are able to comprehensively assess a huge number of carbon credit creation projects, enabling us to compare the quality of projects, and we have obtained a patent for this system.

We will pursue all possibilities in collaboration with partners, such as licensing this system and utilizing it within the formation of a credit trading platform.

Furthermore, in March 2025, we launched the system as a web-based service called “GreenChecker.” This is the first service in the world to evaluate the quality of carbon credits using generative AI. By launching this web service on a preliminary basis, we further refined it based on feedback, and made it generally available in August 2025.

Involvement in a forestry fund formed by the Sumitomo Forestry Group

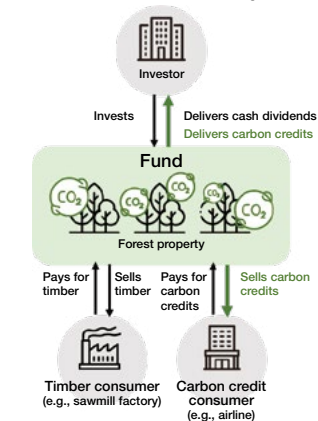
In July 2023, Osaka Gas announced its joint investment, along with nine other Japanese companies, in the Eastwood Climate Smart Forestry Fund I (“the Fund”) established by the Sumitomo Forestry Group.

The size of this fund is approximately 600 million yen, and the investment period is planned for 15 years. By 2027, the pooled capital will have been invested in the acquisition and management of 130 thousand hectares of forest, primarily in North America. The Fund will contribute to the realization of a carbon-neutral society by generating new absorption of CO₂ and the production and trading of high-integrity carbon credits. (Approx. 90 thousand hectares of forest assets acquired as of February 2025.) The value of forests as natural capital will also be enhanced, such as by maintaining biodiversity and conserving water resources. the Fund will deliver global climate benefits by supporting responsible forest management at an area and financial scale beyond that which individual companies could achieve on their own.



An example of forests purchased by the fund
(Courtesy of Eastwood Forests, LLC)

Structure of forestry fund



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

DBJ Green Building Certification is 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. Seven new condominiums have been offered with ZEH-M as standard features by FY2025.3 (Ready: 3 and Oriented: 4).

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 Hommachi II, 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 Hommachi II	Urbanex Temmabashi South	Urbanex Tsukaguchi
Exterior view			
Outline	Completed in 2024 Total number of units: 76	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 CO₂ 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★★.”

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 CO₂ 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 CO₂ 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 CO₂ 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.

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 CO₂ 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.

Disclosure Based on the TCFD Recommendations: Recognition of and Action on Risks and Opportunities

Principle and Outline

Tackling climate change is seen as one of the Sustainable Development Goals (SDGs) adopted by the United Nations. Since the Paris Agreement came into force in November 2016, initiatives to tackle climate change are being undertaken around the world. In Japan, the country declared carbon neutral by 2050 in October 2020, making it even more important to address climate change.

For the Daigas Group, which is engaged primarily in the energy business, climate change represents an important management challenge, and initiatives to reduce CO₂ emissions are a crucial mission. In January 2021, the Daigas Group established and announced the “Daigas Group Carbon Neutral Vision,” indicating its vision of how it strives to become carbon neutral by 2050.

In March 2023, we released “Energy Transition 2030 (ET2030),” which outlines the overall roadmap for the transition to carbon neutral energy, as well as our Group’s specific initiatives and solutions we can offer our customers toward 2030, and presented it to stakeholders. In the Daigas Group Medium-Term Management Plan 2026, announced in March 2024, we position providing carbon neutral energy as one of our key initiatives. In February 2025, we announced “Energy Transition 2050 (ET2050),” which clearly showed our energy transition roadmap toward achieving carbon neutrality by 2050 and presented solutions for co-creating “value for a sustainable future” with stakeholders.

The recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD) announced in June 2017 (the “TCFD recommendations”) encourage companies to disclose climate change related financial information to promote appropriate investment decisions by investors.

Osaka Gas supports the TCFD recommendations, and utilizes them as indicators to validate its climate change response. We also participate in the TCFD Consortium*, where discussions take place on efforts toward information disclosure on responses to climate change based on the TCFD recommendations.

* TCFD Consortium

The TCFD Consortium was established on May 27, 2019, whose members from the Japanese private sector discuss how companies can effectively disclose information on tackling climate change and how financial institutions can use the disclosed information to make appropriate investment decisions. From the Japanese government, the Ministry of Economy, Trade and Industry, the Financial Services Agency, and the Ministry of the Environment participate as observers in the consortium.

Climate Change Governance

The Daigas Group regards tackling climate change as a key management issue. Just as with other important business activities across the Group, the Board of Directors is responsible for making decisions on and supervising activities aimed at tackling climate change and other environmental issues. At the Sustainability Council (Management Meeting), which is held three times a year, executives discuss activity plans and activity reports related to ESG issues, including climate change issues, and submit reports to the Representative Director and President.

The Group also has the Sustainability Committee, chaired by the Head of Sustainability Promotion (Director and Senior Executive Officer), an executive who supervises the Group’s sustainability activities, and consisting of the heads of related organizations. The Sustainability Committee meets three times a year for cross-organizational deliberation, coordination, and supervision of climate-change-related issues, including the planning and promotion of related business activities, progress in achieving relevant targets, and risk management and countermeasures. The committee submits to the Board of Directors deliberation proposals and reports on important agenda items, such as the status of achievement of sustainability-related Sustainability management targets and business projects expected to sustain a major financial impact due to climate change.

Directors other than Outside Directors are paid performance-linked remuneration, and the coefficient of Sustainability indicators achievement is used as one of the performance indicators. Sustainability indicators include CO₂ emissions and other climate change-related indicators toward achieving carbon neutrality.

Strategy

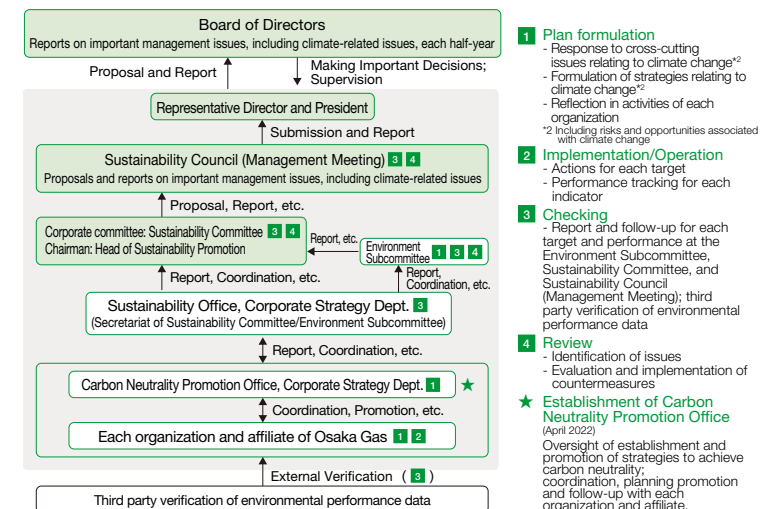
Scenario analysis

The Group has been working on climate change scenario analysis using scenarios published by an external organization (International Energy Agency, IEA) with the aim of understanding the impact of climate change on the Group’s business on a medium- and long-term basis and using its results as reference material for evaluating and preparing countermeasures.

We assessed our energy businesses (gas, electricity and related businesses in Japan and overseas) which are expected to experience the greatest impact from climate change among the Group’s businesses, assuming the scenarios that take into account the progress of energy conservation and changes in the composition of power sources, etc. (1.5°C Scenario (NZE2050) and 2.6°C Scenario (STEPS)*2).

We steadily implement initiatives to increase the resilience of the Group’s businesses, while applying the suggestions gained from scenario analysis to our evaluation of medium- and long-term business strategies. Moreover, as the global response to climate change continues to progress, the scenario’s preconditions may also change in the future. We will continue to deepen our scenario analysis, renewing our assumptions in line with the latest conditions as necessary, taking into account scenarios established by external authorities. *2 Authority: IEA “World Energy Outlook 2021”

■ Governance/Risk Management System for Climate Change



Recognition of risks and opportunities

Using a multi-track scenario analysis, the Daigas Group identified anticipated risks and opportunities, based on the environment surrounding its domestic and overseas energy businesses, evaluated them, and examined countermeasures in the short- to medium-term toward 2030 and the long-term toward 2050.

The Group is engaged in gas and electricity businesses, primarily in the Kansai region, which use natural gas as their main raw material and fuel. The external environment is undergoing various changes due to climate change. We have classified the major factors associated with these changes into “transition risks” and “physical risks,” and identified the major risks and opportunities. Significant risks for the Group related to climate change include the possibility that rising sea levels and natural disasters such as typhoons and torrential rains due to localized abnormal weather events, etc. may cause damage to our manufacturing/distribution equipment. In addition, it is possible that our businesses may be affected by significant increases in the carbon tax rate in Japan, or an increased desire among our customers to switch to non-fossil fuels. However, promotion of the development and spread of renewable energy and technologies for carbon neutrality also represents a significant opportunity for the Group.

The Group will pursue sustainable growth by promoting portfolio management through diverse businesses in order to respond appropriately to the identified risks and opportunities.

■ Evaluation of Risks and Opportunities

				Impact on Business	
				Short- and Medium-Term	Long-Term
Risks	Physical	Physical risks	Scenario	Impact	
			2.6°C	Damage to facilities arising from meteorological disasters	Increase in capital investment costs and insurance premiums
	Transition	Market	2.6°C	Switch to natural gas	Increase in prices due to greater competition in LNG procurement
			1.5°C	Switch to non-fossil fuel energy	Fall in sales of gas and thermal power
		Reputation	1.5°C	Focus of investment criteria on low-carbon or decarbonized businesses	Declining investment in fossil fuels businesses
Opportunities	Physical	Physical Opportunities	2.6°C	Increase in awareness and support measures for weather disaster countermeasures	Expansion of decentralized energy systems
			2.6°C	Switch to natural gas	Switch to LNG and expansion of sales of high-efficiency equipment abroad
	Transition	Technology	1.5°C	Development of renewable energy and CCUS technologies	Expansion of development of renewable energy sources
			1.5°C	Implementation of a national policy for the mass introduction of renewable energy sources	Expansion of sales of electricity from renewable energy sources
		Policy and legal	2.6°C	Development of AI/IoT	Participation in decentralized power sources aggregation business

Financial impact : Small

Financial impact : Large

■ Strategies/Countermeasures for Risks and Opportunities

		Short- and Medium-Term	Long-Term
Risks	Physical	● Implement disaster countermeasures for facilities	
	Transition	● Diversify procurement sources ● Develop and expand sales of renewable energy power sources in Japan and abroad ● Engage in dialogue with investors Please see the following material for our major initiatives*	
Opportunities	Physical	● Development and sale of equipment with disaster response functions	
	Transition	● Develop and expand sales of renewable energy power sources in Japan and abroad ● Develop and sell high efficiency, compact decentralized power sources (CHP, fuel cells) ● Expand fuel switching, sales of high efficiency equipment in Japan and abroad ● Verify and participate in the decentralized power sources aggregation business Please see the following material for our major initiatives*	
		● Further develop energy-saving technologies	● Full-scale introduction of CCUS/"e-methane," hydrogen, etc. and establishment of supply chains



▶ Carbon Neutral Vision



▶ ET2030



▶ ET2050

Financial Impact of Climate Change Risks and Opportunities

In its Medium-Term Management Plan 2026, the Daigas Group expects to invest 100.0 billion yen in the carbon neutral field (renewable energy, e-methane, etc.) for a future earnings structure as investment for growth from FY2025.3 to FY2027.3. The Daigas Group is actively contributing to the spread of renewable energy, and estimates that the sales impact of expanding its renewable energy business in FY2031.3 will be on the order of 100 billion yen. It should be noted that there are uncertainties and assumptions in the above estimation of financial impact. In practice, the impact may vary significantly as a result of changes in key factors.

Initiatives to Reduce Greenhouse Gas Emissions

Initiatives to reduce greenhouse gas emissions are a crucial mission for the Daigas Group. We focus on reducing CO₂ emissions, not only from our own business activities, but also from customers who use the energy we provide. In the Daigas Group Energy Transition 2030 (ET2030), we have set a target of reducing CO₂ emissions in our domestic supply chain by 5 million tons by FY2031.3 compared to FY2018.3, and we are taking various initiatives to reduce CO₂ emissions.

Under the Daigas Group Carbon Neutral Vision, we have established the goal of contributing 10 million tons per year of CO₂ emissions reductions in FY2031.3. This indicator will enable us to contribute to reductions throughout society, and we therefore use it as a management target linked to the Group's business initiatives.

In February 2025, we formulated "Energy Transition 2050 (ET2050)." Taking into account uncertainties beyond 2030, we have formulated multiple scenarios based on the energy supply and demand outlook presented in Japan's Seventh Strategic Energy Plan and will respond to them flexibly. Please see [P.037-P.048](#) for each initiative.

Initiatives Ensuring Resiliency for a Carbon Neutral Society

Securing a stable supply of energy, a core social infrastructure, is one of the major climate change-driven challenges facing society as a whole. By continuing to provide a range of services, including multiple sources of clean energy such as gas and electricity utilizing technologies for carbon neutrality, disaster response equipment, and the widespread and advanced use of energy, the Daigas Group will strive to contribute to society in terms of stable supply and resilience toward a carbon neutral society.

The Daigas Group will aim to achieve both business growth and stable social infrastructure, and promote activities that contribute to reducing CO₂ emissions throughout society, promote the advanced use of gas, and develop technologies for carbon neutrality, in response to the growing global trend toward carbon neutrality.

Please see [P.039](#) for an overall picture of the Daigas Group's efforts to provide carbon neutral energy.

Risk Management

When deciding on the Daigas Group's business plan and investment plan, the internal organizations responsible for the gas, electricity and other businesses analyze the risk factors and their impact on each business, distill and identify risks, and submit these together with other business risks, etc. to the Management Meeting for deliberation. Climate change risks in the formulated plans are managed through a PDCA cycle, and are reported and followed up at the Environment Subcommittee, Sustainability Committee, and Sustainability Council (Management Meeting).

Decisions on climate-related risks and sustainability, including investment decisions, are made by the Board of Directors and the Management Meeting. Matters related to climate change that were proposed or reported by March 31, 2025, included those listed below.

Please see [P.049](#) for the risk management system for climate change

- Resolutions for collaboration and participation in projects for a carbon neutral society, based on the Carbon Neutral Vision
- Formulation and disclosure of Energy Transition 2050
- Monitoring of the results for indicators used to manage climate change response, etc.

Introduction of ICP

The Daigas Group introduced the concept of "Environmental Management Efficiency" in 2003, which is used to quantify the environmental impact of business activities by converting environmental impacts per volume of gas produced into monetary values. From 2023, we have adopted internal carbon pricing (ICP) to conduct scenario analysis when evaluating investments with a large carbon impact, which we reference as one of tools when making decisions, including the degree of risk and the existence and effectiveness of countermeasures.

Prices are set according to investment target countries/timeframes with reference to carbon price trend forecasts by the International Energy Agency (IEA), etc.

■ Example: ICP Applied to Domestic Investment Projects (as of June 2025)

2030	US\$ 60/t-CO ₂
2040	US\$ 70/t-CO ₂
2050	US\$ 90/t-CO ₂

Indicators and Targets

The Daigas Group will proceed to contribute to radically reducing CO₂ emissions and realizing a carbon neutral society, through initiatives such as energy conservation, the advanced use of natural gas, and the widespread use of renewable energies.

Field	Indicators	Targets	Target FY
Climate Change	CO ₂ emissions of Daigas Group	Net-zero CO ₂ emissions	2051.3
		27.02 million tons* ¹ Domestic: 5 million tons less than FY18.3	2031.3
	Contribution to CO ₂ emissions reductions across society	Avoided emissions* ²	2031.3
		10 million tons	2027.3
	CO ₂ emissions reductions from our own business activities	7 million tons	2027.3
		Renewable energy development contribution	2031.3
		5 GW	2031.3
		4 GW	2027.3
		Percentage of renewables in our power generation portfolio in Japan	2031.3
		Approx. 50%	2027.3
	Contribution by development of technologies	Approx. 30%	2027.3
		CO ₂ emissions reduction in the Group company offices and vehicles	2031.3
		100%	2027.3
		67%	2027.3
		Promotion of e-methane practical application	2031.3
		1% e-methane in gas grid	2027.3
		Final investment decisions in e-methane supply chain PJ	2031.3
		Establishing a pilot-scale (400 Nm ³ /h class) SOEC technology	2027.3
		Promotion of methanation technology development	2027.3
		Transition to the second phase of SOEC GI funds business	2027.3

*1 Emissions in domestic supply chain (Scopes 1, 2 and 3)

*2 Calculate the estimated effect of CO₂ emissions reduction in one year of the target FY by introducing high efficiency facilities and low carbon energy, etc. to customer side and the company's business activities in and after FY2018.3.

Contributing to the Resource-Recycling Society

Principle and Outline

With the aim of creating a recycling-oriented society, the Daigas Group strives to minimize waste emissions through efficient use of resources throughout its business activity value chain and through resource recycling by means of promoting the 3R + Renewable efforts. The Group also strives to conserve water through appropriate use of water and wastewater management.

More Specifically, Daigas Group is thoroughly implementing the 3Rs (reduce, reuse, recycle), cutting its resource consumption and waste generation, and endeavoring to reuse and recycle used resources. We are recycling resources throughout our business activity value chain by such means as striving for zero emissions at LNG terminals, reusing gas meters, recycling gas pipe materials, reusing excavated soil from gas pipe installation, and recycling used gas equipment.

Consumption of Resources by Daigas Group

Recycling of used gas pipes

The polyethylene (PE) pipes waste material generated at work sites is mainly used as covers to protect gas pipes and as post markers to indicate the location of supply pipes. In FY2025.3, 119 tons of polyethylene (PE) pipe waste was generated and all was reused. Metal pipes, such as steel and cast-iron pipes, are sold to electric furnace manufacturers and recycling companies, who use them as raw materials for products.

Reusing of gas meters

To measure the amount of gas used by customers, Osaka Gas has installed approximately 7.4 million gas meters. Under the Japanese Measurement Law, these devices must be replaced every 10 years.*1

After 10 years in use, gas meters are repaired (taken apart, inspected, and fixed) to make them perform as well as new ones. They are then installed at customer sites. In the past, this type of repair was conducted a third time to give the gas meters a total lifespan of 40 years. After conducting evaluations including durability tests*2 jointly with the gas meter manufacturers, we came to a decision that these gas meters can be used another 20 years if twice of additional repairs are conducted. Based on the result, the Company has decided to increase the maintenance of gas meters by two times since FY2010.3, and to use them for 60 years.

As a component material, around 2 kg*3 of aluminum is used in each gas meter body. Reusing gas meter reduce 80%*4 of CO₂ emissions, that includes CO₂ emission that would have been emitted in the process of casting a new gas meter body, giving a cumulative total reduction of 85,000 tons over the next 20 years, compared with producing new meters.

*1 Replacement of meters: Some exceptions apply. (Meters from #25 or higher need to be replaced every seven years)

*2 Durability test: Cyclic tests, accelerated temperature tests, etc.

*3 Calculation of aluminum use: A body of gas meter contains approximately 2 kg (average of from #2.5 to #6) of aluminum.

*4 Calculation of CO₂ emissions: Calculated with new meters also using regenerated aluminum.

Electronic issuance of a manifest certifying waste disposal via the Daigas Group's e-Cycle system

The Daigas Group operates a proprietary "e-Cycle" system that links appliance sales agents,

collection and transportation companies, and disposal companies via the Internet. This system enables prompt confirmation of "manifests," which certify that used equipment collected by sales agents has been appropriately handled by the shipping companies and the disposal companies.

The manifest is electronically issued, as the Daigas Group's e-Cycle system is connected to the Japan Industrial Waste Information Center (JWNET) through the EDI.*

* EDI

EDI stands for electronic data interchange. Electronic data are exchanged between the JWNET and Osaka Gas's e-Cycle system.

Compliance with the Home Appliance Recycling Law

The Daigas Group appropriately disposes of gas air conditioners for household use and clothes dryers, covered by the Home Appliance Recycling Law, in line with the law. In FY2025.3, about 87 tons of gas air conditioners for household use were collected, and 91% of them were recycled, higher than the minimum mandatory recycling rate of 80%. The amount of clothes dryers collected during the same year came to about 18 tons, 91% of which was recycled, far above the mandatory recycling rate of 82%.

■ Air Conditioners

	FY2021.3	FY2022.3	FY2023.3	FY2024.3	FY2025.3
Number of units recycled (units)	3,656	2,921	2,755	2,645	2,180
Gross weight recovered (t)	147	118	111	106	87
Weight recycled (t)	134	107	101	97	76
Recycling rate (%)	90	90	91	91	91

■ Clothes Dryers

	FY2021.3	FY2022.3	FY2023.3	FY2024.3	FY2025.3
Number of units recycled (units)	523	393	445	408	425
Gross weight recovered (t)	21	16	19	17	18
Weight recycled (t)	19	15	17	15	16
Recycling rate (%)	89	90	90	91	91

Chemical substance management

Legal compliance and proper management

There are very few hazardous chemicals handled by the Daigas Group during the processing and supply of natural gas. The Group will continue to manage and reduce the amount of chemicals it uses under the policies shown below.

■ Daigas Group Chemical Substance Management Principles

1. We comply with laws and environmental regulations concerning the use of chemical substances.
2. We use ISO 14001-compliant and other environmental management activities to step up management and decrease emissions of chemical substances.
3. We disclose information on chemical substance management mainly on our website.

Soil and groundwater conservation



Information Disclosure on the Inspection Results of the Former Plant Sites

Inspecting soil and groundwater on former coal gas production sites

In compliance with relevant laws and regulations, Osaka Gas has checked the possibility of soil pollution at former coal gas production sites by measuring the amount of specified chemical substances contained in the soil and groundwater taken from the sites and assessing their impact on the sites and surrounding areas. The results of the surveys have been disclosed and response measures have been implemented where necessary. For example, when chemical substances (mainly cyanide compounds and benzene) in excess of the maximum amount allowed under the Soil Contamination Countermeasures Law were found, the incidents were reported to administrative authorities and adequate measures, including removal and cleaning the problematic soil, were taken promptly. Before changing the form of land, we conducted surveys based on relevant laws and regulations, followed by implementing appropriate response measures, including disposing of the contaminated soil and on-site containment of the soil. We have issued press releases regarding the results of investigations and the response measures, all of which have already been implemented. We will continue to take necessary measures based on the Soil Contamination Countermeasures Law.

Management of asbestos

The status of asbestos use at major facilities and buildings of the Group, and in its gas equipment, is given below.

Gas manufacturing and supply facilities	Gas equipment, combustion equipment	Daigas Group's buildings
Asbestos is not used in new facilities. The asbestos used in existing facilities as installed does not disperse into the air. When these facilities are serviced or reclaimed, nonasbestos material will be used in place of asbestos.	Asbestos is not used in new gas equipment or combustion equipment. Some of the gas equipment sold in the past used asbestos in gaskets or the like, which does not disperse into the air under ordinary conditions of use.	Measures to systematically eliminate spray-on asbestos insulation in buildings have been completed. Showrooms and other open spaces visited by customers do not use spray-on asbestos.

Compliance with the Act on Promotion of Recycling of Plastic Resources

The Daigas Group promotes resource recycling efforts through the promotion of the 3Rs (reduce, reuse, and recycle) plus renewable with the aim of creating a recycling-oriented society.

With regard to plastic resources, we are actively implementing material recycling in our business supply chain, including 100% recycling of waste polyethylene (PE) pipes, which are gas pipe materials, and recycling of resin used for gas alarms.

We will also continue our efforts to minimize the amount of landfill waste and other waste finally disposed of by effectively utilizing waste from other plastic products as thermal energy by, for example, converting it into refuse paper & plastic fuel (RPF).

Management of waste containing PCBs

Proper management and disposal of PCBs in line with government policy

Every company in the Daigas Group manages and disposes of waste containing PCBs in accordance with Japan's Act on Special Measures for Promotion of Proper Treatment of Polychlorinated Biphenyl (PCB) (PCB Special Measures Act). All capacitors and transformers with a high density of PCBs over 10 kg were disposed of by FY2013.3. All ballasts and other equipment that contain PCBs were also disposed of by the statutory processing deadline. Low-density PCBs have been consigned to approved decontamination facilities since FY2014.3 in a systematic process of disposal.

Going forward, we will continue to store and dispose of PCBs properly, in accordance with the government's disposal schedule and policies.

Gas appliance eco-design

Conform with all laws and take the environment into consideration, such as by restricting the use of chemical substances

July 2006 was the start of the RoHS Directive, which restricts the use of specified substances, such as lead and cadmium, in appliances. Also in July 2006, in Japan the revised Law for the Promotion of Effective Utilization of Resources went into effect, obligating companies to label products as containing the six specific hazardous substances of the RoHS Directive according to J-MOSS, the JIS standard for the labeling of electrical and electronic products containing chemical substances.

In line with the measures propelled in the automobiles and home appliances sectors, we are working together with gas appliance manufacturers on the development of environmentally-friendly gas appliances and its labeling. The Group abides by Japanese regulations on chemical substances (the Act on the Regulation of Manufacture and Evaluation of Chemical Substances, and the Act on the Assessment of Releases of Specified Chemical Substances in the Environment and the Promotion of Management Improvement). We also engage in independent evaluations of chemical management according to the RoHS Directive and are working to reduce chemical substances outlined therein.

Collaborating with Other Companies to Reduce Waste and Resource Use and Prevent Pollution

Environmentally Conscious Procurement

The Daigas Group aims to contribute to the development of a sustainable society and believes that environmental and social consideration is important in procurement. We have established the Daigas Group Procurement Policy, and are promoting purchasing activities based on the Daigas Group Environmental Policy.

Considering the balance between economic conditions and the reduction of environmental impact, we are promoting green purchasing that prioritizes the purchase of products and services with the lowest possible environmental impact throughout their product life cycle, from resource extraction to waste disposal, from business operators who strive to reduce their environmental impact.

■ Main examples

By replacing the plastic folder opening packs (distributed 557,500 packs/year) that are provided when gas is opened at customers' homes with paper folders, we have reduced approximately 13 tons of plastic.

Before change



After change



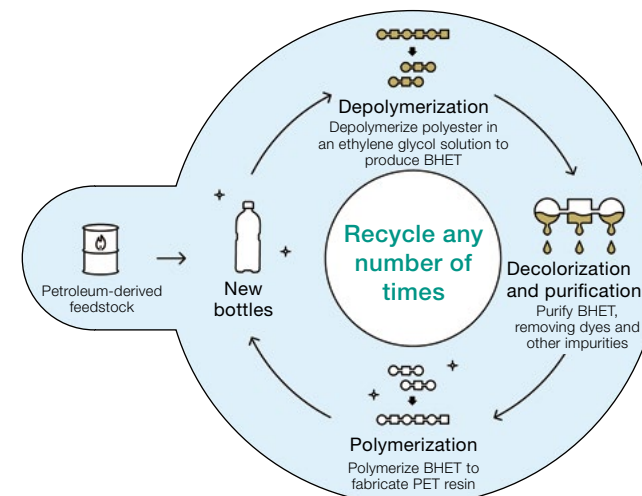
Developing new circular economy-related businesses with a partner

In December 2023, Osaka Gas entered into a capital and business alliance with JEPLAN, INC., which engages in businesses related to technologies for chemically recycling polyethylene terephthalate, a raw material for plastic bottles and other goods.

JEPLAN, INC. is one of the few companies in the world that has commercialized the horizontal recycling of plastic bottles to plastic bottles and polyester clothing to polyester clothing, using its proprietary PET chemical recycling technologies.

The Daigas Group will take advantage of its strong network and work to promote the recycling of plastic bottles and clothing in the Kansai area. The Group will also work on the reduction of costs and CO₂ emissions in the chemical recycling process with its energy-related solutions. Both companies will take advantage of their respective strengths and aim to contribute to the creation of new value and the promotion of a circular economy.

■ Recycling to make bottles from bottles



Source: "Making bottles from bottles" from JEPLAN, INC.'s website

Biodiversity

Principle and Outline



Daigas Group Biodiversity Policy

Believing that the many blessings of biodiversity are essential for the promotion of the Group's business, the Daigas Group in April 2010 established the "Osaka Gas Group Biodiversity Promotion Policy," which was revised to the Daigas Group Biodiversity Promotion Policy in March 2018. Subsequently, we made revisions to the Daigas Group Biodiversity Promotion Policy in April 2024 to clearly state that we will work to "understand our dependence and impact on biodiversity, as well as the risks and opportunities that come with them," and to "avoid or minimize our impact on biodiversity." Prior to the revisions, we referred to Japan's National Biodiversity Strategy 2023-2030 formulated based on the launch of the Taskforce on Nature-related Financial Disclosures (TNFD)* in June 2021 and Kunming-Montreal Global Biodiversity Framework, which was adopted at the 15th Conference of the Parties to the Convention on Biological Diversity (COP15) held in December 2022. The Group has begun to identify the relevance (dependencies/impacts) between nature and our business as recommended by the TNFD and to study our response, in line with the Policy. Through its business activities, the Group intends to offset its negative impacts on biodiversity and aims to build a nature-positive society.

* An international organization, originally conceived at the Annual Meeting of the World Economic Forum (known as the Davos Meeting) in 2019. It requires companies to disclose and act on their nature-related dependencies and impacts, and risks and opportunities.

Start of Study for TNFD Response

The recognition that natural capital is in crisis has been shared globally, as it was reported at the World Economic Forum that more than half of the world's GDP has been potentially threatened by the loss of nature.

In response to this situation, "nature positive," a global societal goal to halt the loss of nature and put it on a recovery track by 2030, and achieve a society in harmony with nature by 2050, was established. Recognizing that companies are required to make efforts to contribute to achieving that goal, the Daigas Group has embarked on an analysis and assessment in line with the LEAP approach*, recommended by the TNFD, in studying nature-related dependencies, impacts, risks and opportunities.

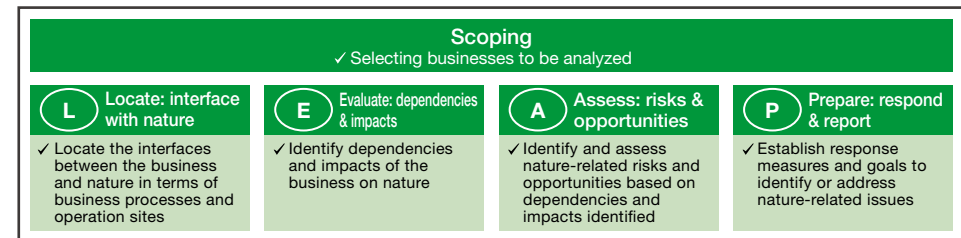
* A methodology developed by the TNFD to enable assessment of nature-related issues in corporate activities such as interfaces with nature, dependencies and impacts on nature, and nature-related risks and opportunities.

TNFD and LEAP approach

Taking into consideration the Group's business scale and the degree of its dependencies and impacts on biodiversity, we included the direct operations of the Group's domestic and international energy (LNG utilization) business in the scope of analysis under the LEAP approach. In the analysis, items related to Locate (interface with nature) and Evaluate (dependencies & impacts) were pilot tested within the scope of the LEAP approach. In FY2025.3, we conducted detailed analysis based on data obtained from the analysis results, and worked on initiatives related to our environmental targets.

As for governance, our biodiversity-related initiatives are managed and supervised under the same system as for climate change. Please see "Disclosure based on the TCFD Recommendations" (P.049) for details.

Pilot Test Process Using the LEAP Approach



* L (Locate) and E (Evaluate) processes were analyzed and assessed this time.

Analysis result 1 Dependencies and impacts on nature

Under the LEAP approach, we used ENCORE,* one of the analysis tools recommended by the TNFD, to analyze the ecosystem services of the business analyzed and their relationship to natural capital in terms of potential dependencies and impacts. We also created a heat map showing the dependencies and impacts relationship between the business analyzed and nature, based on the results of the ENCORE analysis.

As a result of the ENCORE analysis, in the nature impacts category, the impact on nature through GHG emissions was assessed as high, in common except for the storage process in the gas business. For the production process, the impact was assessed as high in the category of impacts on nature through input such as the use of terrestrial and freshwater biological systems.

In the category of dependencies on nature, it was assessed that the businesses analyzed were commonly dependent on the supply service of surface water and underground water. The transportation process was also assessed as being dependent on the climate control services through ocean currents and wind. The ENCORE data used in the analysis (as of April 2024) did not include the impacts by invasive species in the assessment metrics. However, we are aware of their impacts on nature in the Group's businesses, and will continue our existing initiatives.

* A tool jointly developed by UNEP-FI, UNEP-WCMC, and Global Canopy that can be used to identify the general dependencies and impacts of each business process relevant to a company.

Heat Map Showing Dependencies and Impacts of the Business on Nature*1

Business category		Dependencies on nature								
		Supply services		Adjustment and maintenance services						
Name of business	Category	Water		Removal/mitigation of hazardous substance		Atmosphere-related	Water-related		Land-related	Other
		Surface water	Underground water	Decomposition function	Filtration	Climate control	Water quality	Water flow maintenance	Slope stabilization and erosion control	Flood and storm prevention
Gas business	Transportation ²	H	H	—	—	VH	M	M	M	H
	Storage	—	—	—	—	VL	—	—	L	M
	Production	H	VH	M	M	M	H	—	M	H
	Supply	—	—	VL	VL	M	VL	VL	H	M
Electricity business	Power supply	VH	M	VL	L	VL	L	M	L	M

Business category		Impacts on nature									
		Input				Output					
Name of business	Category	Use of terrestrial ecosystems	Use of freshwater ecosystems	Use of marine ecosystems	Use of water	GHG emissions	Non-GHG air pollutants	Water pollutants	Soil contaminants	Solid wastes	Disturbance (disturbance to life)
Gas business	Transportation ²	H	VH	VH	—	VH	H	H	H	M	H
	Storage	H	—	—	—	—	—	L	L	—	—
	Production	VH	VH	VH	VH	VH	VH	H	H	H	H
	Supply	H	H	H	H	VH	M	H	H	M	—
Electricity business	Power supply	—	H	—	VH	VH	H	H	H	H	H

Analysis result 2 Interface with important areas in relation to natural capital

In addition to identifying dependencies and impacts on natural capital in the Group's businesses, we identified areas requiring attention*2 in the Group by using a tool*1 recommended as an assessment perspective in the TNFD, with the aim of understanding the relationship between the Group's operation sites and the surrounding natural environment.

The results of the analysis showed that five of our domestic and overseas sites (overseas offices and domestic LNG terminals and power plants) are located in protected areas and areas of biodiversity importance, and we have identified them as falling under areas requiring attention.

As for water stress assessment of our business sites, Osaka Gas has been compliant with CDP,*3 a global environmental protection organization that evaluates environment-related strategies and initiatives of companies and other organizations, and we conducted water stress assessment using Aqueduct at our sites, including office sites not covered by the LEAP approach. As a result, business sites covered by the LEAP approach were not located in areas of high water stress. We found that several business sites not covered by the LEAP approach were located in areas of high water stress, mainly overseas sites. Since businesses at these sites do not use a large amount of freshwater, the Group considers them to be areas of low priority for response while identifying them as areas requiring attention.

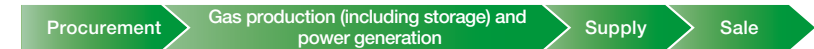
Furthermore, we studied trends in the state of the natural environment at our business sites using Biodiversity Risk Filter of WWF, and found that tree cover is on a decreasing trend in the surrounding areas at our overseas sites. The study results suggested that the ecosystem condition tends to deteriorate in the surrounding area of sites in Japan. We will analyze these trends to see how they relate to our business and assess the effectiveness of environmental impact reduction measures through our various existing initiatives.

*1 Area where activities in the organization's direct operations (or in the entire value chain) interface with environments assessed as requiring attention based on each standard. Standards defined by the TNFD are "biodiversity importance," "ecosystem integrity," "water stress," and "importance of ecosystem services supply."

*2 We used four tools: IBAT (Integrated Biodiversity Assessment Tool), Global Forest Watch, BRF (Biodiversity Risk Filter), Aqueduct (WRI Aqueduct Water Risk Atlas and Tools). These tools help us to identify areas requiring attention.

*3 Non-governmental organization (NPO) managed by UK charity. It runs the global information disclosure system for investors, companies, states, regions, and cities to manage their environmental impacts.

Relationship between the Daigas Group's Businesses and Nature Based on the LEAP Approach (Conceptual Diagram)



Ecosystem services we depend on

- Water resources
- Climate control functions
- Slope stabilization and erosion prevention functions
- Flood and storm prevention functions

Impact drivers on nature

- Use of terrestrial, marine, and freshwater ecosystems
- GHG and non-GHG emissions
- Water use
- Water pollution
- Soil contamination
- Solid wastes
- Disturbance
- Invasive species

VH	... Very High
H	... High
M	... Medium
L	... Low
VL	... Very Low
—	... Not Detected

*1 Created in April 2024 using ENCORE. A heat map is created for each business and supply chain (if multiple processes can be considered, the assessment with higher impact is adopted as the result.) [Example of integration]: If there are two processes upstream of Business A, and L and VH are shown in impacts category A, then assessment is determined to be VH. Items that were assessed as ND in all categories of dependencies and impacts were excluded.

*2 Since the same process and assessment results apply to those for electricity business, they are omitted in its section.

FY2025.3 TNFD Initiatives

The Daigas Group is gradually proceeding with analysis and assessment in accordance with “Assess” (risks & opportunities) and “Prepare” (respond & report) of the LEAP approach based on “Locate” (interface with nature) and “Evaluate” (dependencies & impacts) obtained from the LEAP approach, as well as the business process specific to the Group’s business and the status of our initiatives.

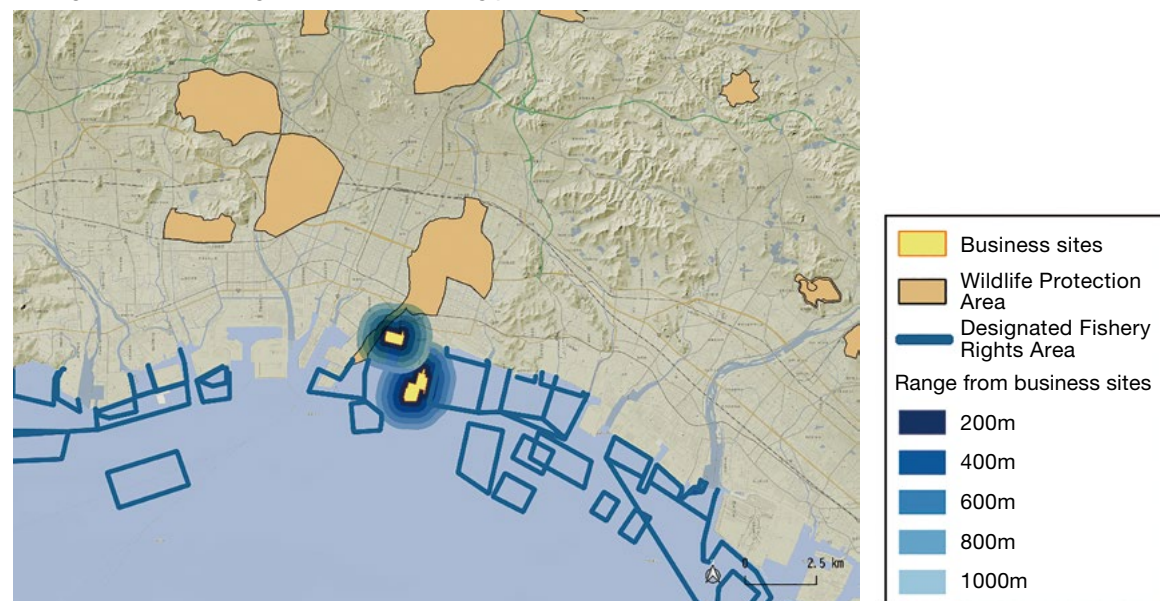
In FY2025.3, we collaborated with environmental impact assessment experts to do a detailed analysis of two of the five sites identified as areas requiring attention: an existing LNG terminal and a power plant. As both of these sites are located in areas adjacent to Category IV and VI protected areas of IUCN Protected Area Management Categories*, we used GIS software to collect information on the sites and their surrounding areas within a maximum radius of 1 km at 200 m intervals. Next, for protected areas that overlap or are adjacent to the Group’s sites, we confirmed the purpose of the protected areas designated by the government and the regulatory standards within the area. As a result of this detailed analysis, we confirmed that the Group’s business processes are being done with appropriate preventative and response measures based on management plans formulated to monitor and manage biodiversity. We plan to conduct similar analyses of all remaining business sites identified as areas requiring attention.

* IUCN Protected Area Management Categories: These categories are developed by the International Union for Conservation of Nature (IUCN) to classify protected areas. They were developed as an international standard for regional classification aimed at preserving the natural environment, and are divided into seven categories based on conservation objectives and management policies.

Details of protected areas and responses to points of concern

Sites	Protected Area Management Categories (IUCN)*	Matters related to the analysis target sites	Points of concern	Response to points of concern
A	Category IV: “Habitat/species management area” → Located within 200 m of the site	Designated as a wildlife protection area (under the Wildlife Protection, Control, and Hunting Management Act).	✓ Designated for the protection and propagation of natural wildlife. ✓ Capture of wildlife is prohibited within the designated areas.	✓ Direct relevance to business activities at the Group bases is considered low. ✓ We will continue to comply with environmental laws and regulations to ensure the sustainability of protected wildlife habitats.
A・B	Category VI: “Protected areas with sustainable use of natural resources” → Located within a 400 to 1,000 m radius of the site.	Common fishery rights (Fishery Act) have been established.	✓ Interfering with fishing activities based on fishery rights is prohibited.	✓ The Group sites discharge rainwater and other wastewater. We comply with existing environmental laws and regulations, including those regarding wastewater discharge, and share information with local stakeholders. ✓ We will continue to comply with laws and regulations and share information locally.

Target sites and designated areas including protected areas



Created by BO-GA Inc. by processing data from the National Land Numerical Information (Ministry of Land, Infrastructure, Transport and Tourism) for the Wildlife Protection Area and Designated Fishery Rights Area, with the background map from the Geospatial Information Authority of Japan (GSI).

Efforts Live Up to the Policy

The Daigas Group has been striving to conserve biodiversity through various measures, including protecting rare native plants growing on the LNG terminal sites, reusing soil excavated during gas piping works, building multi-level gardens at the experimental residential complex NEXT 21^{*1}, and planting trees in Japan. Since we formulated the “Osaka Gas Group Biodiversity Promotion Policy” in April 2010 (revised to “Daigas Group Biodiversity Promotion Policy” in March, 2018), we have made positive efforts in line with this policy and also actively provided information thereon. Our efforts to conserve biodiversity, have been made under the guidance of government and research institutes, outside experts, and external consultants. Since 2003, Osaka Gas has been participating in the Keidanren Nature Conservation Council as a member company; we also participate in the Keidanren Initiative for Biodiversity Conservation to collaborate with stakeholders, including the government and regulatory bodies. In FY2025.3, the Senboku LNG Terminal was certified as a “Nationally Certified Sustainably Managed Natural Site”^{*2} certification system run by the Ministry of the Environment as part of measures to achieve 30 by 30 (an international goal to effectively conserve at least 30% of land and ocean as healthy ecosystems by 2030). Based on its Green Purchasing Guidelines (formulated in 2000, revised in 2022), Osaka Gas works with business partners to promote green purchasing: prioritized procurement of biodiversity-friendly goods and construction works that have less impact on the environment.

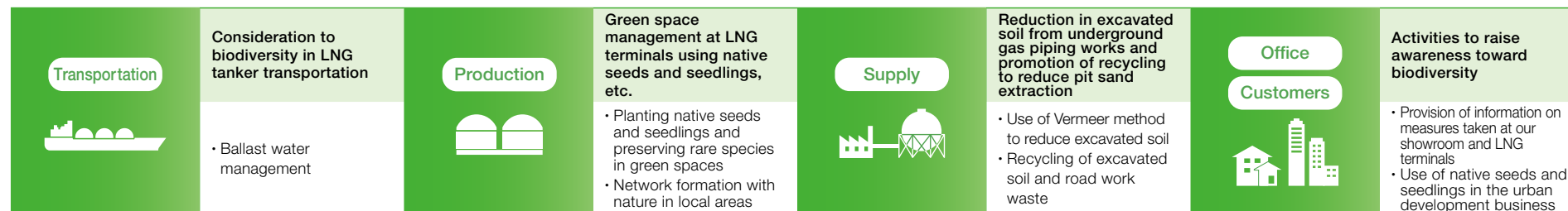
In the Daigas Group, every new investment and development project, whether in Japan or abroad, follows an environmental impact assessment at the planning stage when required by law. We survey the water environment, animals, plants, ecosystems, etc. to assess the environmental impact, and take necessary measures with consideration for the function of the ecosystem network, such as using native species when planting, with the aim of realizing a sustainable society. We have set environmental targets in line with our environmental management system (EMS) and the Group Medium-Term Management Plan 2026, both of which are aimed at the complete implementation of the Daigas Group Environmental Policy. These environmental targets also include paying due consideration to biodiversity in business activities.

^{*1} Experimental Residential Complex “NEXT 21”

The “Next 21” was constructed in October 1993 by Osaka Gas, with the goal of demonstrating and proposing an ideal neo-futuristic urban multiple-unit housing from the perspectives of the environment, energy, and lifestyle. Based on themes set in accordance with historical context, with Group employees and their families actually living there, Next 21 is conducting various demonstrative experiments focused on energy saving and CO₂ reduction for the entire building, making green spaces and environmental symbiosis in urban areas, ideal forms of residence that reflect diverse lifestyles, and product development. Also, many proposals and presentations that may lead to ideal multiple-unit housing in the future have been made, and some of the proposals have been commercialized.

^{*2} Starting in FY2024.3, the Ministry of the Environment has designated areas where biodiversity is conserved through private initiatives or other means, as “Nationally Certified Sustainably Managed Natural Sites.” The “Act on Promoting Activities to Enhance Regional Biodiversity” (jointly administered by the Ministry of the Environment; the Ministry of Land, Infrastructure, Transport and Tourism; and the Ministry of Agriculture, Forestry and Fisheries), which legislates Nationally Certified Sustainably Managed Natural Sites, came into effect in April 2025. Areas where implementation plans certified under this new law will also be designated as “Nationally Certified Sustainably Managed Natural Sites.”

■ Daigas Group's Biodiversity Efforts in the Value Chain



Biodiversity conservation activities

The Daigas Group is committed to helping build a society harmonious with nature that can conserve biodiversity and enjoy the bounties of nature into the future, and will undertake efforts that promote the conservation of biodiversity and sustainable use, based on the “Daigas Group Biodiversity Promotion Policy.” We promoted the following initiatives in FY2025.3.

Transportation	We manage ballast of LNG tankers we use in accordance with regulations of the country where the port of call is located. In addition, our tankers are equipped with water-processing facilities that meet the conditions set under the International Convention for the Control and Management of Ships' Ballast Water and Sediments stipulated by the International Maritime Organization (enacted in September 2017). We have reduced the impact of ballast on ecosystems by, for example, replacing ballast taken on at a Japanese port with water from the open ocean before releasing the ballast in a foreign port.
Production	At our LNG terminals (Senboku LNG Terminals I and II, Himeji LNG Terminal), green areas were managed in a way that contributes to biodiversity through native seeds and seedlings utilization, etc. In addition, biotopes were created, which also serve as refuge for rare species, and biodiversity monitoring studies were conducted at LNG terminals in collaboration with external experts.
Supply	The Daigas Group works to reduce the amount of excavated soil and waste asphalt generated as a result of gas pipe installation, which contributes to reduce impact on the ecosystem. Ways to achieve this include the Vermeer method, which requires soil excavation of only two points, and the shallow pipe installation method. In FY2025.3 these methods allowed us to reduce the amount of excavated soil generated by approx. 384 thousand tons compared to what would have been generated using conventional methods. Our soil and asphalt recycling system promotes the reuse of waste asphalt and excavated soil as either recycled asphalt, regenerated roadbed material, or improved soil. These efforts allowed us to recycle 99.7% of material excavated during gas pipeline construction in FY2025.3 and send to final disposal approx. 300 tons.
Business office Customers	[*] Since April 2022, the city gas supply business has been conducted by Osaka Gas Network Co., Ltd. We conduct community and environmental communication, as well as environmental education in collaboration with local educational institutions, in approximately 100 m ² of rice paddies and 12 m ² of fields created on the roof of its own facilities. In addition, our group company engaged in urban development projects is working on planting plants that take biodiversity into consideration at its facilities and the condominiums they develop, encouraging interaction with the local community and creating connections between people and the city.

Certified as a “Nationally Certified Sustainably Managed Natural Site”

Osaka Gas's Senboku LNG Terminal has been certified as a “Nationally Certified Sustainably Managed Natural Site” (second half of FY2025.3).

The “Nationally Certified Sustainably Managed Natural Site” certification system, part of the Ministry of the Environment's efforts to achieve the 30 by 30^{*1} initiative, recognizes areas where biodiversity conservation efforts are being made through private initiatives or other means, and recognizes those that meet the OECM^{*2} criteria as “Nationally Certified Sustainably Managed Natural Sites.”

The Senboku LNG Terminal is located on reclaimed land along the Seto Inland Sea coast, straddling Takaishi City and Sakai City in Osaka Prefecture. It consists of two plants: Terminal Plant 1 (started operation in 1971) and Terminal Plant 2 (commenced operation in 1977). The terminal is Osaka Gas's largest LNG terminal and is an important base for stable supply, accounting for approximately 70% of our city gas supply.

Since the terminal opened, we have promoted greening with native tree species that are highly compatible with local vegetation, and since 2002 we have introduced locally grown seeds and seedlings^{*3}. The introduced seeds were cultivated by terminal staff from acorns and other seeds collected from nearby satoyama woodlands and planted in collaboration with local elementary schools. Through these activities, the terminal not only cultivates highly diverse vegetation, but also fosters connections with the local community and serves as a venue for environmental education. We believe this certification recognizes these initiatives.

^{*1} An international goal to effectively conserve at least 30% of land and ocean ecosystems as healthy ecosystems by 2030.

^{*2} OECM (Other Effective Area-based Conservation Measures): Areas outside protected areas that contribute to biodiversity conservation.

^{*3} Seeds collected in nearby areas, or seedlings with a clear production process from seed collection.

Initiatives to Improve the Quality of Green Spaces

We are working to improve the quality of green spaces at our major LNG terminals (Senboku LNG Terminal and Himeji LNG Terminal). Since their inception, we have cultivated green spaces using tree species that are compatible with the local vegetation at the Senboku LNG Terminals. In recent years, the terminal has been cultivating highly diverse vegetation by forming green spaces using only locally-sourced seeds.

We have conducted continuous monitoring of flora and fauna, recording the locations of birds, insects (butterflies), and vegetation in the cogon grass lands, as well as recording the presence or absence of invasive species. Monitoring activities have been conducted for 16 years up to FY2025.3. We do monitoring using a line census^{*1}, comparing trends in the species that appear each year and evaluating diversity in terms of butterflies. The monitoring results show that the number of confirmed species increased at the beginning of the initiative and has stabilized since then. Furthermore, the number of confirmed species since the stabilization has remained at a high level when compared to the figures for Hamadera Park, a nearby large green space (surveyed in 2014).

^{*1} A method of surveying the number of confirmed species along a predetermined route.

Since 2002, under the guidance of the Museum of Nature and Human Activities, Hyogo Prefecture, the Himeji LNG Terminal has been preserving rare plants native to the area of Nishi Harima, Hyogo Prefecture. We are currently growing rare plants including *Gardneria multifolia* “CHITOSEKAZURA” and Red-root Lithospermum (both rated level 2 endangered on the Ministry of the Environment's endangered species list). The biotope created in FY2014.3 reproduces satoyama woodlands, grasslands and marshes with plants originating from the area of Nishi Harima, preserving such rare species as the Platycodon or Japanese Bellflower.

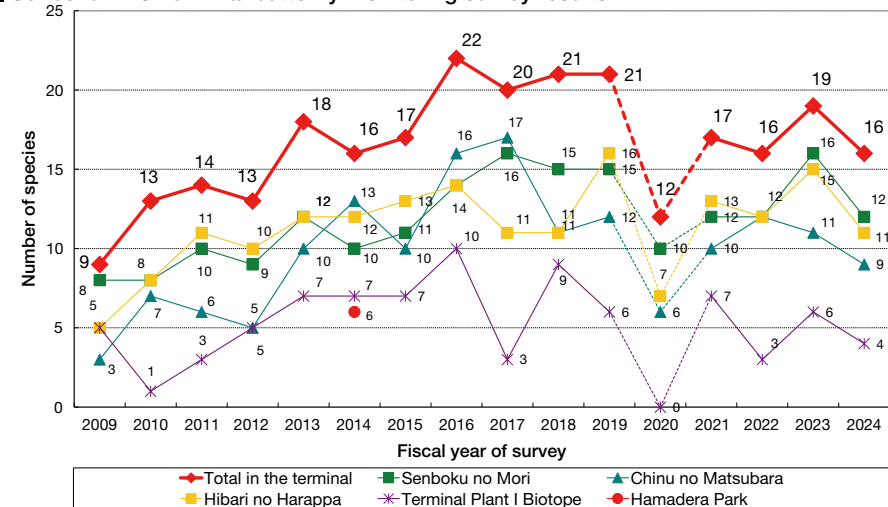
LNG terminals are required to form green areas by laws and regulations, and secure a certain amount of greenery. Both LNG terminals believe that the quality of greenery is important, and are striving for the preservation of biodiversity in the local communities by using seedlings of local origin. In addition, the number of insect and bird species visiting the

two terminals has increased from when these efforts began in 2009 through to 2012, and we have maintained this increased number since then, which suggests that connections have been formed with the nearby green spaces. Going forward, we will continue to monitor these areas under the guidance and advice of experts.

Details of major initiatives

- Development and implementation of green space design and management plans that combine safe and secure business continuity with the creation of a diverse ecosystem
- Eradication of invasive species
- Conservation of rare species
- Experts conduct monitoring surveys of flora and fauna
- Communication with stakeholders

Senboku LNG Terminal butterfly monitoring survey results



Note 1: Although surveys have usually been conducted three times a year (spring, summer, and fall), in FY2021.3 they were conducted only twice a year (summer and fall).

In FY2021.3, the number of surveys was reduced due to COVID-19 countermeasures (restrictions on travel between prefectures and reduced contact by refraining from going out).

Note 2: The numbers for the Hamadera Park represent reference value based on data from 2014 as a representative green space in the region.

Systematic Implementation of Certification Systems

Participation in and initiatives for biodiversity certification systems and the like

ABINC certification	FY2021.3 Scenes Tsukaguchi (Certification period: February 4, 2021 to February 3, 2024)	
Nationally Certified Sustainably Managed Natural Sites certification	FY2025.3 Senboku LNG Terminal FY2026.3 Himeji LNG Terminal (pending)	

Biodiversity Education for Children

A rice paddy of about 100m² and a crop field of about 12m² have been created on the rooftop of Osaka Gas's food and housing information center, "hu+g MUSEUM." Since FY2016.3, these fields have been used by local elementary schools as part of community and environmental communication and environmental education activities. About one month after rice planting, a nature observation event was held to observe the growth of the rice and the creatures living in the rice paddy. Elementary school students got a chance to see firsthand how the seedlings they planted were growing and the habitat of water fleas and dragonflies that had naturally flown in.

The program was planned and operated by hu+g MUSEUM staff and Daigas Group employee volunteers, who supported elementary school students' hands-on lessons on rice planting and harvesting, and have been engaged in daily observation and maintenance of the rice paddy.



A scene of the rice planting experience
(left: Rice planting, right: Rice harvesting)

Creation of biodiversity habitats: Development of condominiums introducing the indigenous species in their gardens

Osaka Gas Urban Development Co., Ltd. is a real estate company and is engaged in the development and management of office buildings and condominiums/rented apartments. In addressing “co-existence with the environment,” one of its “five focuses” for urban and property development, Osaka Gas Urban Development Co., Ltd. is pursuing a planting plan that takes biodiversity into consideration.

The planting of native seedlings of “Chimakizasa,” a species of bamboo grass called Sasa, was introduced to the garden of The Urbanex Kyoto Matsugasaki, which was completed in March 2014. Chimakizasa has been recognized as an endangered plant in Kyoto City as a result of excessive eating by wild deer, whose population in the neighboring woodlands has been increasing in recent years. All of the 10 bamboo grass plants that were planted in the garden of The Urbanex Kyoto Matsugasaki were donated by the Chimakizasa revival committee, a local team formed to increase numbers of the plant, with members being mainly residents of Sakyo Ward, Kyoto City and researchers from Kyoto University.

At the “Urbanex Kobe Okurayama” completed in February 2016, Osaka Gas Urban Development has planted Japanese blue oaks, gooseneck loosestrife, and other local seeds/seedlings with support from the Museum of Nature and Human Activities, Hyogo. Signs describing plant names and their characteristics were also installed to help local residents learn about the importance of biodiversity. These combined efforts, including the active use of native seedlings, earned the 2016 Good Design Award.

Osaka Gas Urban Development Co., Ltd. has steadily increased the use of native seedlings in the planting of its properties, and has introduced them to 45 properties as of March 31, 2025. Osaka Gas Urban Development will continue to standardize biodiversity-friendly planting plans as specifications and work on such plans at the condominiums it develops.

As of March 31, 2025, 45 properties have introduced local biodiversity-friendly planting. (including properties for sale and for rent)



Scenes Amagasaki (Completed in March 2025)



Scenes Tennoji-Karasugatsuji (Completed in March 2025)

The condominium “Scenes Kanzakigawa” won two awards at the Osaka Excellent Greenery Awards: the Osaka Prefectural Governor’s Award and the Biodiversity Award.

The new condominium “Scenes Kanzakigawa,” sold by Osaka Gas Urban Development Co., Ltd. in Yodogawa Ward, Osaka City, in collaboration with Sumitomo Realty & Development Co., Ltd., won the Osaka Prefectural Governor’s Award and the Biodiversity Award at the 18th Osaka Excellent Greenery Awards*.

The property has a massive green space measuring around 800 m², and we have made a planting plan to create a variety of seasonal scenery, with approximately 9,000 flowers and trees representing 30 species. As part of Osaka Gas Urban Development’s ongoing initiative to make a habitat with biodiversity, at this property we also place importance on the three elements of biodiversity: “genetic diversity,” “species diversity,” and “ecosystem diversity.” We have also planted great burnet and indigofera pseudotinctoria, which are native to the surrounding area.

These initiatives were recognized with this award.

*A system in Osaka Prefecture that recognizes building owners who have made particularly outstanding efforts to improve the urban environment and make cities more attractive.



Scenes Kanzakigawa

Appropriate Use and Discharge of Water Resources

Water is not a primary material among the products handled by the Daigas Group. We recognize that the use of water does not pose a major business risk for our Group. However, the Group controls water discharge after using drinking water, industrial-use water, groundwater and seawater. At power plants, core facilities for its electricity business, the Group uses industrial water as a coolant in a steam turbine condenser, and vaporizes it inside the cooling tower. Drinking water, industrial-use water and groundwater are also used at LNG terminals, power plants and offices, and discharged. Seawater is mainly used for vaporization of LNG at city gas plants and for cooling in steam turbine condensers at some power plants. We discharge the seawater to the sea without consuming it or affecting its composition. In discharging water, we have conducted water quality inspections in line with relevant laws, ordinances and agreements with local municipalities. We continued to comply with the effluent standards of the Water Pollution Prevention Act, etc. in FY2025.3, and there were no violations. The Group sees water as a limited natural resource. We will continue to use water adequately, control its discharge strictly, and promote water saving.

■ Amount of Water Intake in FY2025.3

General water, industrial water	13,446 thousand m ³
Underground water	3,597 thousand m ³
Seawater	536,710 thousand m ³

■ Amount of Water Discharge in FY2025.3

Sewer	829 thousand m ³
River	3,155 thousand m ³
Sea	538,232 thousand m ³

Collaboration with Other Companies to Reduce Water Usage

The Daigas Group is working together with business partners and customers to reduce water consumption.

Daigas Energy Co., Ltd., a Group company, uses the technological capabilities it has cultivated in the gas business to provide water treatment consulting services to companies and makes energy-saving proposals, including reducing water usage.

For example, the company proposes the introduction of optimal water treatment programs for cooling water systems to conserve water, and the reduction of water and sewage volumes by treating industrial wastewater and reusing it as service water.

Biodiversity risk assessment

The Daigas Group, being aware of the environmental impact of its value chain, strives to minimize its impact on biodiversity and expand its contribution.

We conduct questionnaires regarding sustainability activities at our LNG suppliers to check on the status of their monitoring activities for local ecosystems and their efforts to conserve the biodiversity of local ecosystems.

In the Group, every new development project, whether in Japan or abroad, follows an environmental impact assessment at the planning stage when required by law. For example, in the process of constructing the Senboku Natural Gas Power Plant, the core facility for the Group's electricity business, between 2002 and 2006, we conducted an environmental impact assessment. It covered the construction work (the impact of transportation of construction materials, such as air pollution, noise, and vibration) and the presence and shared use of land and workpieces (the impact of ground modification and the facility's existence on local flora and fauna and the impact of exhaust gas and wastewater from the facility in operation on the quality of air and water). We also adopted environmental conservation measures against air pollution, noise, vibration, and wastewater, as well as measures to form green areas that foster biodiversity, in order to further reduce the environmental impact of the project.

Also, in the Himeji Natural Gas Power Plant construction project, which Himeji Natural Gas Power Generation Co., Ltd., a wholly owned subsidiary of Osaka Gas, is implementing, an assessment process has been completed in compliance with the Environmental Impact Assessment Act.

Please see the following website for more information about the initiatives in the Himeji Natural Gas Power Plant Construction Project.

 [▶ Environmental Initiatives of Himeji Natural Gas Power Generation Co., Ltd.](#)

Development of Environmental Technology

Principle and Outline

The Daigas Group views technology as the foundation for its corporate competitiveness and views research and development as one of its most important strategies for differentiating itself from the competition. While accelerating low-carbon transitions through development of technologies contributing to the reduction of CO₂ emissions, we take on the challenge of technical research and development for the carbon neutrality of our gas and electricity. We will actively tackle a wide range of subjects, from the advanced use of natural gas to the further utilization of renewable energy and the research and development of carbon-neutral gas technologies such as methanation, to accelerate development of technologies that will contribute to achieving carbon neutrality.

Development of New Technologies that Contribute to Carbon-Neutral Solutions

The Daigas Group believes that e-methane*, which is synthesized from hydrogen produced using renewable energy and CO₂, is the key to making city gas carbon-neutral. The Group is working on establishing a variety of methanation technologies toward full-scale introduction of e-methane in 2030. Moreover, we are promoting development of technologies that contribute to further low-carbon/carbon-neutral solutions by making use of the gas synthesis/catalyst technology, combustion technology, and material technology that Osaka Gas has developed so far. For example, the Company is now developing hydrogen and ammonia combustion technologies by leveraging the know-how cultivated through the development of a variety of natural gas combustion technologies tailored to our customers' uses. Such efforts include the development of a small ammonia engine system in cooperation with Toyota Industries Corporation. The Company is also working on the development of chemical looping combustion technology as a technique for producing carbon-neutral hydrogen and electricity from biomass. In addition to energy, Osaka Gas also develops and sells SPACECOOL®, a radiative cooling material. The Carbon Neutral Research Hub of Osaka Gas conducts these researches and development projects, disseminates information, and forms business alliances. To further accelerate these efforts, we are establishing a new research and development base in the Torishima district of Osaka City, with full-scale operations scheduled for FY2026.3

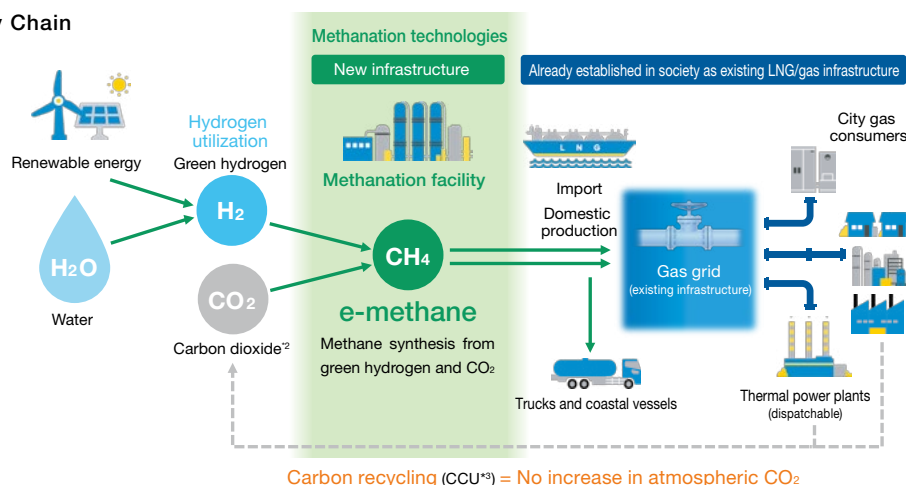
*Synthetic methane produced from non-fossil energy sources, such as green hydrogen, is called "e-methane".

"e-methane"—the key to carbon-neutral solutions created by methanation technology

"e-methane," which is produced by recycling CO₂ otherwise emitted into the atmosphere and synthesizing it with hydrogen, is a carbon-neutral hydrogen carrier*1.

Since "e-methane" has almost the same composition as city gas, existing city gas infrastructure and combustion equipment at customers' sites can be used as is, enabling seamless carbon neutralization during the transition period and advantageously reducing the cost of its social implementation.

■ e-methane Supply Chain



*1 Hydrogen compounds that make it possible to store, transport and use hydrogen efficiently. (Hydrogen is inefficient to store or transport over long distances in its gaseous state.)

*2 Biogenic CO₂ and possibly CO₂ derived from DAC (Direct Air Capture: a technology used to capture and remove CO₂ directly from the atmosphere) might be utilized in the future.

*3 Carbon dioxide Capture and Utilization

Efforts to establish three methanation technologies to enable the introduction of "e-methane"

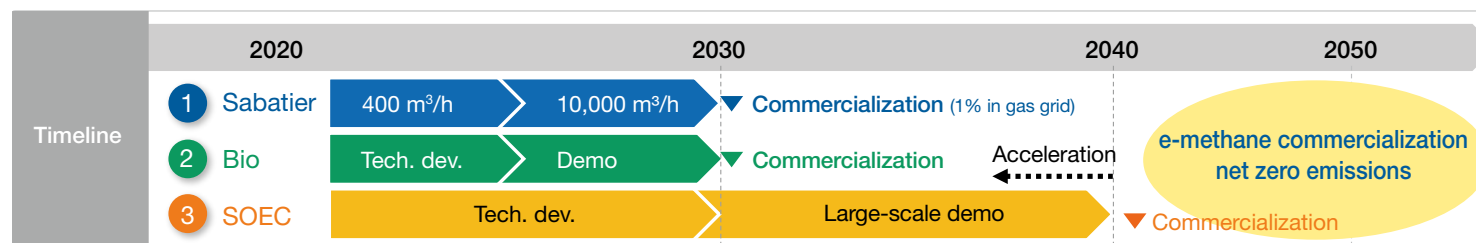
In addition to working to scale up the existing technology, Sabatier methanation, we aim to commercialize biomethanation, a locally produced and locally consumed energy generation technology, and to achieve early introduction of highly efficient SOEC methanation, an innovative technology.

① **Sabatier methanation***¹ (existing technology): Scaled up and implemented in society at an early stage

② **Biomethanation***² (innovative technology): Produce and use energy locally for local consumption

③ **SOEC methanation***³ (Innovative technology): Reduce cost by enhancing energy efficiency

Roadmap for Social Implementation of Methanation Technology



*1 CO₂ conversion by a catalytic reaction with hydrogen derived from renewable energy, etc. to synthesize methane.

*2 Technology that uses biological reactions to synthesize methane from CO₂ and hydrogen

*3 Use of SOEC equipment to electrolyze water and CO₂ into hydrogen and carbon monoxide using renewable energy, etc., and then synthesize methane by catalytic reaction of the hydrogen and carbon monoxide.

Progress in SOEC methanation development

In 2021, Osaka Gas became the first company in Japan to succeed in creating a full-sized cell prototype for metal-supported SOEC, the key to SOEC methanation technology.

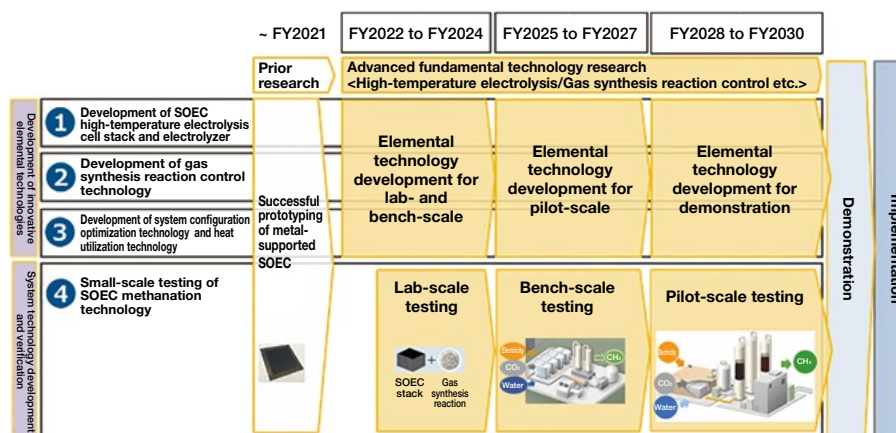
In April 2022, in response to a call for proposals by the National Institute of Advanced Industrial Science and Technology (AIST) and the New Energy and Industrial Technology Development Organization (NEDO), we proposed an SOEC methanation technology innovation project for the "development of innovative technology for the production of synthetic methane," one of the research and development themes of the Green Innovation Fund Project's Development of Technology for Producing Fuel Using CO₂, etc. The Group's proposal was adopted for the project.

The project is expected to take nine years, starting in FY2023.3 and ending in FY2031.3. It will bring together technologies related to SOEC methanation and aims to establish synthetic methane production technologies with the world's highest levels of energy conversion efficiency.

As a small-scale experiment, from FY2023.3 to FY2025.3, we built a lab-scale pilot facility and confirmed an energy conversion efficiency of 60% or higher.

From FY2026.3 onward, we plan to gradually increase the scale of its experimentation.

SOEC Methanation Technology Innovation Project Schedule



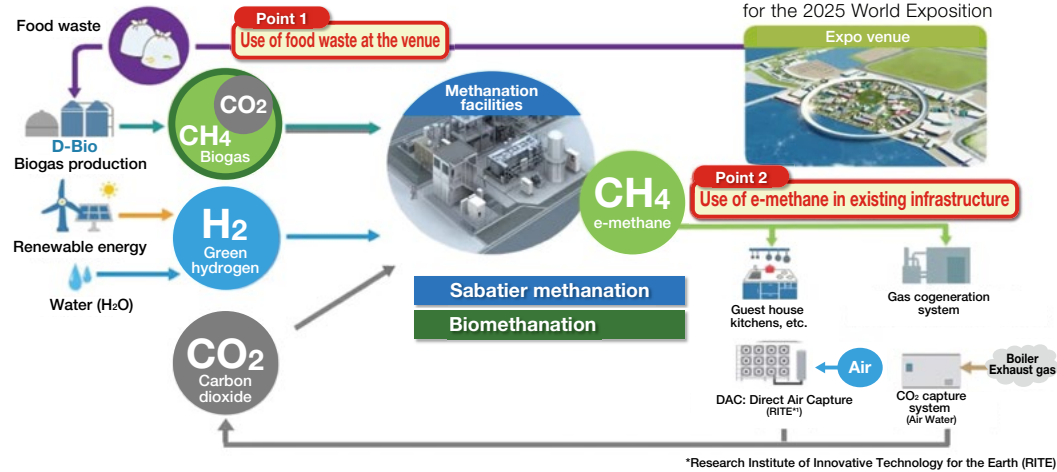
Daigas Group's Development of Carbon Neutrality-Related Technologies to Help Achieve the Theme of the Osaka/Kansai Expo: "Designing Future Society For Our Lives"

Verification of e-methane production within the Expo site

At the site of the Osaka/Kansai Expo (©Expo2025), a demonstration project is being conducted to create e-methane (enough for 170 typical households) by synthesizing CO₂ produced through the fermentation of food waste and other CO₂ to be reclaimed from the site with green hydrogen produced in the site through the methanation.

The generated e-methane is being supplied to gas-powered equipment and used in gas-fired kitchens in the guest house, gas co-generation within heat supply facilities, and gas-powered air conditioning.

Conceptual image of demonstration project



Operation of CO₂NNEX® that enables the transfer of environmental value of e-methane

As more e-methane is supplied in city gas, private operations have begun for clean gas certificates that can transfer the environmental value of e-methane and biogas, similar to non-fossil certificates for electricity. As the trading volume of e-methane and its environmental value will increase in the future, it will be necessary to have a system for transferring environmental value via clean gas certificates.

Osaka Gas and Mitsubishi Heavy Industries, Ltd., have developed CO₂NNEX®, the first system in the city gas industry that enables the transfer of the environmental value of e-methane, and is operating this system at the Expo 2025 Osaka, Kansai, Japan. At the Expo, CO₂NNEX® is being used to transfer and use clean gas certificates obtained from e-methane and biogas produced nationwide to natural gas supplied by Osaka Gas, contributing to carbon neutrality within the Expo.

*CO₂NNEX is a registered trademark of Mitsubishi Heavy Industries, Ltd.

CO₂NNEX® Clean Gas Certificate Transfer Initiative



Expo site image courtesy of Japan Association for the 2025 World Exposition

Development of chemical looping combustion technology for simultaneous production of hydrogen, electricity and CO₂

Osaka Gas is working on the development of chemical looping combustion (CLC^{*1}) technology^{*2}, which produces electricity, hydrogen, and CO₂ simultaneously by leveraging the redox action of iron oxide. CLC technology circulates iron oxide to have it react with fuel, water, and air, through which electricity, hydrogen, and CO₂ are produced simultaneously. Biomass and organic waste liquid can be used as fuels. This technology is expected to produce and supply green electricity, hydrogen and biomass-derived CO₂ when carbon-neutral biomass is used as fuel, and electricity, hydrogen, and CO₂ through the recycling of waste materials when organic liquid waste is used as fuel.

Meanwhile, there has been no implementation example of CLC technology aimed at producing hydrogen using biomass or organic waste liquid as fuel. For commercialization, it is necessary to solve technical issues such as elemental technology development toward the establishment of system design technology and process verification. The Daigas Group plans to use this technology to generate electricity, hydrogen, and CO₂ using biomass and organic waste liquid as fuel and to supply them to customers who want to contribute to carbon neutrality and the circular economy.

^{*1} CLC: Chemical Looping Combustion

^{*2} NEDO- subsidized project: "Development of Technology for Carbon Recycling and Next-Generation Thermal Power Generation/Development of Fundamental Technologies for Next-generation Thermal Power/ Development of technology for a poly-generation system with CO₂ separation and capture capabilities/ Development of technology for chemical looping combustion poly-generation"

Radiative cooling material SPACECOOL®, a new product by SPACECOOL Inc. —Also contributing to realizing a carbon neutral society with world-class cooling performance—

SPACECOOL®, developed by Osaka Gas and manufactured and sold by SPACECOOL Inc., is a radiative cooling material with zero-energy cooling capability. By releasing heat into space under direct sunlight, it lowers the temperature^{*1} below the outside temperature without using energy. It has the potential of contributing to carbon-neutral solutions for society as a whole.

A demonstration test confirmed that the temperature inside the structure was up to about 10°C^{*2} lower than the outside air temperature under direct sunlight, realizing world-class^{*3} cooling performance.

The material is available in film, magnet sheet, tarpaulins, etc., and is expected to be deployed in products for implementing measures against global warming, achieving energy conservation and ensuring cooling comfort.

It is adopted in the Gas Pavilion exhibited by The Japan Gas Association at the Osaka/Kansai Expo (©Expo2025), reducing the air conditioning burden in the Gas Pavilion and contributing to lower CO₂ emissions. In the future, we would like to promote the spread of this material both domestically and internationally and contribute to the realization of a carbon neutral society.

^{*1} This has been achieved by using Osaka Gas's proprietary optical control technology to develop a material design that reduces the solar heat input and increases heat dissipation through thermal radiation.

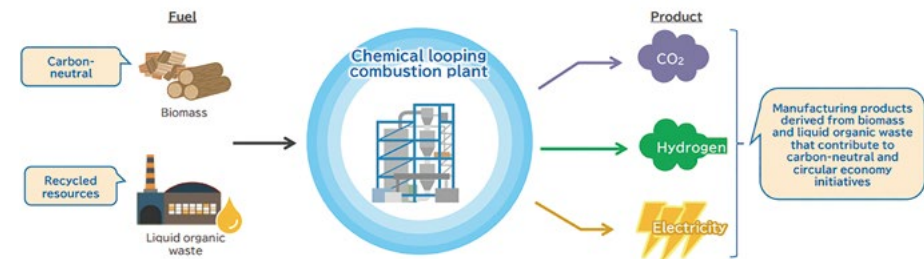
^{*2} The temperature was measured at Osaka Gas Energy Technology Laboratories (currently, the Advanced Technology Institute) in Konohana-Ward, Osaka City.

^{*3} The survey was conducted by the Company, based on published papers.



Courtesy of Japan Gas Association

Our vision for the practical application of CLC technology



Development of technology for predicting renewable energy power generation

With an eye on the increasing number of renewable energy power plants such as solar power plants to realize a carbon neutral society, the Daigas Group is working to develop technology to predict renewable energy power generation amounts and improve the accuracy of the prediction.

For example, previously, electricity generated in solar power plants was traded at a fixed price, known as FIT. In recent years, a growing number of solar power plants are using schemes other than FIT, as a new purchase method, FIP, has been implemented. Therefore, power producers are increasingly required to predict power generation with a high level of accuracy, given the risk of needing to pay imbalance costs*. The Group has developed technologies for predicting weather at a level comparable to that of weather companies, based on our long-accumulated knowledge of fluid analysis, and has been implementing highly accurate solar power generation predictions utilizing this technology. In the future, solar power generation will be joined by wind power generation, and we will work to further improve the accuracy of our renewable energy power generation forecasts.

* Imbalance costs: Monetary penalties incurred when there is a discrepancy between the planned and actual amount of electricity generated when operating a power plant.

Initiatives to develop the world's first “ultra-long life” storage batteries that last five times longer than current storage batteries

The storage battery market is expected to continue to expand worldwide for multiple applications, such as automotive and stationary use. In Japan as well, storage batteries are positioned as one of the most crucial technologies to achieve the electrification of automobiles and the utilization of renewable energy as the main power source, with a view to achieving the greenhouse gas emissions reduction target for FY2031.3 and carbon neutrality by 2050.

KRI, Inc., one of the Group companies, is a comprehensive private contract research company with both advanced research and development capabilities and consulting functions. The company supports customer businesses by engaging in contract research and analysis evaluation, primarily focusing on energy, environmental technology, and material technology. It also pursues the excavation of new technological seeds and the creation of new value through its own research. In particular, storage batteries are emphasized as one of its key fields of focus, and the company is actively expanding its contract research and development business related to such products. We have been discussing and developing “ultra-long life” storage batteries from two aspects of “materials, electrodes, and batteries” and “diagnosis and operation” with manufacturers who agree on KRI's “ultra-long life concept,” with the aim of achieving “ultra-long life,” which is the direction of the storage batteries needed for a 2030 society.

Having had the prospect of completing the basic technology for “ultra-long life” lithium ion batteries (LIB)*1 that last five times longer than current storage batteries and reaching its goal, KRI, Inc. starts supplying 10Ah (around 400 Wh/L)*2 samples for user evaluation in FY2026.3. The above assumes the use of prototyping and demonstration technology of SEI CORPORATION, which became a subsidiary of KRI, Inc in February 2024.

Ultimately, the company aims to increase the life of conventional 30 kWh batteries installed in electric vehicles (e.g. 160,000 km guaranteed) by more than five times.

*1 A type of storage battery that uses an oxide containing lithium for the positive electrode and carbon material for the negative electrode. This battery has high performance and can be miniaturized. It is used in a variety of applications, including batteries for mobile devices and electric vehicles.

*2 Approximately the capacity installed in an electric motorcycle.

Launch of demonstration tests of degradation diagnosis and lifespan prediction model for EV storage batteries

In October 2024, Osaka Gas and KRI, Inc. launched demonstration tests of degradation diagnosis and lifespan prediction model for EV storage batteries, using data acquired from electric vehicles used by the Daigas Group (“Company EVs”).

The decarbonization of the transport sector, which accounts for just under 20% of Japan's total CO₂ emissions, will play an important role in realizing carbon neutrality by 2050. Increasing the use of EVs has been positioned as an effective means of achieving this, together with the decarbonization of power sources.

The Daigas Group aims to achieve net zero CO₂ emissions from company vehicles by FY2031.3, and began introducing EVs into its company vehicle fleet from August 2024.

However, as the amount of degradation that occurs in storage batteries used in EVs varies depending on their usage environments (ambient temperature, method and frequency of charging and discharging, driving patterns, etc.), identifying the amount of degradation for individual storage batteries and estimating their remaining lifespans and internal state present a challenge to long-term storage battery use.

In these demonstration tests, we collect and analyze data from the storage batteries used in Company EVs to conduct detailed design and accuracy testing in preparation for the commercialization of these estimation technologies.

This will make it possible to visualize the degradation and predict remaining lifespans of individual EV storage batteries in different states and to provide advice if their operating conditions are not adequate. Doing so will promote the long-term use of EVs based on an accurate understanding of individual EV storage battery degradation and remaining lifespans,

which has the potential to extend EV lifecycles.

We aim for the practical application of these technologies within the Group by the end of FY2026.3. Subsequently, we will contribute to the expansion of EV leasing and the growth of the used EV market by developing related commercial services.

Going forward, we will apply these technologies to a wider range of businesses that use storage batteries, including the battery energy storage system sector, such as the grid storage battery business that use reused storage batteries.

Development of degradation diagnosis and lifespan prediction technologies for battery energy storage system

Osaka Gas and KRI, Inc. have used KRI's technologies to develop deterioration diagnosis and forecast technology for battery energy storage system for grid storage batteries*3 and other equipment.

In recent years, renewable energy has come to be used more widely, increasing the need for storage batteries that help mitigate the variability in renewable energy output. The Company decided to enter the grid storage battery business in February 2023, and we are currently working on projects at three locations across Japan.

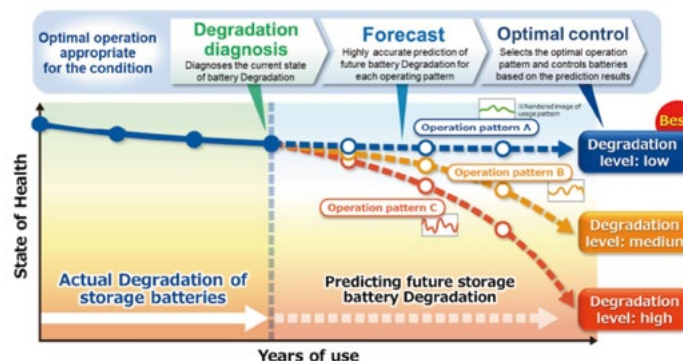
Meanwhile, by their nature, storage batteries can undergo sudden degradation and become less safe if their charging and recharging is not controlled based on their State of Health. For large-scale battery energy storage system, in particular, there has been a need for the development of operation technologies that enable safe, long-term use.

This technology not only diagnoses the State of Health of storage batteries from monitoring data such as in-service voltage, current, and temperature, but also predicts future deterioration for each operating pattern.. Furthermore, combining theoretical models based on physical phenomena with data makes it possible to select optimal operation methods from a wider range of operation patterns, compared to conventional prediction methods that use only data. This has the potential to slow down degradation and allow storage batteries to be used for long periods of time.

Going forward, we will gradually expand our application of this technology to our own storage battery business, and proceed with detailed design work aimed at their practical application. At the same time, we will use this technology and the power trading know-how we have developed to create a system for determining optimal operation of storage batteries to achieve longer storage battery lifespans and greater safety, as well as the economic efficiency of electricity market transactions.

Furthermore, throughout the storage battery business, we will leverage the comprehensive strengths of the Daigas Group to carry out studies not only in the grid storage battery business, which we are already a part of, but also storage batteries installed with renewable energy facilities, with the aim of becoming one of Japan's top storage battery operation companies.

*3 Large-scale storage batteries directly connected to the power grid



Osaka Gas's experimental residential complex, "NEXT 21" won multiple awards

NEXT 21, Osaka Gas's experimental residential complex, was awarded the "Minister of Land, Infrastructure, Transport and Tourism Award in the 44th Green City Award," "the Organization for Landscape and Urban Green Infrastructure President's Award in the 23rd Innovative Green Tech Awards," and "the Good Design Award 2024."

As a verification model for environmentally symbiotic housing, NEXT 21 is continuing its efforts aimed at developing urban housing in which people live in harmony with nature. These awards are a recognition of the results this housing experiment has produced over the past 30 years.

■ Details of major initiatives

● Energy experiments

Experiments have been carried out regarding efficient energy systems, healthy and comfortable living spaces, disaster-ready housing, and more.

● Environmental symbiosis activities

Through planting management and the growth of local vegetables in rooftop gardens by residents, the residential complex is continuing its environmental protection activities.

● Community formation

NEXT 21 is engaging in community-rooted activities such as building illumination, music events, disaster drills, cooking workshops, and more.