



Paintings shown on the cover were drawn by children attending a design and painting class sponsored by "Children Design Education," a nonprofit organization.
Children Design Education has been established to support children who have to live separately from their parents for various reasons. The NPO provides them opportunities to produce paintings and design works repeatedly at a design and painting class, envisaging them to develop power to stand on their own in their infancy. Character designs created by the children through the class are sold to business corporations. Proceeds from the sales will be incorporated into a special fund set up to support the children's education in the future.

NPO Children Design Education ▶ http://c0d0e.com/english/index.html

Daigas Group

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https://www.osakagas.co.jp/en/index.html

Osaka Gas was included in the following socially responsible investment (SRI 🔍) indices and an investment universe as of the end of June 2019.

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

ECPI Sense in sustainability

FTSE4Good

MS-SRI モーニングスター社会的責任投資株価指数 Morningstar Socially Responsible Investment Index

MSCI 2019 Constituent MSCI ESG Leaders Indexes*

MSCI MSCI Japan ESG Select Leaders Index*

MSCI MSCI Japan Empowering Women Index (WIN)*

FTSE Blossom Japan

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https://www.msci.com/esg-integration

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Published in October 2019

CSR REPORT

2019

Daigas Group

Osaka Gas Group is now Daigas Group



Editorial Policy

Notes about CSR Report 2019

The Daigas Group reports material aspects of its CSR and its management scheme as well as associated activities for improvement.

The Daigas Group deems that it is necessary for the Group to listen to people's voices sincerely and conduct its business activities based on such voices, if it is to fulfill its corporate social responsibility (CSR).

The Daigas Group identified important aspects for the Group's CSR, which we call "materiality," or "material aspect," by referring to the GRI Sustainability Reporting Standards (GRI Standards), a global standard for sustainability report compiled by the Global Reporting Initiative (GRI), while taking into account the current social issues and continuing dialog with stakeholders and experts in relevant fields.

In this report, the Group explains the management situation regarding each material aspects and the degree of implementation of relevant measures. The Group posts, as much as possible, activities other than those related to the material aspects so that a full picture of the Group's CSR is made known to parties outside and inside the Group.

Outline of CSR Report



Note: Cover photo of Freeport LNG terminal was provided by Freeport LNG Development, L.P.

Other reporting media

Website


Outline of corporate group


Investor relations


International energy business

Leaflet



Annual Report

Scope of This Report

This report covers the Daigas Group, consisting of Osaka Gas Co., Ltd. and its affiliated companies. Some information, as noted in this report by phrases such as "Osaka Gas" or "the Company," refers exclusively to Osaka Gas Co., Ltd.

Fifty-five companies*—out of 150 affiliated companies and consolidated subsidiaries of Osaka Gas—are subject to compilation of environmental performance data. Excluded are companies housed in office buildings as tenants and whose environmental performance data are difficult to grasp and whose environmental effects are minimal. Also excluded are overseas companies.

While the most recent data covered in this report represents those for fiscal 2019 (from April 1, 2018 to March 31, 2019), some refer to activities for fiscal 2020.

* Energy consumption and greenhouse gas emissions were collected from 56 companies including one overseas subsidiary.

Guidelines referred to

- ISO 26000
- Sustainability Reporting Standards of the Global Reporting Initiative (GRI Standards)
  This report contains information corresponding to disclosure requirements of the GRI Sustainability Reporting Standards.
- Environmental Reporting Guidelines 2018 of the Ministry of the Environment
- Task Force on Climate-related Financial Disclosures (TCFD)
- The United Nations Global Compact COP* Policy

* COP…Communication on Progress

Coverage and Materiality

In selecting topics to be covered in the report and prioritizing them, we took into consideration their importance to the Daigas Group and their importance to society, chosen by outside experts. What is not covered under this report is posted on the website.

Readability and Ease of Understanding

To ensure that a wide range of readers can understand the information provided in this report, careful consideration is given to visual design, including the text size, use of colors, pictures and diagrams, and explanatory notes are provided for technical terms.

For words with this mark, refer to a terminology list.

Taking readability for people with color vision deficiency into consideration, the colors and designs of this report were examined and certified by the Color Universal Design Organization.

Reliability

We asked for third-party verification to ensure the reliability of the content and data presented in this CSR report.

The environmental performance data in this report underwent third-party verification by Bureau Veritas Japan Co., Ltd. The overall report underwent third party-review on assessment and recommendations, including simple audits, a task consigned to the Institute for Environmental Management Accounting (IEMA).

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Outline of the Daigas Group

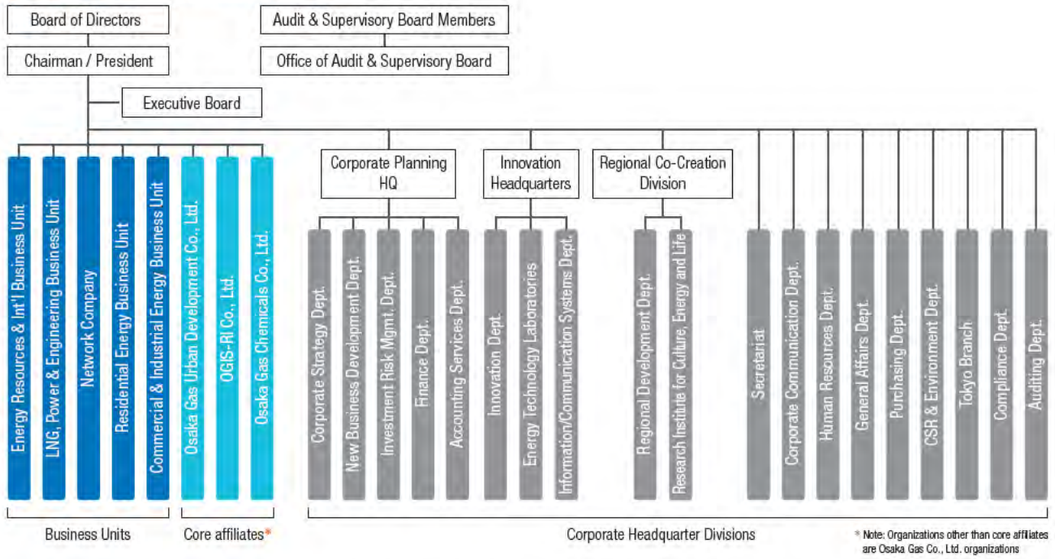
Corporate Profile of Osaka Gas (As of March 31, 2019)

Head Office : 4-1-2 Hiranomachi, Chuo-ku, Osaka 541-0046, Japan
Establishment : April 10, 1897
Commencement of operations : October 19, 1905
Capital : 132,166 million yen
Number of employees :
[Non-consolidated] 5,392
(including operating officers, directors and temporary employees, and excluding employees temporarily transferred to affiliated companies)
[Consolidated] 20,224

Main Business Lines of the Daigas Group (As of March 31, 2019)

Business segments	Main business lines
Domestic energy: gas	Production, supply and sale of city gas, sale of gas appliances, gas pipe installation, sale of LNG PH1 and LPG PH1, gas sales to industrial customers
Domestic energy: electricity	Power generation, sale of electricity
International energy	Development of and investment regarding oil and natural gas, energy supply, leasing of LNG tankers
Life & business solutions (Non-energy business)	Development and leasing of real estate properties, information-processing services, sale of fine materials and carbon material products

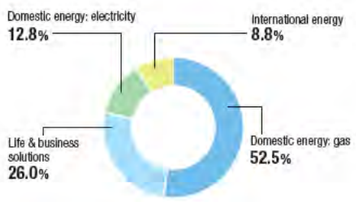
Daigas Group Management Structure (As of April 1, 2019)



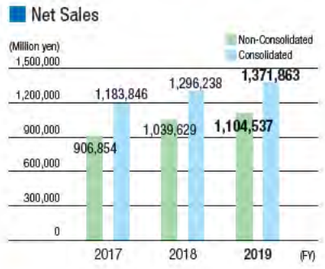
* Note: Organizations other than core affiliates are Osaka Gas Co., Ltd. organizations

Financial Data of the Daigas Group

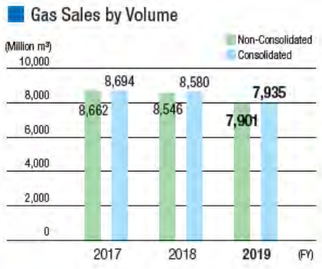
Sales by Segment of the Daigas Group in FY2019



Net Sales



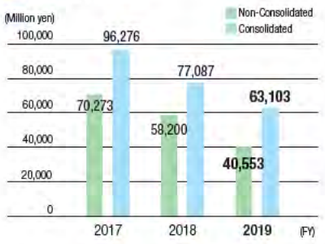
Gas Sales by Volume



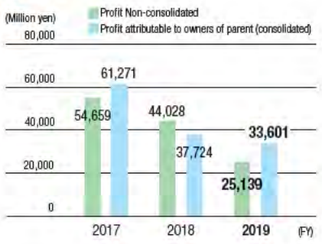
Operating Profit



Ordinary Profit

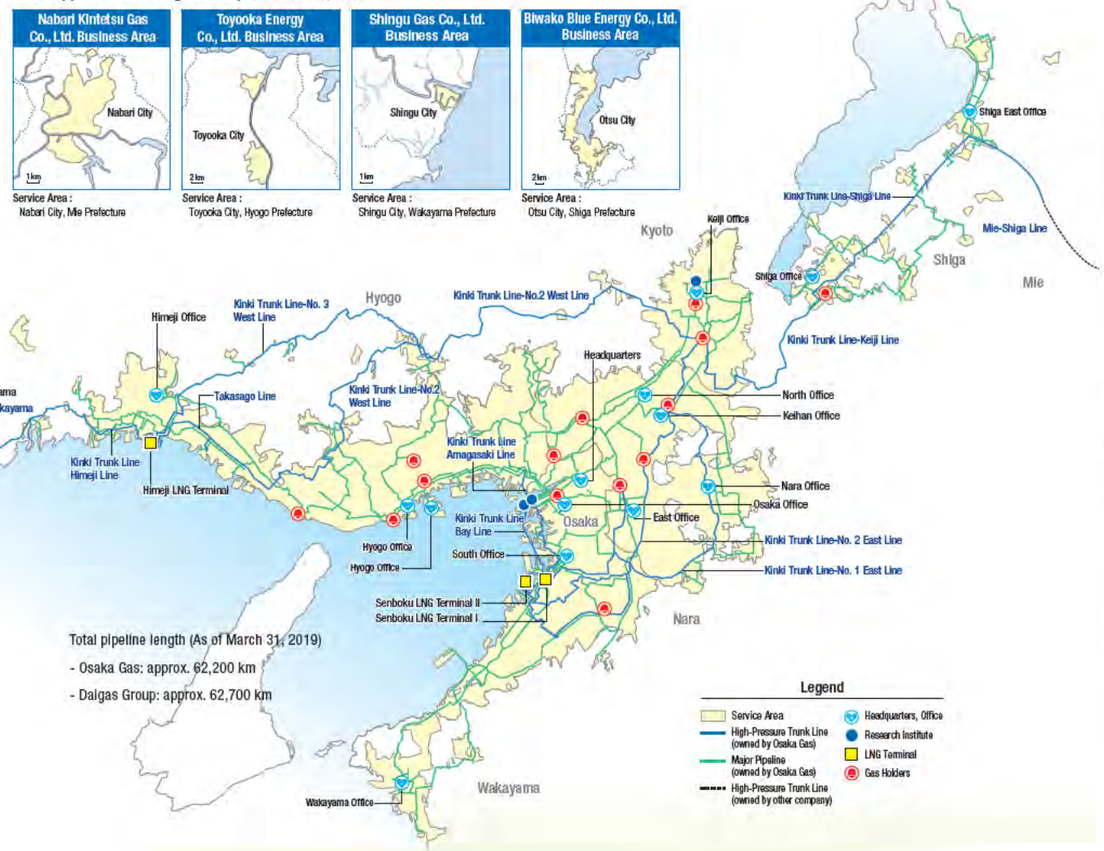


Profit



Daigas Group City Gas Business Area

Gas Supplier of the Daigas Group (As of March 31, 2019)



Overseas Energy Business of the Daigas Group



(As of March 31, 2019)

Toward Achievement of the Long-Term Management Vision 2030:
CSR Integrated into Management Strategy

The Daigas Group declared that it pursues its Long-Term Management Vision 2030 and Medium-Term Management Plan 2020 cherishing the three guiding principles that embody its corporate philosophy. The group applies global environmental, social and governance (ESG) criteria in business to "continue to earn the trust of investors, corporate partners, employees and society," one of the guiding principles.

Daigas Group Corporate Principles and Three Guiding Principles toward FY2031

Daigas Group Corporate Principles

Corporate Motto

Service First

What the Daigas Group aims to be

A corporate group that supports continuous advancement of consumer life and business

Daigas Group Declaration

The Daigas Group is committed to **creating four types of values.**

The Daigas Group is committed to creating value primarily for customers, as well as for society, shareholders and employees.

- Value for customers
- Value for society
- Value for shareholders
- Value for employees

Three Guiding Principles toward FY2031

1. Continue providing as many customers as possible with high-quality services we have nurtured in businesses in the Kansai area.
2. Always strive to be professionals who pursue innovative challenges.
3. Constantly winning confidence of investors, corporate partners, employees and society.

Business Areas and CSR Domain of the Daigas Group

Societal issues tackled by the Daigas Group

- Climate change
- Stable supply of energy
- Efficient use of resources
- Population decline in Japan
- Technological innovation

Business Areas of the Daigas Group

Domestic energy	International energy	Life & Business Solutions
City gas production and sales City gas distribution Electric power generation and sales	International upstream and trading International midstream and downstream	Urban development Materials Information
New areas / Other		

LNG Value Chain →P7-8

Drilling → Transportation → Processing → Supply → Sales and Consumption

Electricity Value Chain →P7-8

Transportation → Electricity generation → Electricity transmission → Sales and Consumption

CSR Domain of the Daigas Group →P25-48

CSR Charter
- I Creating Value for Customers
- II Harmonizing with the Environment and Contributing to Realizing a Sustainable Society
- III Being a Good Corporate Citizen Contributing to Society
- IV Complying with Laws and Regulations and Respect for Human Rights
- V Management Policy for Human Growth

Materiality
- I Customer Health and Safety
- II Energy / Emissions
- III Local Communities
- IV Customer Privacy
- V Training and Education Diversity and Equal Opportunity

Common Themes
- Economic Performance
- Supplier Assessment (Impact on the environment and society, human rights and labor practices)

The Daigas Group has been following ESG criteria in line with its CSR Charter. Initiatives taken in FY2019 aimed at reaching FY2031 targets are presented in this report on the following pages. Applying ESG criteria in business operations plays a key role for the Group as we aim to further raise our standards of social responsibility so that all of our stakeholders see how we are contributing as a corporation to sustainability in society.

Initiatives to Achieve "What We Aim to Be in 2030"

	Business that continues to earn the trust of stakeholders	Work style reforms and personnel development to enhance productivity →P43-46
E Environment →P31-36, 47-48	● Support customers in introducing high-efficiency energy equipment, and provide them with energy services ● Promote fuel conversion to natural gas, a clean energy source, and introduction of energy-saving technologies ● Develop and introduce leading-edge thermal power plants and renewable energy ● Promote environmental management focusing on resources recycling, biodiversity, chemical substances safety, etc.	**Attitude Reform** ● Think and act independently and remain reform-minded with readiness to change our mindset if necessary ● Execute assigned duties wisely and efficiently ● Shift to flexible thinking ● Pursue growth by taking up challenges beyond the boundaries
S Social →P21, 27-30, 37-42, 48	● Pursue activities in accordance with international norms, such as the Global Compact ● Promote activities relevant to the entire value chain including initiatives to protect human rights ● Engage in co-creation with local communities (social contribution activities, community communication activities, community building, etc.)	**Work Style Reform** ● Develop human resources who can play important roles in the global community ● Increase business efficiency through the active use of ICT ● Share business know-how among employees to make them immediately available in business and improve service quality ● Make workplaces attractive for employees
G Governance →P19-24, 40-42, 45-46	● Promote dialogue with stakeholders ● Pursue fair business practices ● Enhance diversity of employees and executives ● Disclosure of ESG information in accordance with global standards ● Take measures to ensure information security	**Work Environment Improvement** ● Promote collaboration among individuals and companies with diverse values ● Provide employees with equal opportunities irrespective of nationality, age, gender or location of residence ● Develop a work environment and system whereby employees can work anywhere and any time

Long-Term Management Vision 2030

Going Forward Beyond Borders 2030

Becoming an innovative energy & service company that continues to be the first choice of customers

Going beyond customer expectations

Always try to provide services that go beyond customer expectations with a spirit of taking on challenges

Going beyond business boundaries

Expand business fields to contribute to society, local communities and customers

Going beyond corporate boundaries

Pursue business alliances and M&As in broader business fields both in Japan and abroad

Contribution to the Sustainable Development Goals (SDGs) →P12-18

Sustainable Development Goals (SDGs) that the Daigas Group is focused on



WEB Information Posted on the Web
- CSR Efforts throughout the Value Chain
- Social Impact of Business Activities in Our Energy Value Chain and Efforts to Reduce Such Impact
- CSR Efforts through Supply Chain

Recognizing Impacts in the Value Chain and CSR Efforts

The Daigas Group procures natural gas, which is an environmentally-friendly and stable energy source, from overseas suppliers, and provides gas to about 5.579 million customers and electricity to about 945,000 customers, both mainly in the Kansai Region. The Group ensures the safety of customers and gives them peace of mind by procuring natural gas in a stable manner and building a solid security and accident-prevention system.

(As of March 31, 2019)

LNG Value Chain

Drilling
Signed long-term contracts with projects in
8 countries
We are striving to establish a system to procure LNG at reasonable prices and in a stable manner. One of those efforts is participation in gas field development.

Transportation
Imported LNG for city gas, power generation and wholesale trade
Approx. 9,419,000 tons/year
The Daigas Group efficiently operates LNG tankers it owns and those owned by other companies with the aim of ensuring safer and steady LNG transportation.

Processing
Number of LNG terminals
2 locations
LNG terminals are a vital component of the LNG business. Osaka Gas has established a robust LNG processing system to secure stable supply of city gas to its customers.

Supply
Total length of gas pipelines extended
Approx. 62,700 km
To ensure stable city gas supply, Osaka Gas has been renovating processing facilities and building gas pipeline networks in accordance with meticulous plans. We have established a solid system in order that we can exercise safety and security measures 24 hours a day, 365 days a year in response to any emergency.

Sales and Consumption
Number of customers receiving gas from Osaka Gas
Approx. 5,579,000 customers
Osaka Gas is committed to promoting further energy saving by its gas appliances. Osaka Gas is also dedicated to reducing CO_2 emissions and saving energy by providing highly efficient air-conditioning systems and cogeneration systems to its business and industrial customers.

Electricity Value Chain

Trans-portation

Electricity generation
Approx. 2,010,000 kW*
The Daigas Group engages in the electricity generation business using various power sources it owns, including thermal power generation and gas cogeneration systems and renewable energy sources. The Group makes efforts to ensure stable and safe electricity generation.

Electricity transmission
(via the grid owned by the power company)
Electricity generated from power sources owned by the Daigas Group is supplied to customers using the grid operated by Kansai Electric Power Co., Inc. The use of Kansai Electric Power's grid makes the power supply of the Daigas Group less vulnerable to emergency problems that may occur at power stations operated by the Group—a mechanism that would not result in the interruption of electricity supply.

Sales and Consumption
Number of customers receiving low-voltage electricity
Approx. 945,000 customers
The Daigas Group currently provides electricity to customers in the six prefectures of the Kansai region, and Fukui, Mie and Gifu prefectures in central Japan.

* Power generation capacity owned by the Daigas Group is included but plants not yet in operation are excluded.

Major Issues to Be Tackled

Transportation
- **Global environment**
  - Emissions of greenhouse gases (GHG) associated with energy consumption involved in drilling of gas resources
  - Environmental nuisance and troubles caused during drilling of gas resources
  - Impact on biodiversity in neighborhoods
  - Recognizing the risks and opportunities of climate change
- **Business partners**
  - Safety, sanitary conditions and human rights of workers employed by gas suppliers

Transportation
- **Global environment**
  - Emissions of GHG associated with energy consumption involved in operations of LNG tankers
  - Environmental problems caused during operations of LNG tankers
  - Impact of ballast water used by LNG tankers on biodiversity
  - Recognizing the risks and opportunities of climate change
- **Business partners**
  - Safety, sanitary conditions and human rights of crewmen working at LNG tankers

Processing
- **Global environment**
  - Emissions of GHG associated with energy consumption and power generation at LNG terminals and electric power plants
  - Recognizing the risks and opportunities of climate change
- **Local communities** **Customers**
  - Safety in the vicinity of LNG terminals and power plants
  - Production- and power generation-related problems caused by natural disasters
- **Business partners**
  - Safety, sanitary conditions and human rights of employees working at the sites
- **Employees**
  - Worker training/education and improving the work environment
  - Diversity promotion

Supply
- **Global environment**
  - Excavated soil discharged during the laying of gas pipes
  - Recognizing the risks and opportunities of climate change
- **Local communities** **Customers**
  - Supply problems caused by natural disasters
- **Employees** **Business partners**
  - Safety, sanitary conditions and human rights of employees laying gas pipes
- **Employees**
  - Worker training/education and improving the work environment
  - Diversity promotion

Sales and Consumption
- **Customers** **Global environment**
  - GHG emissions accompanying gas consumption at customers
  - Recognizing the risks and opportunities of climate change
- **Customers**
  - Accidents at customer's sites due to usage of gas equipment without safety mechanisms
  - Provision of appropriate information regarding products, services and rates
  - Protection of personal information of customers
- **Local communities**
  - Contribution to local communities via educational support
- **Employees** **Business partners**
  - Safety, sanitary conditions and human rights of employees laying gas pipes
- **Employees**
  - Worker training/education and improving the work environment
  - Diversity promotion

Activities Undertaken under Each KPI

Customers	Charter I: 302, 416; Charter II: 305, 418	Contributing to sustainability in society and business advancement through the stable supply of energy to customers, the improvement of services through innovation, and the proposal of sustainable lifestyles and provision of information on energy savings
Global environment	Charter II: 302, 305, 308, 414, 201	Achieving lower greenhouse gas emissions by using natural gas efficiently and raising the proportion of renewable energy sources used
Local communities	Charter III: 413, 416	Minimizing the impact of disasters on energy infrastructure and contributing to resilience in urban development
Business partners	Charter I–V: 414, 308	Achieving gender equality, creating rewarding jobs, and promoting employee health and safety
Employees	Charter IV: 308, 414; Charter V: 404, 405	Achieving gender equality, creating rewarding jobs, and promoting employee health and safety

Major Issues to Be Tackled and Its KPIs to Be Pursued Through Value-Chain

The Daigas Group has identified material aspects of its business and KPIs to be pursued as part of its efforts to grasp and manage the possible effects of its business activities on the environment and society, with a view toward creating a sustainable society. To visualize its CSR activities in line with each CSR Charter, the Group sets CSR Indicators and implements relevant measures.

Materiality and CSR Indicators (See P25–26)

Explanations of the seven sustainable development goals (SDGs) that most closely match the Group's aims are spelled out in each chapter of the CSR Charter.

CSR Indicators under each Daigas Group CSR Charter
- Charter I: Customer Satisfaction Survey: Seven Customer Service Duties
- Charter II: Environmental Management Indicator
- Charter III: Communication events / Social contribution activities
- Charter IV: Scores on Compliance Awareness / Percentage of Employees Receiving the "Compliance Training"
- Charter V: Employee Attitude Survey

GRI Standards Items Identified as Materiality
- 416 Customer Health and Safety
- 305 302 Energy / Emissions
- 404 Training and Education
- 405 Diversity and Equal Opportunity
- 413 Local Communities
- 418 Customer Privacy
- 308 414 Supplier Assessment
- 201 Economic Performance

President's Commitment



Takehiro Honjo
President of Osaka Gas Co., Ltd.

本荘武宏

By preserving the spirit of active involvement that we have been cultivating for more than 110 years, we are proactively creating solutions to emerging social challenges.

The Daigas Group is rooted in a spirit of active involvement

Since our founding in 1905, the Daigas Group has written a history that reveals a consistent effort to solve customer problems and address social issues in various ways while providing society with useful products and services.

For example, looking at the application Osaka Gas submitted to establish a company during the Meiji era, it is clear that one of the reasons for the Company's founding was to promote a switch to gas lamps and away from the oil lamps that were responsible for many fires at that time. This is just one example of the Company taking steps to address a serious social issue.

The major objectives of the conversion to eco-friendly city gas derived from natural gas and away from city gas derived from coal and oil, a process that took place over a 16-year period beginning in 1975, was to address the issues of air pollution and accommodate that era's rapid economic growth. Benefitting from the cooperation of customers, Company representatives visited individual residences to make the conversion to natural gas and adjust the gas devices. This major project saw the installation of some 23 million conversion units in 4.4 million households.

Our gas cogeneration system P11, the first unit of which we sold in 1982, was intended to solve the social issue of energy efficiency, which became an increasingly pressing problem due to the oil crises of that era. The Ene-Farm household fuel cell cogeneration system boasts the world's highest power generation efficiency and more than 100,000 units are now in service, contributing to household energy efficiency and reduced CO_2 emissions.

Our "spirit of active involvement" is reflected in our corporate motto "Service First" and our aim to become a corporate group that helps to further the evolution of our customers' livelihoods and businesses. This approach has been handed down in our group's DNA through our people and our corporate culture. We believe that our management mission is to build on this foundation through our Group's business operations.



Portable gas generator (top) and temporary bath facilities, powered by CNG P11, installed following the Great Hanshin-Awaji Earthquake



Responding to a disastrous earthquake by learning to "think on our feet" with a "Service First" approach

The Daigas Group's "Service First" approach really struck home for me during the time the city gas supply was being restored following the devastating Great Hanshin-Awaji Earthquake in 1995.

At that time, I worked in the marketing department. Our first step was to arrange for our customers to receive portable gas cartridge stoves. Because this disaster struck in winter, those affected were in desperate need of hot meals and drinks. With 860,000 households suffering a city gas supply outage, the need for a temporary heat source could best be answered with a supply of portable gas cartridge stoves. I remember that we were soon able to procure 100,000 of these stoves from manufacturers in the distant Tohoku area so that local stores near the disaster area would not suffer a sudden inventory depletion.

At the same time, in addition to setting up temporary bath and shower booths, we prototyped and introduced our first portable gas supply facility, instructions for which have since been incorporated into disaster response manual. In the face of such an unprecedented catastrophe, all employees were required to "think on their feet" in order to do the best to help customers in dire straits. I realized that, whether in times of emergency or under normal circumstances, this was exactly how the Group fulfilled its mission of "service first" without hesitation.

The entire Group remains committed to this spirit. In the Northern Osaka Prefecture Earthquake that struck in June 2018, about 2,700 people from gas companies across the country rushed to restore the city gas supply in only one week. Although managing such large numbers of personnel and vehicles at one time proved a difficult task to undertake on top of our regular daily preparations, our flexible attitude of "think on our feet" ensured the task went smoothly. In addition, our website was overwhelmed almost immediately following the disaster, but employees responded quickly by using Facebook, Twitter, and other social media to quickly provide the information that customers were looking for. This was just another example of how "thinking on our feet" proved the most effective way to assist our customers.

Contributing to the Sustainable Development Goals

Helpful initiatives to address social issues and contribute to building a sustainable society are spreading internationally, and the Sustainable Development Goals (SDGs) adopted by the United Nations represent a framework for achieving this.

We believe that our Group can help to reach these goals by tackling global disasters caused by earthquakes, climate change, and heavy rain events.

In terms of environmental measures, we continue to promote the adoption of eco-friendly natural gas even as we develop renewable energy power supplies and expand our energy-efficiency service business utilizing IoT and other tools. Under our long-term management vision, our goal is to contribute to a total reduction of 70 million tonnes of CO_2 emissions by 2030.

In terms of responding to disasters, which occurred frequently last year, we are working to develop systems to promote earlier recovery from the gas supply outages caused by earthquakes and maintain the power supply by utilizing cogeneration facilities during blackouts.

Utilizing the Daigas Group's strengths to address social issues

In promoting these initiatives, it is essential that we make full use of the capabilities we have cultivated.

One of our strengths is the ability to customize solutions. In the past, when in competition with other fuels, we have prided ourselves on becoming the first to provide solutions to customer problems, not only by supplying gas but also by providing facilities and equipment. For example, for customers in factories and office buildings, we suggest products and services that are precisely customized to the needs of each in order to ensure the optimal use of energy.

Technology is another of our Group's strengths. By leveraging the R&D networks available to us within and outside the Group, we are developing technologies—encompassing basic and applied technologies as well as product-specific technologies—capable of solving a broad range of issues. In the field of information and communication technology, which represents the core of technological innovation, we were among the first to introduce computer processing of our numerous billing operations; today, we are focusing on introducing the benefits of AI and IoT.

Evolving to respond to change through "Resilience 2.0"

For our Group to continue serving individual customers and society at large in the future, it is essential that we achieve sustainable evolution and growth. We are now facing an era of unprecedented change as seen in intensifying competition, a series of large-scale disasters, the rapid progress of digitization, and high expectations for a global transition to a low-carbon society.

Throughout our history, our Group has had to overcome numerous challenges, and in each case we have prevailed by demonstrating our unique resilience [?1]. However, in order to cope with the recent trend of rapid and significant transitions and achieve sustainable growth, we need to demonstrate that our resilience can evolve further in response. Our ability to achieve full recovery was termed "Resilience 1.0"; in contrast, the capability to grow with flexibility and make further change is an ability we have termed "Resilience 2.0."

Increasing our resilience to Level 2.0 requires that we not only cultivate the ability to "think on our feet" but also develop the capacity to deal with a series of emerging challenges. However, since a willingness to take on new problems sometimes results in failure, we are focused on creating an organizational culture that encourages employees to meet such trials without fear, thus developing personnel with a proactive problem-solving attitude. For example, we have established a "goal management" system that encourages employees to set their own goals and evaluate not only the results but also the process of taking the initiative in order to encourage an aggressive attitude to meeting new challenges.

Furthermore, ideas and innovation are indispensable to the flexibility we must develop in order to achieve our goal of "Resilience 2.0." In many cases, this springs from a serendipitous emergence of ideas, so there is great significance in promoting the emergence of a company and organization committed to diversity [?1] in terms of gender, age, physical ability, ethnic background, and so on. In addition, it is necessary to create a work environment in which all employees can engage in open discussion with one other and demonstrate their own personalities. We will continue to work on ESG (environment, social, and corporate governance) management criteria according to global standards, including the development of a governance system essential for instituting this management.

Targeting sustainable growth

In conclusion, I believe that the concepts of equity and efficiency essentially underpin corporate management, and thus I have adopted these concepts as my own motto. "Equity" means addressing social problems and aiding society as a good corporate citizen. "Efficiency," on the other hand, means to improve our productivity and ensure that we earn an appropriate level of profitability. Both concepts are essential to achieving sustainable corporate growth, as is the requirement to find a balance between them.

Going forward, we will continue to respond flexibly to change while adhering steadfastly to our unchanging spirit of active involvement. By contributing to the success of our customers and the development of local communities and society at large with inspired solutions to emerging social issues, we are committed to becoming an innovative energy services company that achieves sustainable growth by always remaining the first choice of our customers.



WEB Information Posted on the Web
President's Commitment
Special Feature: The Daigas Group addresses social issues with its human resources and technical expertise

Special Feature

The Daigas Group addresses social issues with its human resources and technical expertise

Contributing to the Sustainable Development Goals

Since 1905, the Daigas Group has been supplying gas and providing products and services tailored to the needs of individual customers and society at large under the motto "service first." Our Group emphasizes customer convenience and undertakes the necessary research and development into innovative technologies that, put to practical use, help our customers live in a more energy-efficient manner. In 2006, the Daigas Group adopted its CSR Charter, a document intended to spell out how we will meet the expectations of stakeholders and fulfill our corporate social responsibility. Our CSR Charter serves as an action guideline for both our executive management and our rank-and-file employees; using this document, the Group implements CSR initiatives intended to contribute to the emergence of a sustainable society. Through its business operations, the Daigas Group remains focused on addressing social issues.

Our Group is engaged primarily in the energy business. In recent years, we have taken on the extremely important mission of reducing our emissions of greenhouse gases (GHG [?1]), which have been linked to the climate change issue. Specifically, we aim to reduce our total CO_2 emissions by approximately 70 million tonnes by FY2031. In this endeavor, our Group engages in a variety of business initiatives that include expanding the use of renewable energy, promoting the adoption of advanced energy equipment, and launching LNG [?1] businesses and other businesses inside and outside Japan. Moreover, considering the increasing frequency of recent natural disasters, the Group is working to improve its resilience by adopting disaster-response measures and improving its ability to ensure the rapid recovery of the infrastructure on which the public depends.

These initiatives are creating value through our efforts at innovation utilizing the many proprietary technologies that our Group has developed over the years. Everyone at our Group is collaborating on the development of new services that not only support the Group but also address the problems that challenge our customers.

We believe these activities contribute to several of the Sustainable Development Goals (SDGs) proposed by the UN. These include Goal 13, which calls for urgent action to combat climate change and its impacts; Goal 12, which calls for responsible consumption and production; Goal 7, which calls for assured access to affordable, reliable, sustainable, and modern energy for all; and Goal 9, which is intended to foster innovation, inclusive and sustainable industry, and the construction of resilient infrastructure. We believe that promoting these initiatives will trigger the creation of opportunities realizing sustainable town planning, increased employment, and creation of spaces conducive to active engagement of diverse personnel. In addition to the above, we believe we can contribute to the achievement of several other goals and targets that comprise the SDGs.
(For more details, please refer to the section titled "CSR Integrated into Management Strategy" on our corporate website.)

The Daigas Group will address climate change as a comprehensive energy service provider. The Group is committed to contributing to development of industries and communities through the provision of sustainable energy.



Special Feature 1

Reducing greenhouse gas emissions through efficient use of natural gas and expansion of renewable energy



In Focus Inami Wind Power Plant

Monitoring the wind and weather to create detailed forecasts

Realizing the potential of proprietary simulation technologies developed by the energy business operator

Weather conditions have a significant impact on the energy industry, as daily temperatures drive demand while changes in solar radiation affect the amount of solar power generated. The dramatic impact of weather has compelled us to develop weather and wind simulation technology that assists us in forecasting changes in wind and solar radiation. The weather data we compile from this technology is also used effectively by various businesses.

This weather and wind condition simulation technology was used in the design of the 26,000 kW Inami Wind Power Plant in Wakayama Prefecture that a Daigas Group company, Gas and Power Co., Ltd., put into service in June 2018. The company used this technology to select the location of the windmill and to forecast the amount of power this facility would likely generate over the next 20 years.

Contributing to the SDGs

The challenge

Contributing to the emergence of a low-carbon society

13 CLIMATE ACTION

Leveraging the strengths of the Daigas Group

- 7 Expanding the use of renewable energy
- 9 Meteorological simulation technology
- 12 Efficient use of natural gas

Solutions and initiatives

Contributing to the provision of services and the development and operation of a wide range of power sources

Our Group takes advantage of its years of experience and outstanding expertise to develop a diverse array of power sources and create sustainable infrastructure that contributes to the emergence of a low-carbon society. This effort includes the launching of LNG businesses outside the Kansai area and promoting biomass power generation by establishing procurement and sales companies for domestic woody biomass fuels.

Currently, we have approx. 210,000 kW of renewable energy sources including wind, solar, and biomass power plants in Japan, which contribute to reducing CO_2 emission.

In an effort to further spread renewable energy, in FY2019 we decided to construct two of Japan's largest biomass power plants, each with a capacity of approx. 75,000 kW, in Sodegaura, Chiba Prefecture, and Himeji, Hyogo Prefecture.

Accelerating the adoption of sustainable energy and services

Devising ways to reduce the greenhouse gas (GHG) emissions associated with climate change has long remained a formidable challenge. Clearly, energy companies are required to do more. Such effort includes promoting the adoption of natural gas, which is associated with low CO_2 emissions, and increasing the ratio of renewable energy sources—such as wind and solar power—in the energy mix.

As a gas and electricity provider, we intend to further accelerate the development and acquisition of renewable energy sources as outlined in our FY2019 management plan, in which we have adopted the target of renewable energy generation capacity 1 million kW by FY2031 in the Japan and overseas markets.

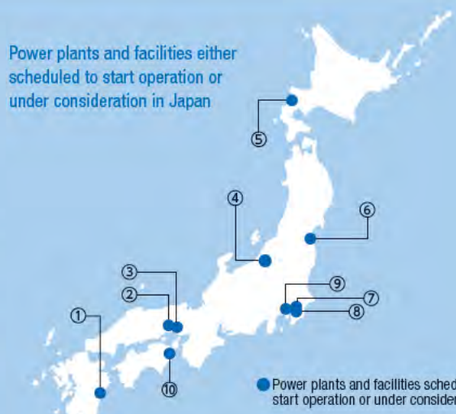
Moreover, we remain committed to further expanding our natural gas business, which is noted for its low CO_2 emissions, and developing a variety of power sources while contributing to the provision of sustainable energy and services.

United Nations Framework Convention on Climate Change

* Conference of the Parties

- 1992: Framework Convention on Climate Change is adopted at the Earth Summit in Rio de Janeiro
- 1997: COP* 3 adopts the Kyoto Protocol
- 2015: COP 21 adopts the Paris Agreement as a new framework for 2020 and beyond
- 2018: The Intergovernmental Panel on Climate Change (IPCC) issues the special report "Global Warming of 1.5 °C"
- 2018: COP 24 adopts "Implementation Guidelines (Detailed Rules)" for the operation of the Paris Agreement

Power plants and facilities either scheduled to start operation or under consideration in Japan



① Himuka LNG (LNG terminal): Scheduled to start operation in 2022
② Hirohata Biomass Power Plant: Scheduled to start operation in 2023
③ Himeji Natural Gas Power Plant: Under consideration and environmental assessment
④ Nagaoka Tansan (industrial gas): Scheduled to start operation in 2021
⑤ Shiribetsu Wind Power Plant: Scheduled to start operation in 2021
⑥ Fukushima Gas Power Plant: Scheduled to start operation in 2020
⑦ Ichihara Biomass Power Plant: Scheduled to start operation in 2020
⑧ Sodegaura Biomass Power Plant: Scheduled to start operation in 2022
⑨ Ogishima Natural Gas Supply (gas production and supply): Scheduled to start operation in 2020
⑩ Tokushima Tsuda Biomass Power Plant: Scheduled to start operation in 2023



Rei Takatani
Certified and Accredited Meteorologist
Fluids and Materials Analysis Team
Energy Technology Laboratories
Osaka Gas Co., Ltd.

Developer Interview

Leveraging the expertise acquired from studies on the airflow of gas fan heaters

The weather analysis is indispensable for operation of energy businesses. Since undertaking analysis of the air flow within and from fan heaters some 30 years ago, the Energy Technology Laboratories have pioneered various applications of fluid simulation technology, including the combustion process in industrial furnaces, diffusion of exhaust gases, and the flow inside the Ene-Farm. The fluid simulation technology we have developed here uses computers to predict the flow of gases and liquids. We came to realize that if these technologies could be adapted to forecast the wind, solar radiation, rain, and other elements of weather, they would become a new fundamental technology, so we started working on ways to put our weather simulation technology to practical use. In recent years, we have been using this technology for wind power generation projects.

In 2005, I became involved in predicting the amount of power that would be generated by the Hirokawa Myojinyama Wind Power Plant in Wakayama Prefecture, which was being planned at the time. I discovered that I could come up with reliable predictions by leveraging my knowledge and experience in predicting the air flow around objects having complex shapes. Since then, we have accumulated a significant amount of skill and data uniquely applicable to wind power generation. To date, we have used this expertise to evaluate a number of wind power projects both inside and outside Japan, including the Hallett 4 Project in South Australia. These achievements have enabled us to evaluate the business case for the Inami Wind Power Plant.

In the future, we aim to provide this service to industries requiring weather forecasting. These include the agriculture industry, which depends on temperature and weather forecasts for making harvesting decisions, and the retail and service industries, whose pricing and customer traffic are affected by the weather.


Simulation



Special Feature 2

Constructing resilient infrastructure for disaster-resistant urban development

In Focus Northern Osaka Prefecture Earthquake

We provided detailed information that contributed to a rapid recovery.

Realizing the great potential of the map information systems maintained by our energy business

Following the Northern Osaka Prefecture Earthquake that struck on June 18, 2018, an emergency gas shutdown was implemented for safety reasons. This affected about 112,000 households mainly in the cities of Takatsuki and Ibaraki, both of which recorded a seismic intensity of "6 lower," a level of an earthquake defined as "Difficult to keep standing" according to the Japan Meteorological Agency.

During the recovery process, about 5,100 people participated in the restoration effort, including employees of gas providers from across the entire country. As a result, the gas supply was restored to customers on June 24. In addition, the Recovery Visualization System introduced in April enabled the Company to disseminate detailed recovery information and ensure good communication and cooperation with customers and administrators.

Contributing to the SDGs

The challenge

Disaster response and early recovery of infrastructure

Leveraging the strengths of the Daigas Group

Building disaster-resistant cities
Using IT to construct information-sharing systems
Adopting and utilizing decentralized energy systems

Solutions and initiatives

Utilizing our disaster recovery support system in the society

The tasks that make up restoration work include the following: Closing the metered gas valve at the customer's residence; searching for gas leaks in the gas pipes [?!] and repairing any leaks found; visiting the customer's house and confirming the safety of the gas facilities; and opening the metered gas valve to resume the gas supply. In this process, it is necessary for the customer to be at home. Until this earthquake, only text information such as press announcements and simple map information were provided to inform the recovery status of gas supply. Therefore, there was an urgent need to develop a system that could provide customers with quick and accurate information and resolve any concerns about recovery.

In response to this situation, we developed the Gas Recovery Visualization System to provide detailed information to the public. This system displays the status of recovery on a map created by linking information through the centralized "Bridge" disaster recovery support system, which Osaka Gas built to improve the efficiency of recovery work, with detailed map information.

During a disaster, Japan's Information Support Team (ISUT) organized by the Cabinet Office uses this system as a "disaster response support map" by accumulating information on shelters and sharing it with organizations that take action during times of disaster. It is also used for bathing support activities provided by the Self-Defense Force.

Recovery task work

Close metered gas valves.
↓
Search for and repair gas pipe leaks.
↓
Visit customer households and confirm safety of gas equipment.
↓
Open metered gas valves and resume gas supply.





Shota Kotake
Disaster Response and Supply Team
Central Control Room
Network Company
Osaka Gas Co., Ltd.

Developer Interview

Focusing on an easy-to-use Gas Recovery Visualization System

Information on the status of recovery of the gas supply often uses somewhat vague descriptions of areas such as "part of Town X" because the gas conduit network spans multiple administrative districts. As a result, customers do not really know when their own gas service will be restored. We realized that if we could provide a detailed map with specific information about our restoration work schedule, customers might become more at ease. Equally important, we could ask customers to remain at home to be prepared for the inspection that is required before the gas supply can be restored.

Considering the large number of customers who own smartphones or have other such connections to the Internet, we set out to create a means of disclosing the progress of the restoration process by providing a map with color-coded addresses. We also wanted to display the predicted times for an inspection visit and scheduled return to operation. We named this innovation the Gas Recovery Visualization System and provided a link to it on our disaster-response website.

After the 2018 Northern Osaka Prefecture Earthquake struck, access to this website increased sharply after we sent out a tip on social media introducing the site: "Useful restoration information using maps is available on the Osaka Gas website." Over several days thereafter, the site was accessed up to 260,000 times daily, and we received many messages indicating the site was very helpful.

We developed the website with the same ease of use as general mapping software in order to make it easy to understand. This system proved to be very useful for customers awaiting restoration of their gas service.

By utilizing the technology of the Daigas Group to meet the needs of individual customers and society at large, we are contributing to the emergence of a society that is resilient to disasters.



Gas Recovery Visualization System

Gas contributes to the development of stronger and more resilient infrastructure.

It is essential that infrastructure function as expected even during a large-scale disaster. In response to this expectation, seismic retrofitting of equipment is required in order to contribute to disaster-resistant urban development.

With respect to gas supply facilities, we take preventive measures to minimize the damage by putting human life as a top priority. In addition, we are working to improve resilience, focusing on emergency measures such as the stop of gas supply for the purpose of ensuring safety and the development and introduction of systems for early recovery.

Cogeneration systems help to provide emergency power in a disaster

During the large-scale power failure that occurred in the typhoon in September 2018, gas cogeneration systems [?!] such as our self-sustaining Ene-Farm continued to generate power. This made it possible for our customers' homes and factories to remain powered with electricity. This has renewed the focus on cogeneration as a solution.

Special Feature 3

Promoting the evolution of ICT/IoT services to solve customer problems



Increasing need for ICT / IoT to meet various problems

Recently, our business and industrial customers have been coping with a variety of issues such as the scarcity and aging of skilled technicians and reduced production efficiency due to equipment failures.

We strive to solve such problems by gaining an understanding of the current and emerging needs of our customers. Our many opportunity of contact with our customers have provided us with the possibility to create value in collaboration with related players. Thus, we provide our customers with diverse services and new technologies useful for solving their problems.

Examples of customers' issues

① Scarcity and aging of skilled technicians
② Reduced production efficiency due to equipment failures
③ Improvement of the work environment including measures to deal with extreme heat
④ Complicated documents and data
⑤ Insufficient communication between sales and production sites
⑥ Lack of IT system specialists

In Focus Support by image recognition technology

Utilization of scientific analysis of cooking and food processing

Realizing the potential of the heat transfer and structural analysis technologies cumulated through energy businesses

In the process of developing kitchen for home and commercial use, Osaka Gas has compiled a significant amount of analysis data regarding food and cooking. The Food Science Lab of the Energy Technology Laboratories conducts research to maximize the appeal of food by scientifically clarifying the key phenomena related to cooking and food preparation.

In order to determine the appropriate immersion period for rice used in sake brewing, Osaka Gas jointly with the Fushimi Sake Brewers Association developed a method for evaluating the absorption status of sake rice. We conducted this research as an application of our knowledge of food science and technology for developing gas cookers.

Contributing to the SDGs

The challenge

Various issues facing customers

Leveraging the strengths of the Daigas Group

- Suggesting improvements to equipment and the work environment
- Suggesting solutions facilitating technology transfer
- Suggesting construction of disaster-resistant systems
- Suggesting the efficient use of natural gas
- Suggesting energy-efficient services

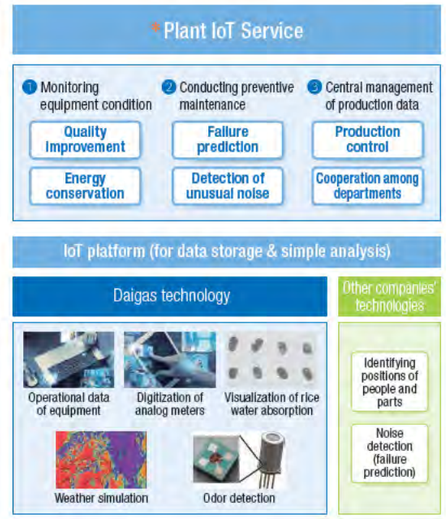
Solutions and initiatives

Working with our customers to devise solutions

In addition to the simulation and sensor technologies and the system development and data analysis expertise we have cultivated through our gas business, the Daigas Group offers our customers IoT systems that address their various problems.

In FY2019, we collaborated with the Fushimi Sake Brewers Association to develop a new method of evaluating the absorption status of sake rice with our proprietary image recognition technology. While demand for the *ginjo* and *daiginjo* varieties of sake has increased in recent years, the number of head brewers and skilled brewers has been on the decline, leading to demand for more scientific support and technology transfer.

Going forward, we intend to continue applying IoT services and the results of our Group's R&D and information and communication technology—such as our one-stop Plant IoT Service*—to help address the various issues our customers are currently facing.





Haruo Tomita
Researcher
Food Science Lab
Energy Technology Laboratories
Osaka Gas Co., Ltd.

Developer Interview

Applying a rice-cooking technology to sake rice

In order to determine the amount of water absorbed by soaking rice, the Food Science Lab undertook an R&D effort to devise an image recognition technology for evaluating the visual change in rice caused by water absorption.

We were consulted by a sales representative to determine whether this technology could be used for value-added products of interest to corporate customers. Thus, in 2016 we collaborated with the Fushimi Sake Brewers Association to determine the amount of water absorbed by sake rice soaked in water. We verified the consistency with existing evaluation methods and correlations with data on brewing sites. After two years of joint study, we confirmed that this method is effective for evaluating water absorption status of sake rice and that it closely conforms with the vast expertise of the head brewers. We aim to introduce this method at various sake brewing locations.

The feature of this technology is that it can quantify and visualize the progress of the "soaking process" through which rice absorbs water when immersed. The soaking process is very important to sake brewing, and the time required for proper soaking varies with the type of rice, soil of the rice field, and the ambient temperature. The soaking time is thus controlled to the second as determined by the skill and experience of the head brewers.


Researcher Saki Nakayama measuring the water absorption of rice

The sake rice for *ginjo* and *daiginjo* sake absorbs water quickly, and cracks appear when the water is absorbed because the kernels have been polished down to no more than 60% of the size of typical brown rice kernels. By developing a new technology that captures these changes in three dimensions and image recognition technology using AI, we were able to accurately capture changes in seconds. This became the point of technology breakthrough.

In addition to using this technology for rice evaluation, we are conducting R&D to address various other food evaluation technologies. We intend to offer them as part of the wide range of solutions we provide, and we hope to develop new services that will help our customers improve quality and control of manufacturing processes, and develop products.

WEB Information Posted on the Web
Corporate Governance
Risk Management

Corporate Governance

Basic Views on Corporate Governance

To implement measures envisaged under the Long-Term Management Vision 2030 and the Medium-Term Management Plan 2020, both formulated in March 2017 and together called "Going Forward Beyond Borders," Osaka Gas will ensure transparency, fairness and boldness in decision making, and execute its assigned business duties efficiently and adequately, based on the Daigas Group CSR Charter, a set of guiding principles for management and employees, and specific standards for actions—the Daigas Group Code of Conduct and the Daigas Group Environmental Activities Policy. By doing so, the Company aims to attain sustainable growth and enhance its corporate value on a medium- and long-term basis. We will further raise the CSR level of the Group by responding appropriately to the exercise of shareholder rights and working to maintain and improve trust through dialogue and collaboration with stakeholders. We will continue to enhance and strengthen corporate governance with the aim of global standard management that takes ESG (environment, society, and governance) into consideration.

System and Efforts Aimed at Enhancing Corporate Governance

Osaka Gas has chosen the organizational form as a company with an Audit & Supervisory Board. The Company has also adopted an executive officer system. The Company's corporate governance system is shown below.

Board of Directors, Directors of the Company

The Board of Directors comprises 13 Directors, including three Outside Directors. It determines the regulations and discussion criteria for the Board of Directors and make swift and appropriate decisions about important matters that affect the whole Group including subsidiaries, and to enhance supervisory capabilities. In FY2019, the Board of Directors met a total of 13 times (posting an average attendance rate of 98.8%). Meetings discussed the Group's management plans, the establishment of important organizations, important human resources matters, execution of important investments and agreements greater than a certain amount, and operational status reports etc. from Executive Officers.

Executive Officers

Osaka Gas has adopted an executive officer system, which is aimed at revitalizing the activities of the Board of Directors, and enhancing its supervisory function while increasing the Company's management efficiency, by enabling Directors to focus on decision-making, and supervisory duties. Under the executive officer system, Executive Officers perform duties determined by the Board of Directors, while some Representative Directors and Directors concurrently serve as executive officers to make management decision-making more accurate and efficient.

Executive Board

Osaka Gas makes decisions on important matters concerning basic management policies and other management issues after the Executive Board fully discusses these matters. In line with the in-house rules related to the Executive Board, the Board is composed of the President, Vice Presidents, Managing Directors, Heads of Corporate Headquarter Divisions and Business Units. In principle, three times per year of the Executive Board meetings are held as "CSR Promotion Council", which deliberate on plans for CSR activities and make report on CSR activities.

Audit & Supervisory Board, Audit & Supervisory Board Members

Audit & Supervisory Board consists of five Audit & Supervisory Board Members, of whom three are outside auditors. These members audit the execution of duties assigned to each Director.

Auditing Department

Osaka Gas has established the Auditing Department as a section in charge of internal auditing affairs. Based on a yearly auditing plan, the Department evaluates, from independent and neutral viewpoints, the adequacy of business activities in light of in-house standards, their efficiency, and the appropriateness of various systems and standards adopted by the Company. If problems related to auditing are found in certain departments or divisions, the Auditing Department proposes improvement and follow-up measures for the affected organizations, and reports the findings to the Executive Board. The Auditing Department is subject to periodical evaluation from an outside party to maintain and improve its auditing abilities.

Advisory Committee

From the viewpoint of ensuring objectivity and transparency in decision-making, matters relating to the nomination of candidates for Directors and Audit & Supervisory Board Members, selection and dismissal of the Representative Director and other Executive Officers, and remuneration paid to Directors are determined following deliberation by voluntary Advisory Committee, the majority of whose members are Outside Directors.

CSR Committee

The CSR Committee is chaired by the CSR Executive, a Representative Director and Executive Vice President in charge of controlling CSR activities of the Daigas Group, with its members chosen from among the Heads of relevant divisions and departments. The CSR Committee promotes CSR activities in such fields as the environment, compliance, social contribution, human rights, employment, information security and risk management, and plays a coordinating role between relevant departments or divisions regarding these activities.

Investment Evaluation Committee

The Investment Evaluation Committee is chaired by the Head of the Corporate Planning Headquarters, with its members chosen from among the Heads of relevant divisions and departments. The committee evaluates investment risks and returns for investment projects of a certain scale. The evaluation, put forward to the Executive Board, is used for appropriate investment decision.

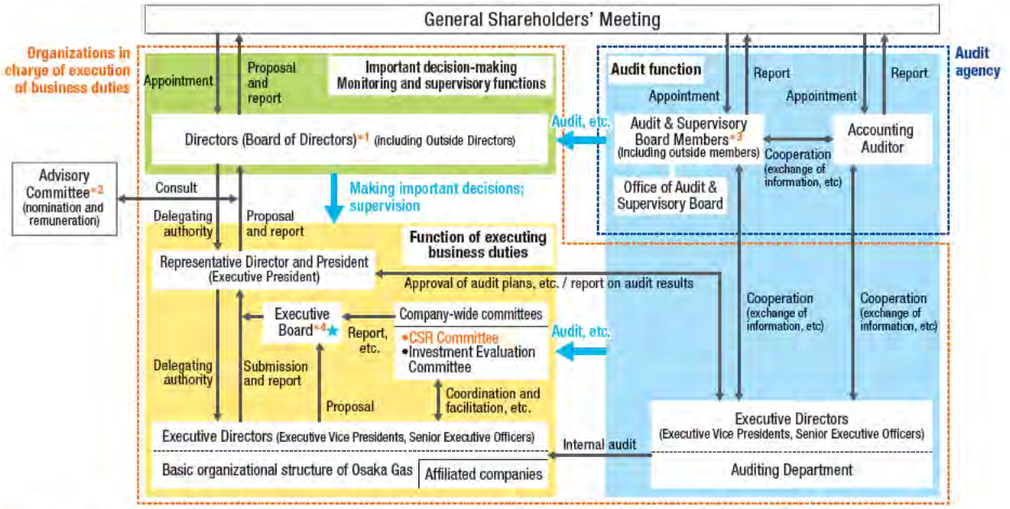
Roles and Functions of Outside Directors

As a member of the Board of Directors, each Outside Director takes part in the Company's decision-making process, and monitors and supervises whether the Executive Officers have executed their business duties appropriately, based on his or her knowledge and experience, and from an independent viewpoint.

Efforts to Strengthen the Functions of Audit & Supervisory Board Members

As part of its efforts to strengthen the functions of Auditors, Osaka Gas appoints three outside Audit & Supervisory Board Members, whose role is to audit if Directors have executed their duties appropriately—from an independent viewpoint. They meet on a regular basis to discuss annual audit plans and audit reports, and exchange information to ensure the effectiveness of auditing activities and enhance their quality. Osaka Gas has established the Office of Audit & Supervisory Board, which is composed of full-time staff operating outside the Executive Officers' chain of command. The Office is designed to support the Audit & Supervisory Board Members' auditing work and thus improve the auditing system.

■ Corporate Governance System (As of the end of a regular general shareholders meeting held on June 20, 2019)



*1 Board of Directors:
13 Directors
(10 in-house Directors and 3 Outside Directors)

*2 Advisory Committee:
3 Outside Directors, 3 Outside Auditors, President and persons appointed by the President
(up to 2 persons chosen from among other Representative Directors)

*3 Audit & Supervisory Board:
5 Audit & Supervisory Board Members
(2 full-time members, 3 outside members)

*4 Executive Board:
President, 3 Vice Presidents and 6 Senior Executive Officers
(★ In principle, three meetings are held per year as the "CSR Promotion Council.")

Risk Management

Heads of divisions of the Daigas Group and affiliates are in charge of managing crisis-related losses by conducting risk-management inspections on a regular basis. Utilizing the Gas Group Risk Management System (G-RIMS)* and other systems, each division and affiliate checks if there are any risks and if risk control has been conducted properly regarding each risk item, and implements follow-up and other measures if necessary. The Risk Management Subcommittee, the CSR Committee's subpanel in charge of risk management, meets to clarify and share awareness among all employees regarding how the Daigas Group should respond to possible risks in the future, based on the results of G-RIMS.

As for risk management regarding matters that affect the entire Daigas Group, such as safety, security, and disaster and accident prevention, the organizations in charge have been clarified to support each organization and affiliate. In order to be prepared for disasters or emergency situation, the Rules for Disaster Control and the Business Continuity Plan (BCP P11) in the Event of Large-Scale Disasters and Accidents have been established.

* G-RIMS is a system for risk management in routine business operations. The manager of each organization and affiliated company checks if preventive measures have been implemented or an early-detection system is in place as required, using a checklist comprising about 50 items. G-RIMS is also designed to evaluate the magnitude of risks and identify risks to be addressed, before PDCA (plan-do-check-act) is operated for improvement.

Status of Internal Control

The Company's Board of Directors developed an internal control system which includes systems necessary to ensure that the execution of duties by Directors complies with laws and regulations and the Articles of Incorporation, and other systems prescribed by the applicable Ordinance of the Ministry of Justice as systems necessary to ensure the properness of the Company's operations. The Company confirms the operating status of the internal control systems on a periodic basis. At the meeting of the Board of Directors held on April 24, 2019, it was reported that the internal control systems were operating in a proper manner.

Promoting CSR Activities

To live up to the expectations of our stakeholders, fulfill its corporate social responsibilities and achieve sustainable development, the Daigas Group adopted the CSR Charter in 2006, guiding principles based on which executives and employees execute their business duties.

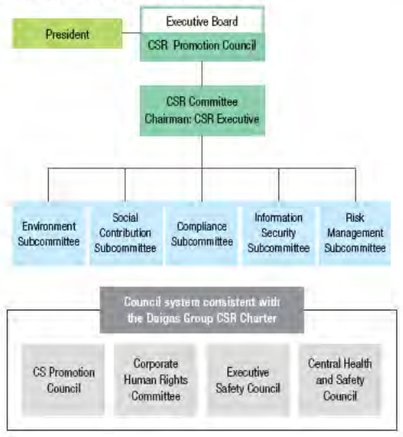
Furthermore, in 2007, Osaka Gas became the first Japanese utility to express its intention to join the United Nations Global Compact in a show of its support of principles to be respected by companies worldwide.

The Daigas Group Code of Conduct, adopted in 2000, spells out guiding principles the Group's employees and executives must abide by. In 2008, the code was revised to make it harmonious with the United Nations Global Compact. In 2011, it was also modified to reflect core elements of ISO 26000. In March 2018, the Code was also revised to promote its diffusion within the Daigas Group and smooth the execution of business duties in reflection of the Code.

Meanwhile, as our business fields have expanded, the scope of stakeholders—parties influenced by our operations—has further expanded, including customers, local communities, shareholders and employees.

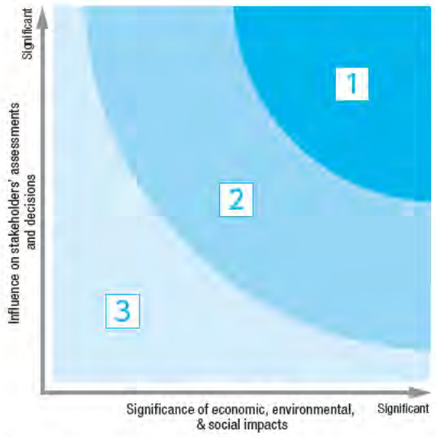
In order to recognize the impact our business activities may have on society and the environment, and conduct business while controlling such impact, the Daigas Group has been promoting CSR activities. Specifically, in 2009, the Group introduced CSR Indicators under each chapter of the CSR Charter to promote CSR activities and visualize the process.

■ CSR Promotion System (As of April 1, 2019)



New Materiality Analysis Map

The Daigas Group newly identified important aspects of CSR (materiality) in FY2018, and began PDCA management in FY2019. In identifying the new materiality, the Group evaluated the progress of activities related to previous materiality identified in FY2014 (FY2015–2017) with reference to the opinions of external experts. In addition, based on changes in the business environment and social trends related to sustainability, we referred to the procedures shown in the GRI Standard, which is the latest version of the GRI Guidelines.



* The GRI Standards consists of the 100 Series, a common standard, and three item-by-item standards – the 200 Series (economic items), 300 Series (environmental items) and 400 Series (social items). The items recognized by our company as materiality, listed above under 1 were chosen from among the 33 items covered by the item-by-item standards.

1 Materiality

201	Economic Performance
302	Energy
305	Emissions
308 414	Supplier Assessment (Environmental / Social)
404	Training and Education
405	Diversity and Equal Opportunity
413	Local Communities
416	Customer Health and Safety
418	Customer Privacy

2

202	Market Presence	403	Occupational Health and Safety
204	Procurement Practices	407	Freedom of Association and Collective Bargaining
205	Anti-corruption	409	Forced or Compulsory Labor
206	Anti-competitive Behavior	417	Marketing and Labeling
301	Materials	419	Socioeconomic Compliance
304	Biodiversity		
306	Effluents and Waste		
307	Environmental Compliance		

3

203	Indirect Economic Impacts	408	Child Labor
303	Water	410	Security Practices
401	Employment	411	Rights of Indigenous Peoples
402	Labor / Management Relations	412	Human Rights Assessment
406	Non-discrimination	415	Public Policy

WEB Information Posted on the Web
CSR Management
Materiality
Dialogue and Cooperation with Stakeholders

Dialogue and Cooperation with Stakeholders

The Daigas Group is focusing on active engagement with stakeholders through dialogue to recognize various possible issues involved in its CSR and to come up with mutually acceptable solutions to such issues, based on the Daigas Group CSR Charter and Daigas Group Code of Conduct. For example, the Daigas Group has been promoting dialogue with the Kansai Consumers' Association Liaison Commission, the Osaka Voluntary Action Center, and the Osaka Gas Labor Union.

Furthermore, the Group is sharing information and cooperating as a member of the Global Compact Network Japan, and actively taking part in the formulation of various policy measures by the government and municipalities. The Group is also active as a member of the International Gas Union (IGU) aiming at promotion of the global gas industry.

One of the results of such engagement is that five business associations formed by partner companies undertaking gas-related services established the Code of Ethics respectively in response to the Group's policy. The Group is also actively engaging with various stakeholders, such as businesses, universities and NPOs.



FY2019 Results

Dialogue with Customers

Phone calls received by customer centers: approx. **3.87** million
No. of replies to a survey on customer satisfaction: approx. **59,000**

To provide services in excess of customer expectations, we are listening to their voices through various contacts with them, with the aim of improving our products and services.


Customer Center

Dialogue with Local Communities

No. of events for social contribution enhancement: **1,085**
No. of events for environmental and food education: **1,497**

The Daigas Group cannot attain its intended business goals without building a favorable relationship with local communities. As part of such efforts, we are undertaking a variety of social contribution activities, including providing energy and environmental education, food education, fire education, and disaster response education.


Food education

Dialogue with Consumer Groups

A total of **779** meetings were held with consumer organizations to enhance our communications with them.

Consumer groups with which we held meetings included the Kansai Consumers' Association Liaison Commission, the Osaka Voluntary Action Center, and the Osaka Gas Labor Union.


Invitation of people from consumer groups to our facilities

Dialogue with Shareholders and Investors

No. of meetings with institutional investors and analysts: **172**
(85 meetings held in Japan and 87 meetings held outside Japan)
No. of briefings on financial results and single-year business plans: **5**
No. of briefings held for individual investors: **6**

The Daigas Group has been stepping up information disclosure to the general public and dialogue with shareholders and investors, using a variety of media and briefing sessions, with the aim of strengthening our management base, regarded as necessary to generate profit in a stable manner and return part of it to shareholders continuously. By doing so, we aim to create value for shareholders.


Annual Report



Third-party Review

The Daigas Group CSR Report underwent a third-party review by the Institute for Environmental Management Accounting (IEMA), including simple audits and recommendations. In the process of preparing its evaluation, the IEMA interviewed Tadashi Miyagawa, Executive Vice President / CSR Executive, and Megumu Tsuda, Head of CSR & Environment Dept., regarding CSR-related activities at the Daigas Group. Based on the interview, the IEMA prepared and presented a report that summarized its overall evaluation and advice regarding the Daigas Group's CSR efforts.

Q Can you tell us about the selection of seven SDGs to contribute to?

A The Daigas Group has selected seven SDGs that can make use of its strengths of the energy business, and announced its contribution in our CSR Report issued in 2017. We have been accelerating our engagement centered on SDGs Target 13 "Specific measures for climate change."

Q Can you tell us about your contributions to the SDGs for the year?

A In FY2019, there were several events that affected the Group's actions, including a number of natural disasters, METI's fifth Strategic Energy Plan and the 2018 United Nations Climate Change Conference (COP24).

In response to the Northern Osaka Prefecture Earthquake in June, thanks to teams coming from all over Japan on short notice to help in recovery efforts, gas supply was fully restored in just one week. We are currently working with the National Research Institute for Earth Science and Disaster Resilience (NIED) to share information on the earthquake and disaster response. Then there was a blackout caused by Typhoon 21 (Jebi) in September, at which time our cogeneration system [?!]—designed to operate without power supplied from the grid—maintained operational continuity. These examples of disaster response and early recovery are activities that fall under SDG Goal 11—making cities resilient and sustainable.

We are working hard to develop renewable energy, which is positioned as a key energy source in Japan's Strategic Energy Plan. By promoting wider use of natural gas we are contributing to SDG Goal 7 "Universal access to clean energy," as well as SDG Goal 13 "Taking urgent action on climate change," a topic discussed at COP24.

Q What is your vision for the future of the company?

A To contribute to Goal 13 of the SDGs, the Long-Term Management Vision established in FY2018 sets the target of reducing CO_2 emissions by a total of 70 million tons by FY2031, in cooperation with customers. As we further analyze the risks and opportunities associated with climate change over the long term, it will be vital to draw up multiple scenarios that can respond to changes in the business environment.

Q What efforts are you taking toward renewable energy?

A We doubled our initial target for developing renewable energy sources, now set at 1 million kW in FY2031, and including projects under construction, we are already at 600,000 kW, so we are well on our way to achieving that target. We also established the Green Power Fuel Corporation in March 2019 to carry out procurement and sales of domestically grown woody biomass for biomass power plants.

Q What are your thoughts on stakeholder engagement?

A While maintaining an awareness of the impacts our business activities can have on all of our stakeholders—our customers, employees, partners, and shareholders and investors—the Group values active dialogue to be able to develop mutual understanding and acceptance in the search for better solutions.

Q What are some specific examples of that engagement with stakeholders?

A Well, with regard to business partners and service chains, we believe that by cooperating with our CSR questionnaire to confirm product safety and labor conditions, we can improve the level of CSR activities throughout the Group's value chain [?!].

As for employees, we are actively encouraging programs where potential young employees can share ideas and create new businesses in order to further enhance the emergence (independence) of employees.

In May 2019, we also expressed our support for the TCFD [?!] Recommendations in disclosing information on climate change. Going forward, we aim to generate new value through activities that engage with a range of stakeholders.

Evaluation and Opinion of CSR Management

IEMA

As a third-party that has no business relationships with Osaka Gas, we are expressing our opinion to help enhance the reliability of the Daigas Group CSR Report 2019 by evaluating all the CSR initiatives mentioned in the report, excluding numerical information on the environment.

As an energy services provider, the Daigas Group is responsible for providing society with critical infrastructure. In FY2019, a series of earthquakes, typhoons, and other damaging events affecting the city gas service area necessitated a response to such disasters. It is highly evaluated and reassuring that the Daigas Group has established a visualization system incorporating advanced technologies such as social media and IoT while making use of its experience in order to inform its many customers of the status of recovery work without delay. It is hoped that your company will contribute to a society where we can lead better lives by protecting the infrastructure that forms a part of the foundation of our daily lives, using your own technologies in collaboration with those of other fields by making use of open innovation which welcomes a wide range of external voices.

Under the Long-Term Management Vision 2030 formulated to support the emergence of a low-carbon society, the Group has adopted the target of reducing its CO_2 emissions by 70 million tonnes by 2030. It appears that these reductions are progressing steadily. For power companies, CO_2 emissions tend to increase as the scale of their power generation business increases, but the Group is seeking to reduce CO_2 emissions throughout society by involving its customers in this effort. With regard to the reductions occurring outside the Group, careful disclosure is required, with consideration for a global approach as well.

In Japan, corporations have been achieving considerable progress with their CO_2 reduction efforts; moreover, it is expected that reduction initiatives in the consumer sector will bear fruit in the future. We therefore anticipate that the Daigas Group's initiatives will encompass residential households. As well, the company's investments in renewable energy projects such as biomass power generation are very attractive because the Daigas Group is developing as an energy services provider, not solely a gas services provider. It is important that the Daigas Group publish its future energy policy, while in line with any new national policies that are possibly implemented. In view of the impact of global trends, energy service providers are required to undertake risk analysis and information disclosure, so it is likely that this will be a point of interest in the future, including responses to scenario analysis as encouraged by TCFD recommendations.

It is people who move companies. At CSR seminars, lecturers and employees engage in a mutual exchange of opinions. Such mechanisms that encourage all employees to think more deeply about such issues are highly regarded. While it is important to become involved in large projects that create value, it is also important for employees to consider how their day-to-day work naturally relates to the social issues addressed in the SDGs. An ideal approach would be to return to the original concepts of the Daigas Group's Corporate Principles and establish a link between contributing to the SDGs and creating social value. We believe that the Daigas Group has created a system for stacking the "Social Value of Daigas" on a daily basis by addressing materiality and KPIs with awareness of these issues in mind. Going forward, we expect public utilities will take the initiative and continue to play a leading role in society.

July 22, 2019

Katsuhiko Kokubu,
Director of IEMA; Professor, Graduate School of Business Administration, Kobe University

Eriko Nashioka,
Representative Director of IEMA, CPA

WEB Information Posted on the Web
Materiality
CSR Management

Indicators for Assessing CSR Activities

Recognizing that the group's business has impacts on society and the environment, in 2009 the Daigas Group introduced CSR Indicators under each chapter of the CSR Charter to enable business to be carried with consideration given to these issues. The indicators also assist in promoting CSR activities and visualizing processes. The current CSR Indicators cover activities for the medium-term period from FY2018 to FY2021. Meanwhile, materiality indicators were identified with the assistance of outside experts for assessing our main CSR activities.

Under the CSR Promotion System that serves as the basis for our CSR activities, we are striving to accurately evaluate the steps we are taking and what we have achieved, as measured by the results of each materiality indicator, while making our PDCA (plan-do-check-act) management more effective. This effort should help us to achieve our targets for several of the sustainable development goals (SDGs). The following pages present information on measures taken with regard to the indicators in each CSR Charter (Major Activities in FY2019).

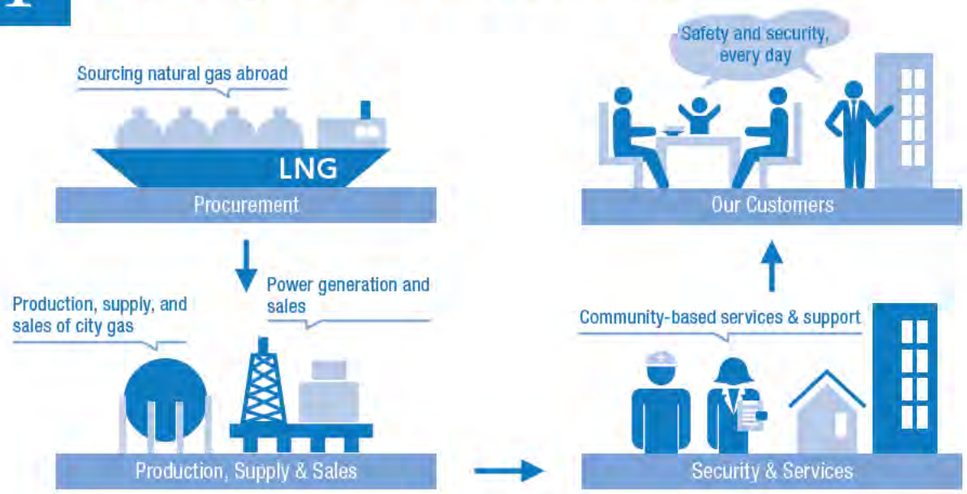
CSR Indicators and Materiality Indicators　List of Targets and Achievements

CSR Charter		CSR Indicators and Materiality Indicators		Target (FY2018–FY2021)	Achievement of FY2019	See for more details	Relevant SDGs
I	Creating Value for Customers	Customer Satisfaction Survey: Seven Customer Service Duties	Overall satisfaction rate	91% or more	92%	P27	
			Satisfaction rate for each of the seven customer service duties	86% or more	89% or more for all seven duties		
		Materiality Customer Health and Safety GRI Standards: 416-1	Percentage of city gas for which health and safety impacts are assessed for improvement against total city gas provided by Osaka Gas	100%	100%	P28	
II	Harmonizing with the Environment and Contributing to Realizing a Sustainable Society	Environmental Management Indicator	Environmental Management Efficiency	14.2 yen / 1,000 m³ or less*1	12.5 yen / 1,000 m³	P31	
		Materiality Energy / Emissions GRI Standards: 305-5	Contribution to reduction in CO_2 emissions	Cumulative reduction of 7 million tons*1	Total reduction of 1.67 million tons	P32	
III	Being a Good Corporate Citizen Contributing to Society	Communication events	Number of such events held (environmental education and food education, and visit to the Gas Science Museum)	1,950 events or more	3,414 events · Target revised to 2,700 or more	P37	
		Social contribution activities	Number of such events held	600 events or more	1,085 events · Target revised to 800 or more		
		Materiality Local Communities GRI Standards: 413-1	Percentage of operations with implemented local community engagement, impact assessments and development programs	100%	100%	P38	
IV	Complying with Laws and Regulations and Respect for Human Rights	Scores on Compliance Awareness	Individual: Recognition level of "Code of Conduct" Organization: Degree of compliance penetration in the organization	Higher than the previous year Higher than the previous year	• Down 1.2 percentage points year-on-year (84.4%) • Down 0.1 percentage points year-on-year (91.8%)	P40	
		Percentage of employees receiving the "Compliance Training"	Attendance rate	100%	100% (No. of employees covered by the survey: 22,231)		
		Materiality Customer Privacy GRI Standards: 418-1	Total number of substantiated complaints regarding breaches of customer privacy	Assessment of management situation	Took measures to prevent recurrence of mishandling of information	P41	
V	Management Policy for Human Growth	Employee Attitude Survey	Job satisfaction and attachment to the company	Maintain sufficient levels	Maintained sufficient levels (3.86 against scale of 5 for job satisfaction and 4.25 of scale of 5 for attachment to the company)	P43	
		Materiality Training and Education GRI Standards: 404-1	Average hours of training per year per employee	Development of human resources, improvement of work environment	• Average hours of training per employee: 25.1 • e-Learning (safety, information security, environment) program No. of participants: 5,029 / course No. of hours: 3.67 hours / person Note: Includes some temporary employees and part-time workers	P44	
		Materiality Diversity and Equal Opportunity GRI Standards: 405-1	Percentage breakdown of employees and executives by gender and age	Promotion of diversity	• Percentage of women among personnel hired for career-track positions in April 2019: 28.3% • Percentage of women in management positions*2: 3.5% (as of April 1, 2019)	P45	
Common Themes		Materiality Economic Performance GRI Standards: 201-2	Financial impacts, risks and opportunities due to climate change	Recognition of risks and opportunities	Recognition of risks and opportunities	P47	
		Materiality Supplier Assessment (Impact on the environment and society, human rights and labor practices) GRI Standards: 308-1 414-1	Percentage of new suppliers that have been selected using criteria regarding environment, social impact, human rights and labor practice	100%	100%	P48	

*1 Target set for FY2021　*2 Managerial or higher position

CSR Charter I

Creating Value for Customers



Fundamental concept

The Daigas Group will endeavor to ensure stable procurement, stable supply, and security to enable customers to utilize energy safely. In so doing, the Group will provide products and services of value to its customers.

The Daigas Group is committed to making a positive contribution to realizing a higher level of comfort and development in the business activities of its customers through stable procurement and safe supply of natural gas and other energy sources, and by ensuring safe use of gas and equipment with an improved level of services for its customers. We believe that an important foundation in realizing this will be ensuring security so that customers can use energy without worry. We will endeavor to provide products and services that give utmost reassurance to safety and will take on the challenge of creating value in line with customers' wishes in order to be a corporate group that continually evolves and develops alongside its customers.

CSR Indicator — Customer Satisfaction Survey: Seven Customer Service Duties

The "Customer Satisfaction Survey" covers seven duties that deal directly with customers: opening of gas lines, repair of gas appliances, regular security patrol (gas facilities inspection), response to telephone inquiries, sales of appliances, security emergency response, and replacement of gas meters upon expiration of the validity period. We send out questionnaires after completing each operation and analyze the customer responses received. Customer satisfaction is graded on a scale of one to six, and the "overall satisfaction rate" is the ratio of responses in the top two grades to the total number of responses.

Targets and Results

The overall satisfaction rate was 92% in FY2019, the same rate as that of the preceding year.
We will continue to offer customer-oriented services in response to the opinions revealed in the survey.

	Targets	Results
Overall satisfaction rate	91% or more	92%
Satisfaction rate for each of seven customer service duties	86% or more	89% or more for all duties

Actions Taken

Further efforts to enhance levels of customer service

Efforts to raise our customer services to the highest level in a six-grade customer satisfaction (CS) poll began in FY2016 as part of our efforts to advance our overall service level. Specifically, we observed the behavior of Osaka Gas staff who received high CS grades in four of the seven customer-service fields—opening of gas lines, repair of gas appliances, sales of appliances, and response to telephone inquiries. We call this analysis method as "behavioral observation*." We analyzed and developed the observation results into a customer service manual for each field for use by all staff. The detailed survey results are fed back to staff for further improvement of their customer service levels.

* A methodology for seeking solutions based on the academic analysis of facts and findings obtained through the broad-based observation of people's behavior that becomes prominent in various situations.

WEB Information Posted on the Web
CSR Indicator (Charter I)
Materiality: Customer Health and Safety
Safety and Security 3: Procurement Stage

Actions on Materiality

Materiality — Customer Health and Safety

Why materiality is important

The Daigas Group puts the highest priority on securing the safety of its gas supply and facilities as an energy business operator supplying city gas to its 5.579 million customers. Therefore, we consider it important that we make efforts to enhance the safety level and formulate a structure to respond to possible accidents and disasters.

Management systems and performance

Indicator: GRI Standards 416-1 Percentage of city gas for which health and safety impacts are assessed for improvement against the total amount of city gas provided by Osaka Gas

Commitment

Osaka Gas is committed to ensuring the safety of city gas, our primary product, its secure supply, and the safety of our gas facilities—all by adhering to our "Gas Supply Clause" and "Security Rules" according to the terms of the Gas Business Law.

Responsibilities

The Daigas Group has established a system to ensure the safety of the city gas supply and gas appliances encompassing all facets of the Group's city gas value chain [1] —processing, supply, sales, and consumption. The Head of Safety and the individuals heading the safety operations of each business unit supervise safety and security matters concerning their respective business units and other business units.

In addition, the Executive Safety Council, comprising the Head of Safety; the individuals heading the safety operations of each business unit; and the chiefs of the relevant departments, convene safety and security meetings five times annually to plan safety initiatives and assess the achievements made in the relevant term. In line with the annual plan, each business unit systematically promotes initiatives to ensure security and improve safety.

Performance

In FY2019, all procedures were conducted based on guidelines in accordance with laws and regulations as well as in-house rules for processes such as quality control of gas in LNG terminals, safety inspection of gas pipelines and supply facilities, and safety inspection of gas appliances with customer consent.

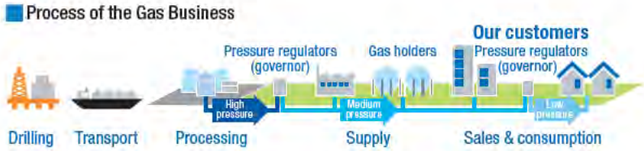
FY2019 target	FY2019 result
100%	100%

Specific actions taken regarding CSR indicators and materiality

Safety and Security Initiatives

Measures to ensure secure and stable supply of city gas

Process of the Gas Business



To ensure our customers receive our energy services without worry, we are focused on maintaining the high quality of the city gas we supply while ensuring the stability of our gas supply and the safety of gas-processing and supply facilities.

Ensuring the quality and safety of city gas

Every day, the city gas plant monitors the quality of the city gas to ensure conformity with the standards set by Osaka Gas according to legal and regulatory requirements. The capacity of the gas holders and gas supply pressure are monitored and well managed in real time.

WEB Information Posted on the Web
Safety and Security 3: Distribution Stage
Safety and Security 1: Procurement Stage
Incorporating Customer Opinions

Inspection of gas pipelines

Gas supply facilities including gas pipes and pressure regulators are inspected to ensure their safety. The frequency and content of such inspections are set under in-house Security Rules.



Regular inspection of bridge piping

Securing safety at customers sites

In preparation for an accident or disaster, we have implemented systems to response to reports and prepare resources for dispatching in case of accidents and disasters 24 hours a day, 365 days a year. Moreover, we comply with legal and regulatory requirements by inspecting gas appliances for gas leaks and gas water heaters and other equipment for proper functioning of air supply and exhaust once every four years, or annually for some customers. With regard to aging gas piping, we have undertaken systematic renewal as planned to introduce piping that are excellent in resistance to earthquakes and corrosion.

Disaster preparedness

Following our experience with the Great Hanshin-Awaji Earthquake in 1995, we have implemented a variety of earthquake countermeasures. For example, the numerous safety measures we have adopted for our manufacturing facilities include the laying of polyethylene (PE) pipes offering excellent durability and seismic resistance and promoting the use of intelligent meters that shut off the gas supply should an earthquake be detected.

Moreover, as an emergency response measure, we are constructing a system capable of shutting off the gas supply in order to prevent secondary disasters. For example, we have installed an automatic seismic/remote shutoff device that automatically shuts off the low-pressure gas supply in the supply area when a large earthquake is detected.

In addition, we are promoting measures against tsunami in the aftermath of the Great East Japan Earthquake. These include measures in LNG terminals such as strengthening of private power generation facilities and water-tightening of buildings* and raising the facilities, as well as measures for supply facilities such as the formation of coastal disaster prevention shutoff system for medium-pressure and low-pressure pipes.

* Improvement of sealing to prevent tsunami flooding

Major Earthquake Countermeasures

Major earthquake countermeasures		Results (as of March 31, 2019)
(1) Enhancement of information-gathering	Seismograph installation	Installed in all areas (263 locations)
	Introduction of an earthquake damage prediction system	Introduced to the Central Control Room (Head Office / Sub-center) and all five districts
(2) Construction of a supply shutoff system	Subdivision of supply blocks	Subdivided into middle blocks (85) and little blocks (164)
	Introduction of supply shutoff equipment	Remote shutoff devices: 3,577 locations / Automatic seismic shutdown systems: 3,011 locations
(3) Other measures	Promoting the installation of polyethylene (PE) pipes	100% of all new low-pressure pipes were the PE type, with PE piping being extended to 16,400 km.
	Promoting the use of intelligent meters	Completed installation for home use, with an overall penetration rate of 99.9% including businesses.
	Online backup of important data	Installation of a backup center

Developing a Business Continuity Plan to take effect during a large-scale disaster or accident

In July 2013, the Daigas Group formulated a Business Continuity Plan (BCP) to be implemented in the event of a large-scale disaster or accident. This BCP, which we have disseminated throughout our Group, outlines responses to identified risks.

It assumes a situation in which the company and society at large are affected by an earthquake or tsunami resulting in a paralysis of various functions, or a functional failure due to problems with raw materials suppliers and our equipment. According to the terms of the "Act on Special Measures for Pandemic Influenza and New Infectious Diseases" (enacted in April 2013), the company shall respond promptly and accurately to the outbreak of a new strain of influenza or the like to prevent infection of employees and to protect public health. We have established company regulations "Pandemic Influenza Preparedness Action Plan" in order to ensure the stable supply of gas in such a situation.

In principle, we review our BCP annually and promote employee awareness by implementing BCP training, earthquake drills, and education and training incorporating e-learning. In FY2019, in response to our experience of the 2018 Northern Osaka Prefecture Earthquake, we revised our BCP operation rules to accommodate a disaster with a more limited area; this was prepared in addition to our previous plan, which assumed a wide-area disaster.

In the event of an earthquake, we must respond by upholding business continuity in parallel with implementation of disaster-response operations, so clearly advanced disaster response capabilities are required as well. By simultaneously implementing earthquake drills and BCP training in FY2019, we were able to identify the challenges of maintaining business continuity concurrently with disaster response operations, thus strengthening our overall disaster-response capabilities.



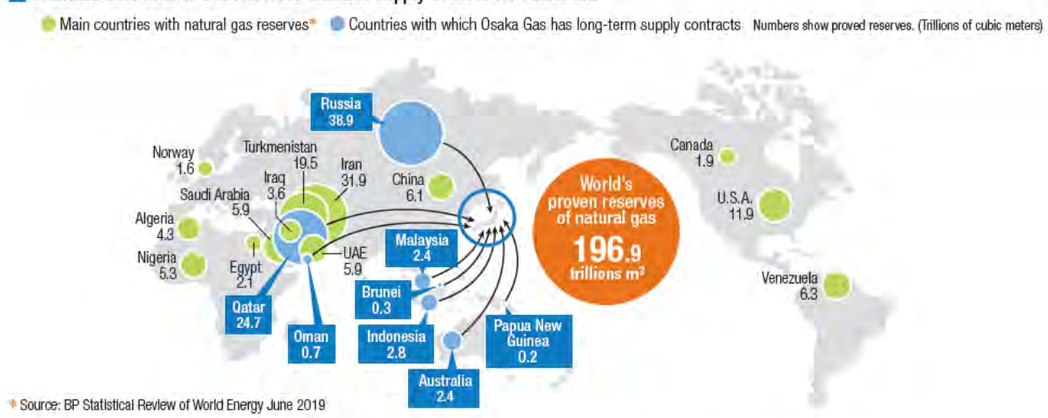
Company-wide Comprehensive Disaster-Response Drill

Ensuring stable procurement by diversifying sources of LNG imports for Osaka Gas

In recent years, calls for energy security have raised expectations as well as demand for natural gas. In 1972, Osaka Gas began importing LNG and, since then, has contracted an increasing number of diverse suppliers. Currently, we source our LNG from eight countries. We also have plans to launch an LNG business in Texas in the U.S.A. and will continue working to expand our stable supply of LNG.

In the U.S.A., the LNG price is determined in conjunction with the Henry Hub price, which is an indicator of the futures price of natural gas in the United States. By adding this transaction to transactions with other countries where the LNG price is determined in conjunction with the crude oil price, the impact of fluctuations in crude oil prices can be mitigated.

Countries with Natural Gas Reserves and LNG Supply Sources for Osaka Gas



* Source: BP Statistical Review of World Energy June 2019

Ensuring a stable energy supply with diversified power sources

The Daigas Group participates in the electricity generation business using the various power sources it owns, including thermal power generation, gas cogeneration systems, and renewable energy sources. The Group has a combined power-generation capacity of about 2.01 million kW in Japan, including a main power source at the Senboku Natural Gas Power Plant, a highly energy-efficient thermal power plant. The Group will continue to develop new power sources to ensure a stable electricity supply.

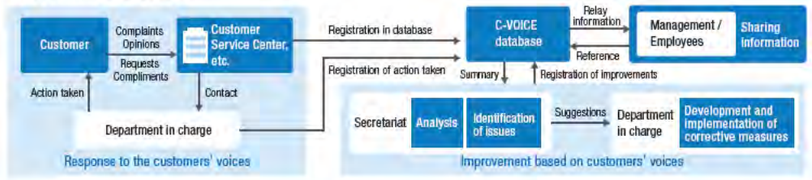
Incorporating Customer Opinions

Sharing customer suggestions throughout the Company

Osaka Gas has made use of many of the "customer feedback" received through various opportunities for the improvement of service quality and business operations. We share customer comments through our C-VOICE database system. In addition to serving current needs, we proactively respond to the potential needs of our customers and challenge ourselves to anticipate the needs of the future.

Based on our customers' suggestions and opinions, we are working for product development and service quality improvement. In FY2019, we enhanced our services by reflecting customer comments, such as the location monitoring service "GPS BoT," which informs families about the whereabouts of their children and movement history through mobile phones using GPS and AI.

Overview of C-VOICE

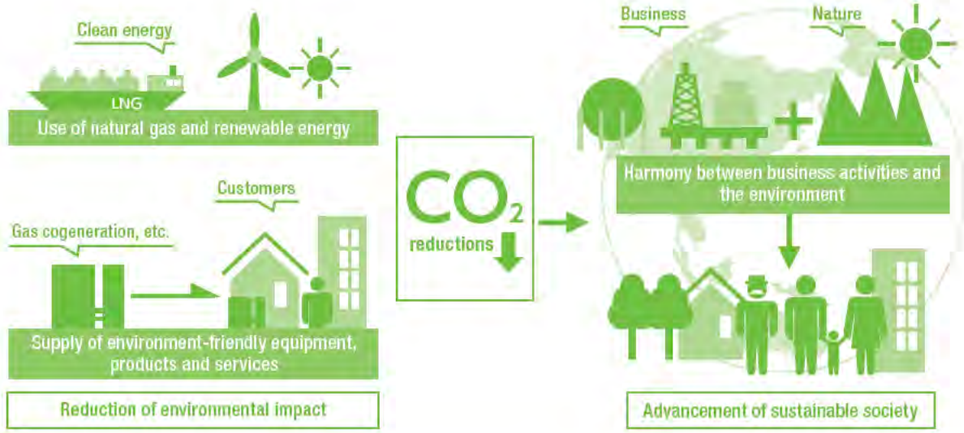




Posters notifying customers of examples of improvements in products and services in response to their suggestions

CSR Charter Ⅱ

Harmonizing with the Environment and Contributing to Realizing a Sustainable Society



Fundamental concept

Through the provision of products and services, including natural gas, the Daigas Group is committed to reducing the environmental impact of business activities. By harmonizing its business activities with the environment, the Group will strive to create a sustainable society.

Environmental conservation on a local and a global scale is an extremely important mission for the Daigas Group, whose operations center on the energy business. Greenhouse gases (GHG 用語) in particular are a leading cause of climate change, which is a global issue with huge impact on society, ecosystems, and the world as a whole. Because GHG emissions are a large part of the environmental impact caused by the business activities of the Daigas Group, we actively engage in taking appropriate measures. In accordance with our "Daigas Group Environmental Activities Policy," the Daigas Group makes efforts to lessen the environmental impact of its business activities and customers through the expansion of utilization of natural gas and renewable energies, the provision of environmentally friendly products and services. And through our business activities, we contribute to environmental improvement and the development of sustainable societies locally, nationally, and internationally by pursuing harmony with the environment and making efficient use of energy and resources.

CSR Indicator　Environmental Management Indicator: Environmental Management Efficiency

Osaka Gas uses "Environmental Management Efficiency" as an indicator to assess progress in environmental management in a continuous, integrated manner. This indicator is the total monetary value of seven environmental impacts* per gas produced. The smaller the figure for environmental management efficiency, the greater the reduction in environmental impact per amount of gas produced.

* GHG emissions, NOx emissions, emissions of COD (chemical oxygen demand), final disposal of general / industrial waste, final disposal of excavated soil 用語, emissions of chemical substances, use of drinking water and industrial water

Targets and Results

The Environmental Management Efficiency for FY2019 was given as 12.5 yen / 1,000 m³, showing steady progress being made toward attaining the FY2021 goal.

	Targets*	Results
Environmental Management Efficiency	**14.2** yen / 1,000 m³ or less	**12.5** yen / 1,000 m³

* Target set for FY2021

Actions Taken

Approach to reducing environmental impact to improve environmental management efficiency

All employees have been working to reduce GHG emissions in business activities through the operation of an environmental management system (EMS). As part of such efforts, we have been switching to LED lighting in all of our office buildings to save energy as part of our "green gas building" activities.

At LNG terminals, an expanded cryogenic power generation facility went into operation in March 2017 at the Himeji LNG Terminal. The stable operation of such systems for recovering and using the kinetic energy from ultra-low-temperature LNG 用語 to generate power has contributed to a decrease in electricity procurement.

In addition, we have reduced environmental impact by recycling drilling soil discharged during gas pipe 用語 construction. Consequently, the environmental management efficiency for FY2019 came to 12.5 yen / 1,000 m³.

WEB Information Posted on the Web
CSR Indicator (Charter Ⅱ)
Materiality: Energy / Emissions

Actions on Materiality

Materiality　Energy / Emissions

Why materiality is important

As an energy business operator, it is vital for the Daigas Group to promote more efficient use of energy resources and reduction of curtail greenhouse gas emissions through the entire range of our business activities and value chain 用語, from the procurement of natural gas and other raw materials and fuels to the production and supply of city gas and generation of power, extending to the supply to customers, where consumption takes place.

Management systems and performance

Indicator: GRI Standards 305-5 Amount of reduction in CO_2 emissions

Commitment

We work hard to reduce the greenhouse gas emissions of the group as a whole, based on the Daigas Group Environmental Activities Policy. In order to manage the efforts, we have set long-term CO_2 emissions reduction targets for FY2031, as well as medium-term environmental action targets, of which progress is monitored to assure its achievement. Also, we calculate GHG emissions annually in group activities across the value chain, and use that information to promote efforts to reduce those emissions.

Responsibilities

The Daigas Group uses indicators and targets to help reduce GHG emissions in each business domain. The performances as well as actions for such indicators and targets are supervised by the Environment Subcommittee, CSR Committee, and CSR Promotion Council (Executive Board). The PDCA (plan-do-check-act) cycle is used to manage such actions.

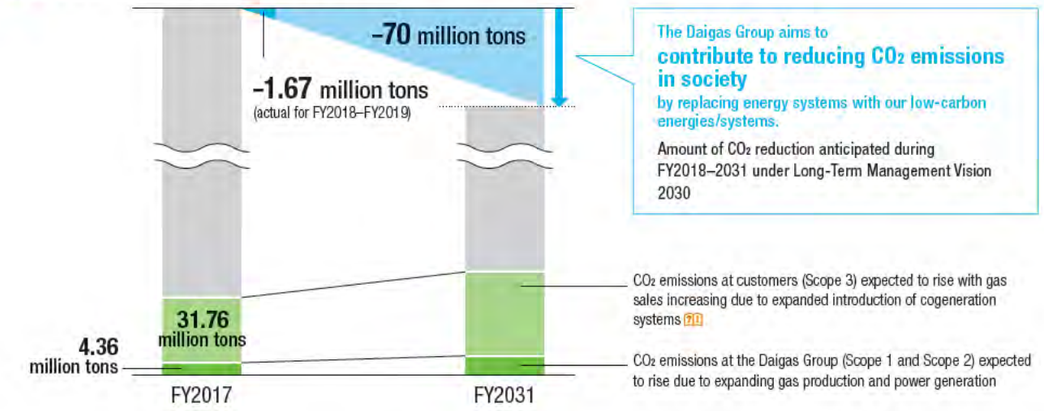
Performance

Several new initiatives have been taken from FY2018 to FY2019. The initiatives in Japan include: the establishment of cryogenic power generation at our city gas production facilities, the introduction of renewable energy sources and high-efficiency thermal power generation, the introduction of fuel cells and gas-powered air conditioning and high-efficiency hot-water heaters at customer sites, and conversion to the use of natural gas as a fuel. The introduction of high-efficiency thermal power generation and fuel conversion to natural gas were also promoted overseas. These efforts have resulted in a total reduction in CO_2 emissions of approximately 1.67 million tons.

FY2019 target*1: **7** million ton reduction → FY2019 result*2: **1.67** million ton total reduction

*1 Target set for FY2021
*2 Third-party review conducted by Bureau Veritas Japan Co., Ltd.

Contribute to Reducing CO_2 Emissions in Society



- CO_2 emissions at the Daigas Group (Scope 1 and Scope 2)
- CO_2 emissions at value chains operated by the Daigas Group (Scope 3: customers and material procurement)
- CO_2 emissions at other companies and their value chains (power plants operated by other companies and energy users using oil fuels)

WEB Information Posted on the Web
- Climate Change Initiatives—Working to Reduce CO_2 Emissions at Customer Sites
- Climate Change Initiatives—Working to Reduce CO_2 Emissions in Business Activities
- Developing Environmental Technologies

Specific actions taken regarding CSR indicators and materiality

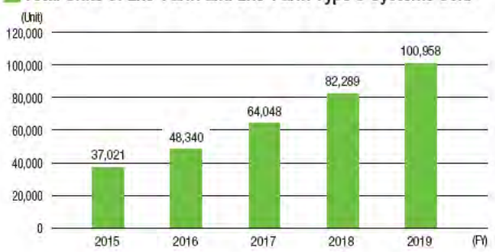
Efforts to Reduce CO_2 Emissions

Total sales of Ene-Farm residential fuel cell system reach 100,000 units

In the effort to bring about a low-carbon society, Osaka Gas has been working to popularize home fuel cell systems for generating electricity. It now sells two such fuel cell systems—Ene-Farm and Ene-Farm Type S—the latter equipped with IoT functions. These residential cogeneration systems help to save energy and reduce CO_2 emissions by generating power through a chemical reaction between hydrogen extracted from city gas and the oxygen in the air. These are the high-efficiency energy systems using the heat from power generation to heat water for home use.

Sales of the two types of Ene-Farm systems reached a total of 100,000 units (as of March 31, 2019), which equates to a reduction in CO_2 emissions of approximately 170,000 tons annually.

Total Units of Ene-Farm and Ene-Farm Type S Systems Sold



Promoting the use of renewable energy sources

The generation capacity of domestic renewable energy sources owned by the Group, such as wind power, solar power, and biomass, reached to approximately 210,000 kW, which contribute to CO_2 emissions reduction.

In FY2019 the group decided to construct two of Japan's largest biomass power plants—in Sodegaura, Chiba Prefecture, and Himeji, Hyogo Prefecture—with a power-generating capacity of about 75,000 kW each, an effort that will further boost the use of renewable energy.

Establishment of Green Power Fuel Corporation

Osaka Gas established the joint venture Green Power Fuel Corporation in March 2019 to procure and sell domestically grown woody biomass for biomass power plants in association with Seishin Shinrin Shigen Co., Ltd. and Nippon Paper Lumber Co., Ltd.

Seishin Shinrin Shigen has abundant knowledge in the wood industry and Nippon Paper Lumber has a long track record of handling domestically grown woody biomass. Utilizing these backgrounds, the new company GPF will procure and transport unused lumber from domestic woodlands as fuel for biomass power generation and stably supply that lumber to multiple biomass power plants in Japan owned or developed by the Daigas Group.

Demonstration Project Started to Promote ACF Air Purification Units in Indonesia

Osaka Gas Engineering Co., Ltd., a subsidiary of the Daigas Group, began a demonstration project in Indonesia in September 2018 to reduce a roadside air pollutant, nitrogen oxide (NOx), by using an air purification system with activated carbon fiber (ACF). The project has been adopted by the Japan International Cooperation Agency (JICA) as one of its "collaboration programs with the private sector for disseminating Japanese technologies for the social and economic development of developing countries." Jakarta, the capital city of Indonesia, has recently been facing severe air pollution on roadways due to intensified traffic congestion that has accompanied rapid economic growth and associated changes in the living environment.

The system features air purification using natural breezes, which does not require electric power, and NOx removal by rinsing with water or by rain, and thus easy maintenance and long-term benefits—all of which are considered to be effective for mitigating air pollution in developing countries. With support from JICA for one year, OGE will verify the system's effectiveness in Indonesia's tropical environment.



Mid- and downstream business development in Southeast Asia

The group began surveying markets in the region around 2010 to determine the potential for mid- and downstream business development. The focus of the survey was Southeast Asia, because of the promise it holds as a market for economic growth with a high percentage of manufacturing industries, besides having many Japanese companies doing business there.

In the industrial market in Thailand, Osaka Gas is utilizing its expertise in energy solutions based on natural gas-related engineering to develop business that focuses on energy services. It engages in the installation of equipment such as boilers and industrial furnaces, and is broadly involved in utilities, which includes CNG supply, along with water and biotechnology.

In October 2013, Osaka Gas founded Osaka Gas (Thailand) Co., Ltd. in Thailand. In November 2015, Osaka Gas and a subsidiary of PTT Public Co., Ltd. in Thailand jointly established OGP Energy Solutions Co., Ltd. to supply energy services to industrial clients in Thailand. The joint company has already received 29 orders from local companies for energy services and facility installation.

In July 2014, Osaka Gas and Nippon Steel & Sumikin Engineering Co., Ltd. (today Nippon Steel Engineering Co., Ltd.) agreed to form a business partnership for an on-site business using cogeneration systems built in Thailand. Under the agreement, the two companies established NS-OG Energy Solutions (Thailand) Ltd. In 2018, the joint venture completed the construction of an on-site energy supply project for Thai Honda Manufacturing Co., Ltd., a manufacturer of Honda's motorcycles in Thailand, and energy supply operations commenced. This marks the company's fourth such energy supply project in Thailand (as of April 2019).



OGT and OGPS personnel

TOPIC

NSENGI/Osaka Gas Affiliate Wins Cogeneration Award 2018 Chairman's Award (Industrial Use Category)

NS-OG Energy Solutions (Thailand) Ltd. ("NSET"), worked with Nippon Steel & Sumikin Engineering Co., Ltd. ("NSENGI"/today Nippon Steel Engineering Co., Ltd.) and the TORAY Group's local subsidiary in Thailand, Luckytex (Thailand) Public Company Limited, known as Toray Textiles (Thailand) locally, on an on-site energy supply project for which the award was granted—"Introduction of a Cogeneration Facility by Means of On-site Energy Supply in Thailand and Highly Efficient, Stable Operations of the Facility—a Case Study of Its Introduction in Mill No. 2 of Luckytex (Thailand) Public Company Limited."
The Advanced Cogeneration and Energy Utilization Center JAPAN presented the Cogeneration Award 2018 Chairman's Award in the Industrial Use category for the following reasons.

- The cogeneration facility has been introduced in Thailand in the form of an on-site energy supply system, which is a one-stop service that covers facility planning, possession, construction, operations and maintenance, as well as fuel gas procurement.
- In FY2018, primary energy was reduced by 25%.
- The rate of operation exceeded 99%, with operations supported through a remote monitoring system by expert staff from NSET's head office in Bangkok and NSENGI in Japan. Such stable operation is remarkable in Southeast Asia, where it has been difficult to maintain stable operation of cogeneration facilities.
- A BCP (business continuity plan) has been put in place to address frequent power failures and instantaneous voltage drops. In the event of an abnormality in grid power, self-sustaining operation of the cogeneration facility takes care of the full load of the plant, avoiding any impact on production in the plant. This shift occurs about 30 times a year.

The award-winning cogeneration facility boasts an overall efficiency of over 90%. This high-efficiency cogeneration system mostly consists of a 7 MW-class gas turbine and a high-efficiency waste heat recovery boiler unique to NSENGI. NSET will continue to support its customers' efforts toward the realization of a low-carbon society and to contribute to the sustainable development of Thailand by making use of this highly-regarded operations management technology and offering highly environmentally friendly and economical energy solutions.

WEB Information Posted on the Web ▮ Environmental Management: Indicators, Targets and Results

Environmental Impact throughout the Daigas Group Value Chain in FY2019

Third-party verification completed. Osaka Gas underwent a third party verification by Bureau Veritas Japan Co., Ltd.

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 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 CO_2, totaled about 34.81 million tons in FY2019. The sum breaks down into about 5.35 million tons, or about 15%, for GHG emitted through business activities by the Daigas Group (Scope 1 and Scope 2), and about 29.46 million tons, or about 85%, emitted by organizations involved in our value chain (Scope 3).

GHG emissions from city gas combustion on the customer side amounted to 18.17 million tons in the reporting year in terms of CO_2, accounting for about 52% of the total. To reduce CO_2 emissions in society as a whole, it is important for Osaka Gas to promote energy conservation using natural gas, an energy source with low CO_2 emissions, and further popularize high-efficiency equipment and systems such as its Ene-Farm and cogeneration systems.

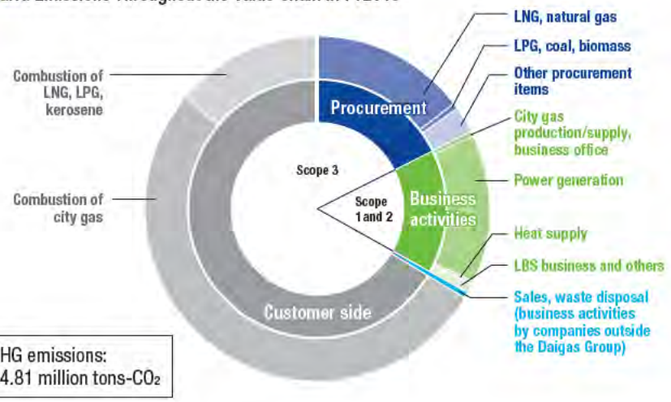
GHG emissions through electricity generation by the Daigas Group, as measured in terms of CO_2, came to 4.88 million tons, representing about 14% of the total emissions from the Group's own business activities. With the power generation business expanding, the ratio of CO_2 emissions from that business has been increasing every year. 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 6.15 million tons, as measured in terms of CO_2 in the year, accounting for about 18% of the total emissions. The procurement of energy sources, especially LNG, accounted for nearly 90% of that amount. Under these circumstances, we will continue our efforts to improve fuel efficiency regarding the operation of LNG tankers in collaboration with material suppliers.

Activities that have potential environmental impacts other than GHG emissions include the disposal of waste (general waste and industrial waste), and the disposal of excavated soil and polyethylene pipes associated with gas pipe construction. However, the recycling rates are high for such waste, a situation we will try to maintain in the future.

About 97% of water used for our industrial activities is taken from the sea. Such water is mostly used to vaporize LNG at LNG terminals. Seawater is also used as coolant inside the steam turbine condenser at some power plants. Once used, the water is discharged into the sea under strict control.

GHG Emissions Throughout the Value Chain in FY2019



GHG emissions: 34.81 million tons-CO_2

Companies subject to the calculation of GHG emissions

Osaka Gas and 55 companies among 150 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.

One overseas company was added to this group of companies subject to the calculation of energy use and GHG emissions.

Main Materials and Fuels

Amount of LNG handled	9,419 thousand tons The figure above includes the amounts of the items listed below: ● Materials of city gas ● Fuels at LNG terminals ● Fuels used by Group companies for power generation ● LNG shipments to outside companies
LPG used for calorific adjustment of city gas	176 thousand tons

Amount of Energy Used

City gas	1,642 million m³ (including gas whose calorific value has yet to be adjusted)
Purchased electricity	453 million kWh
Other energy sources	14,424 TJ

Amount of Vehicle Fuel Used

Gasoline	1,843 kl
City gas	82,000 m³
Diesel	779 kl
LPG	13,000 m³

Amount of Water Intake

General water, industrial water	14.311 million m³
Underground water	3.788 million m³
Seawater	577.357 million m³

Sales Volume of Main Products

Gas	7,935 million m³
Electricity	11,653 million kWh

Procurement of materials and fuels (activities by outside companies)

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

Business activities by Osaka Gas

- City gas production/supply
- Business office
- Power generation
- Heat supply
- LBS business (Life & Business Solution): Urban development, Materials, Information business
- Others: - Engineering - Energy services - Renovation, maintenance - R & D etc.

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

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

Customers

- City gas
- Electricity
- LNG, LPG, kerosene
- Gas appliances
- Chemical products
- Services

GHG (Scope 3*1)

	CO_2 emission (1,000 t-CO_2)
LNG, natural gas	5,096
LPG, coal, biomass	185
Purchased goods	873
Total	**6,155**

Sources of emission factors used for calculating CO_2 emissions

- LNG production and shipment: Calculation of life cycle greenhouse gas emissions of LNG and city gas 13A (Research papers and a collection of academic speeches released at the 35th meeting of the Japan Society of Energy and Resources, held in 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 (Database Ver.2.6) published in March 2019 by the Ministry of Environment

GHG (Scope 1 and 2)

	CO_2 emission (1,000 t-CO_2)
City gas production/supply	89
Business office	38
Power generation	4,878
Heat supply	106
LBS and others	238
Total	**5,350**

Waste

	Generated	Recycled
General waste	1,017 tons	95%
Industrial waste	120,043 tons	97%
Excavated soil	697,000 tons	100%
PE pipe	120 tons	100%
Used gas appliances recovered	1,738 tons	87%

* At time of city gas production

Chemical Substances

		Amount of discharge
NOx		859 tons
SOx		188 tons
Toluene		30.15 tons
Xylene		8.01 tons
COD*		2.0 tons
Discharge of water	Sewer	1.641 million m³
	River	3.786 million m³
	Sea	580.331 million m³

GHG (Scope 3*2)

CO_2 emission (1,000 t-CO_2)
193

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)

	CO_2 emission (1,000 t-CO_2)
Combustion of city gas	18,170
Combustion of LNG, LPG and kerosene	4,941
Total	**23,111**

CO_2 emission factors used

- Electricity: 0.65 kg-CO_2/kWh (2016 anti-global warming plan; FY2014 average emission factor for fossil-based electricity sources)
- City gas: 2.29 kg-CO_2/m³ (based on Osaka Gas data)
- Others: Factors listed under the Law Concerning the Promotion of Measures to Cope with Global Warming

Breakdown of Scope 3 categories

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

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

*3 Category 11 (use of sold products)

CSR Charter Ⅲ

Being a Good Corporate Citizen Contributing to Society



Fundamental concept

Through communication with society, we aim to advance the sustainability of local communities and are working to create social value.

The Daigas Group conducts business rooted in communities, and its business cannot succeed without good relations with these communities. Actively disclosing information to promote better understanding of our business is a matter of course. Based on the Small Light Campaign, an initiative led by employees, we are working on creating value with society (joint efforts with local communities) mainly under five themes—working with regional communities; history, culture and towns; sports and health; safety and security; and diet. We are undertaking these activities by making active use of the Daigas Group's business resources. By doing so, we aim to promote the development of sustainable local communities.

CSR Indicator Activities to Deepen Communication with Society and Social Contribution Activities

The CSR indicator "events held to enhance communication" represents educational events sponsored by the Daigas Group to enhance people's understanding of energy and the environment, food and fire use, plus visits by the general public to the Gas Science Museum. The CSR indicator "social contribution activities" indicates events that Daigas Group has hosted for local communities, including baseball workshops by the Group's athletic club members and educational seminars for young people.

Targets and Results

In FY2019, the Daigas Group held 1,497 educational events for energy, environment, food and fire. Over the year, 1,138 communication-enhancement events were held at the Gas Science Museum. A total of 584 events aimed at promoting the Group's social contribution were held, including activities under the "Small Light Campaign" and activities by athletic clubs. In addition, the number of social contribution activities held by the Research Institute for Culture, Energy and Life (CEL) of Osaka Gas and the Osaka Gas Group Welfare Foundation totaled 501 over the year.

	Targets	Results
Events held to enhance communication	Over 2,700 events (environmental education and food education, and visits to the Gas Science Museum)	3,414 events
Social contribution activities	Over 800 events	1,085 events

Actions Taken

Continued communication activities and social contribution activities

In FY2019, the Group supported welfare facilities through the "Small Light Campaign" events. The Group teamed up with local municipalities and experts in the educational and medical fields to solve regional problems, using educational programs developed by Osaka Gas to promote food education, disaster-response education and environmental preservation. Based on know-how gained from the 2018 Northern Osaka Prefecture Earthquake and implementation of comprehensive disaster response drills, we identified issues with local government services and worked to establish disaster response and disaster recovery measures in cooperation with local communities, including getting consent for posting information on a Recovery Visualization System we developed to enable confirmation of the status of gas restoration on the local government website.

Furthermore, the Group actively works in the community, including having the athletic clubs of Osaka Gas host activities that support the healthy growth of young people.

WEB Information Posted on the Web
- CSR Indicator (Charter Ⅲ)
- Materiality: Local Communities
- Corporate Volunteering Activities under the "Small Light Campaign"

Actions on Materiality

Materiality Local Communities

Why materiality is important

The Daigas Group conducts businesses rooted in and supported by the local communities. Therefore, we believe various kinds of contribution to the local communities will lead to a favorable cycle that brings the development in both the Group and the society.

Management systems and performance

Indicator: GRI Standards 413-1 Percentage of operations with implemented local community engagement, impact assessments and development programs

Commitment

Based on the Daigas Group Code of Conduct, we care about the issues faced by society and strive to contribute to the local community recognizing what we are supposed to act as a member of the society.

Responsibilities

The CSR Committee has set up a Social Contributions Subcommittee to deliberate and report on multidisciplinary social contribution activities within the Group. The meetings of the Subcommittee were convened three times in FY2019.

In the Regional Co-Creation Division, we have set up companywide activity planning, with each individual business operation taking advantage of the local network it built in the communities to move forward with activities in its area.

Performance

In FY2019, all major business offices undertook various activities tailored to their characteristics.

We promoted communication enhancement activities to deepen the public's understanding of business projects run by the Daigas Group. In addition, we filed proposals aimed at building resilient [21] cities and communities while developing programs for making regional communities attractive by adding new value.

FY2019 target	FY2019 result
100%	100%

Specific actions taken regarding CSR indicators and materiality

Social Contribution Activities

Corporate volunteering activities under the "Small Light Campaign"

The Small Light Campaign was launched in 1981, the UN International Year of Disabled Persons, as a company volunteer effort by the Daigas Group. Our Group's business activities are closely tied to the daily lives of everyone in the community. Acknowledging that this fact alone demands greater self-awareness and action from them as members of their local communities, employees are involved in the Small Light Campaign as good corporate citizens.



NOBY T&F CLUB activities

In addition to the Small Light Campaign activities, the Daigas Group is using its resources and assets in ways that meet a wide range of local community needs, making efforts that help increase the vitality of local areas. One particular effort is the NOBY T&F CLUB, a track and field club led by Nobuharu Asahara, a noted sprinter and employee of Osaka Gas. The club offers various athletic programs aimed at providing youth the chance to grow up healthy through sports and to develop into the next generation of top athletes. The wealth of knowledge gained from NOBY T&F CLUB activities is now being applied to projects with other local governments.

Also, in September 2018, we signed a business agreement with the comprehensive community sports facility, Cerezo Osaka Sports Club, to open the Cerezo Osaka × NOBY T&F Club, a track and field club. The aim is to foster the next generation of top athletes to compete on the world stage and promote the health of everyone from children to seniors through activities held at the community sports club.





Activities of NOBY T&F Club

Communication with Society

Exchange of opinions between representatives of consumer groups and management

In order to use the views of as many people as possible to improve business and operations, Osaka Gas creates opportunities to gather the opinions of people, such as members of consumer groups.

Once a year, there is an exchange of opinions between Osaka Gas's management and the representatives of the Kansai Consumers' Association Liaison Commission, an organization of local consumer groups throughout the Kansai region. This exchange has been taking place for over 30 years, beginning in 1986. In FY2019, the region was hit by the Northern Osaka Prefecture Earthquake and problems caused by abnormal weather, so we explained the measures that Osaka Gas takes to ensure safety and security in the supply of gas, emphasizing the high priority given to safety as the cornerstone of our operations. We also received positive feedback on our renewable energy business plans.

We regularly hold briefings and study sessions to promote better understanding among consumer groups and consumer centers regarding the systems and mechanisms that have been established in line with energy market liberalization, along with our efforts to promote gas safety. In November 2018, for example, the Pipeline Business Unit held a skills contest for Osaka Gas service personnel, intended to enhance emergency inspection skills needed to carry out emergency repairs or construction when a gas line has broken. The event was instrumental in deepening consumers' understanding of efforts being made by the Daigas Group to improve safety.

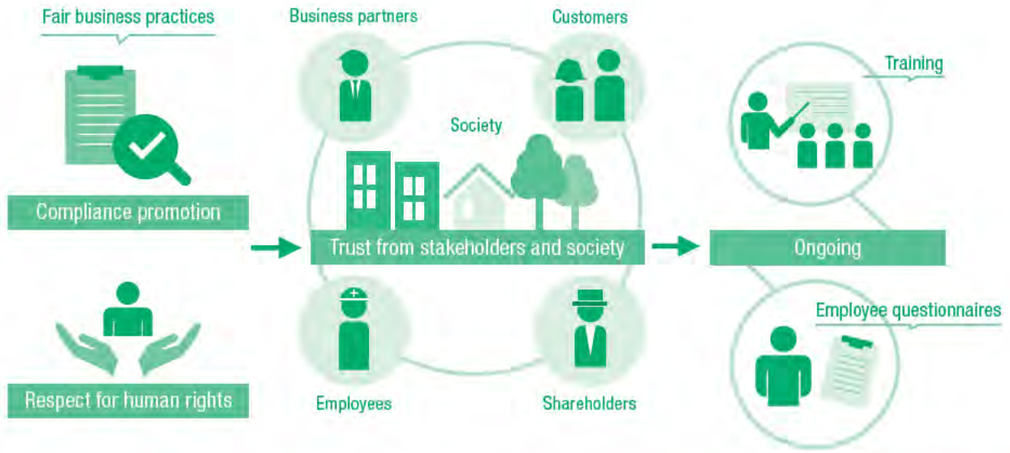
We will also continue to undertake public relations activities as part of our efforts to promote consumer-oriented business operations.



Exchange of opinions between Osaka Gas's management and representatives of the Kansai Consumers' Association Liaison Commission

WEB Information Posted on the Web
- Social Contribution Activities
- Activities for Promoting Communication with Society
- CSR Indicator (Charter Ⅳ)

CSR Charter Ⅳ Complying with Laws and Regulations and Respect for Human Rights



Fundamental concept

The Daigas Group believes that observing compliance and respecting human rights are the most important factors for the Group in winning trust from customers and society, and constitute the basis of business continuity.

Based on our notion that compliance extends beyond just following laws and regulations to include exhibiting decent behavior as a member of society, the Daigas Group recognizes fulfilling compliance as continuing to live up to the expectations of customers, employees, society and shareholders while winning their trust and sympathy. The Group thus endeavors to maintain fair and honest relations with customers, business partners, and all other parties, and to respect human rights. Ensuring compliance is the most important thing we can do to gain the trust of customers and the society, and is the basis for continuing our business. Recognizing that every manager and employee is the key to compliance, we are continually conducting training sessions and employee surveys to raise awareness.

CSR Indicator Scores on Compliance Awareness / Percentage of Employees Receiving "Compliance Training"

We have introduced three viewpoints deemed important for compliance promotion as CSR Indicators. These three are: ① the degree of recognition by each employee of the Daigas Group Code of Conduct, ② the degree of penetration through each Daigas Group organization of employees' awareness of the importance of compliance, and ③ the percentage of Daigas Group employees taking a compliance training course. As for indicators ① and ② above, the Daigas Group aims to obtain higher scores than in the previous year in the compliance awareness surveys that it has been conducting since FY2004 to measure the degree of its penetration. Concerning indicator ③, we work to ensure that all employees receive compliance training.

Targets and Results

The targets and results for FY2019 are as follows.

	Targets	Results
Scores on compliance awareness		
① Individual: Recognition level of Code of Conduct	Higher than the previous year	Down 1.2 percentage points year-on-year (84.4%)
② Organization: Degree of compliance penetration in the organization	Higher than the previous year	Down 0.1 percentage points year-on-year (91.8%)
③ Percentage of employees receiving the Compliance Training	100%	100% (No. of employees covered by the survey: 22,231)

Actions Taken

Actions taken to enhance the awareness and understanding of employees of compliance

The results of a compliance awareness survey were collated into a report presented to the CSR Committee and Compliance Subcommittee. Feedback was then provided to Group organizations and affiliates, and work was begun to create a plan for action in the next fiscal year based on the results and the aim of improving awareness and understanding of the Group Code of Conduct.

In FY2019, an in-house study session conducted regularly at each organization of the Daigas Group newly took up the Daigas Group Code of Conduct and ethics enhancement. In the same year, an in-house case-study session focusing on interactive discussion was held for employees in management positions at two Business Units and one affiliated company (including all subsidiaries).

WEB Information Posted on the Web
- Materiality: Customer Privacy
- Information Security
- Compliance Promotion Efforts

Actions on Materiality

Materiality Customer Privacy

Why materiality is important

As an energy business operator which supports a core infrastructure of society, the Daigas Group recognizes the vital importance of protecting customers' information and managing that information appropriately.

Management systems and performance

Indicator: GRI Standards 418-1 Total number of substantiated complaints regarding breaches of customer privacy

Commitment

In accordance with the Daigas Group Code of Conduct which incorporated code of conduct and guidelines concerning the handling of private information set by the Ministry of Economy, Trade and Industry and the Japan Gas Association, we strive to ensure safety regarding the privacy of customers abiding by in-house rules, such as our Rules for Personal Information Protection, Privacy Policy, and Manual for Handling Personal Information.

Responsibilities

The Vice President in charge of the General Affairs Department is appointed as the Chief Privacy Officer (CPO). Placed under the Vice President to ensure the protection of private information involving the Daigas Group are Personal Information Managers, who supervise Business Units, the Human Resources Department, Osaka Gas affiliated companies and contractors working for Osaka Gas.

Performance

FY2019 result Responded to Leak of Personal Information

In FY2019 there was an incident of attacks on server vulnerabilities and unauthorized access at one company in the Daigas Group that led to customer information being leaked. Based on the results of a third-party security audit, measures were taken to prevent a recurrence.

Specific actions taken regarding CSR indicators and materiality

Information Security

Strengthening information security measures

Under the leadership of the Information Security Subcommittee, the Daigas Group has established a system to enhance its overall information security.

In FY2019, we conducted surveys and checkups on information security at Group companies, formulated improvement plans for each company, and had them implement suitable measures. Education on information security was also provided to all Daigas Group employees to improve information security awareness and the skill level of each and every employee. Also, drills simulating targeted email attacks based on actual cases were conducted, reaching a total of about 20,000 employees.

The entire gas industry has been working on security-enhancement measures in line with an action plan meant to strengthen information security regarding important infrastructure, compiled by the National Center of Incident Readiness and Strategy for Cybersecurity (NICS). In step with this move, our company has endeavored to enhance information security.

Responding to customer information leaks due to unauthorized access

The vulnerability was attacked and unauthorized access was made on some servers used for the file transfer service operated by OGIS-RI Co., Ltd., a Daigas Group company. As a result, 4,815,399 customer information leaked to the outside.

Based on this incident, OGIS-RI has established the Security Enhancement Countermeasures Section to strengthen countermeasures and monitoring against cyber attacks. In addition, the Group as a whole is further strengthening information management, such as checking for the risk of similar events.

Compliance Promotion Efforts

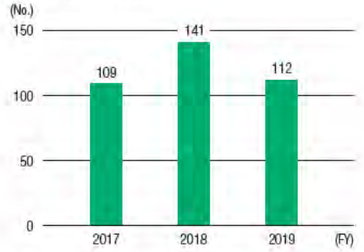
Compliance Desks set up to receive consultations and reports from parties both inside and outside the Group

Observing compliance is vital to winning the trust of customers and society, and constitutes the basis of business continuity. To facilitate compliance, we are building frameworks for quickly recognizing when a legal violation or wrongdoing has taken place and to facilitate an appropriate response. The Daigas Group thus established "Compliance Desks" at the Head Office, core affiliates, and law offices outside the company to provide a channel for persons who need a place to seek advice on, and report matters concerning compliance with laws and in-house rules. Not only management and employees of the Group, and workers dispatched from manpower agencies to work for the Group, but also management and employees of suppliers providing goods and labor to Group companies on a long-term basis can seek advice or make reports anonymously by phone, e-mail, or in writing.

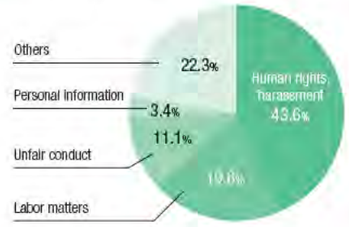
In FY2019, the Compliance Desks received a total of 112 consultations and reports. Upon receipt of a report, an initial examination was made, following which a fair investigation of the facts was conducted and any necessary corrective measures were implemented.

Acting on a report concerning compliance, the Group will take remedial measures if the case is found to constitute a violation of law. Even if no violation is detected, the Group will carry out improvement measures as a way of creating a better working environment and maintaining it, as necessary.

Number of Consultations



Breakdown of Report Content



Promotion of global compliance in step with overseas business development

In view of expanding business operations abroad, an English version of the leaflet summarizing the Corporate Principles of the Daigas Group, the Daigas Group CSR Charter, the Daigas Group Code of Conduct and Compliance Desks used for the internal reporting system was posted on the intranet for dissemination to employees.

In FY2019, we grasped how risks have been addressed at 16 major overseas subsidiaries while modifying risk items listed under G-RIMS, a risk management system developed by Osaka Gas, for use by such overseas subsidiaries. We checked whether preventive measures and early-detection steps on about 40 risk items had been implemented at the subsidiaries as intended. Then, we took response actions against the risks. We also conducted on-site surveys at our overseas subsidiaries to determine the status of their environmental compliance and CSR efforts.

About warning from the Japan Fair Trade Commission

Osaka Gas received a warning from the Japan Fair Trade Commission on January 24, 2019 about a pre-order system in use for selling our brand of fan heaters to service shops. We will continue to thoroughly review our systems in working with service shops and take action to ensure compliance with the Anti-Monopoly Law and related laws and regulations.

Response to improper work performed by group companies to whom regular inspection of gas heat pump air conditioners was outsourced

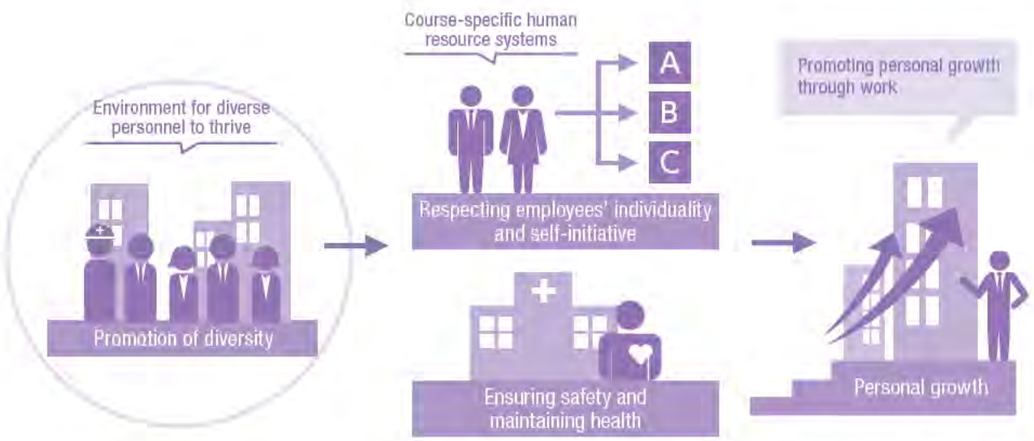
In August 2018, Osaka Gas learned that in the periodic inspections of its gas heat pump air conditioning systems outsourced to Enetec Kyoto Co., Ltd., a Daigas Group company, improper work was done that departed from established procedures, whereby certain worn parts had not been replaced that should have been.

After this incident, we started carrying out follow-up surveys on periodic inspection work to prevent a recurrence. In May 2019, Osaka Gas surveyed customers of another group company, Enetec Osaka Co., Ltd., who had had a periodic inspection performed prior to measures being devised to prevent a recurrence and found that fuel hoses that should have been replaced had not been replaced. These parts were subsequently replaced and all maintenance firms were instructed to conduct follow-up surveys and to confirm that work had been performed properly as part of efforts to prevent a recurrence.

For details of this matter, please refer to our press release dated May 17, 2019 (Japanese only).

CSR Charter V

Management Policy for Human Growth



Fundamental concept

The Daigas Group is working to become a company that promotes the growth of its employees through work by employing a personnel management system that promotes an environment in which individuality and initiative are respected and diverse talent is cultivated.

The Daigas Group would like to be a company at which employees can find not just employment but also personal growth through their work. To that end, we have introduced career-course-specific human resources systems designed to respect and put to full use the individuality and autonomy of employees, and we have been conducting a wide range of training. We have also formulated the Daigas Group Diversity Promotion Policy to ensure that a diverse range of people can play active roles at the Daigas Group. Convinced that ensuring employees' safety and maintaining/improving their physical and mental well-being are keys to all our operations, we are also undertaking efforts to prevent work accidents and to promote fitness.

CSR Indicator Employee Attitude Survey: job satisfaction and attachment to the company

Osaka Gas periodically conducts its "Employee Attitude Survey" to understand how satisfied employees are with their job, workplace environment, superiors, company systems, and so on. Employees are asked to rate their satisfaction level on a five-point scale for categories including job satisfaction, attachment to the company, etc., and to leave an open comment.

Targets and Results

The goal of the "Employee Attitude Survey," conducted every two or three years, is to confirm changes over time in employee attitudes and the progress made in adopting/implementing the human resources systems.

The results of the latest survey, conducted in FY2019, on the CSR Indices of job satisfaction / attachment to company and degree of satisfaction with human resources systems, are shown below.

	Targets	Results
Job satisfaction and attachment to the company	Maintain sufficient levels	Maintained sufficient levels (3.86 against scale of 5 for job satisfaction and 4.25 of scale of 5 for attachment to the company)

Actions Taken

Employee Attitude Survey

The Employee Attitude Survey is carried out to understand how satisfied Osaka Gas employees are with their jobs, workplace environment, superiors, and human resources system, as well as to gauge their understanding of the corporate principles and long-term management vision in today's rapidly changing business environment. Employees are asked to rate their satisfaction level on a five-point scale for categories including job satisfaction, attachment to the company, etc., and to leave an open comment.

We consider these survey results as a source of business growth, and will use them to implement better measures to promote a workplace culture where employees can take on challenging work.

WEB Information Posted on the Web
CSR Indicator (Charter V)
Materiality: Training and Education
Human Resource Development and Rewards

Actions on Materiality

Materiality Training and Education

Why materiality is important

We believe that developing human and intellectual capital is a source of value creation. The Daigas Group's Long-Term Management Vision 2030 lists the promotion of work style reform and development of human resources as important goals to be attained by 2030. We consider it vital to develop personnel who are capable of working in an active manner in a rapidly changing business environment, and to that end we offer a range of training and educational programs aimed at developing individual capabilities.

Management systems and performance

Indicator: GRI Standards 404-1 Average hours of training per year per employee

Commitment

The Daigas Group Code of Conduct was formulated and the Group has declared its intention of creating workplaces in which employees can work with peace of mind. We will respect employee individuality and support career design and skills development to enable diverse personnel to reach their full potential.

Responsibilities

Osaka Gas has introduced a personnel system that helps all employees to clarify their roles and expectations through meetings with superiors who serve as training advisors. Employees themselves select a career track course to pursue.

We offer training programs for all positions and job descriptions, in addition to a system training by career track course. Overseas business training is also conducted to develop personnel who can play an active role globally.

Performance

To help develop employee skills, we conduct assessments through meetings between employees and their superiors based on Management by Objectives (MBO), with periodic follow-up meetings. This mechanism encourages each individual's willingness to grow and helps us formulate a training plan.

FY2019 result

- Average annual hours of training per employee
  25.1 hours / person
- e-learning (safety, information security, environment) program
  * Includes temporary employees and part-time workers
  Number of participants: 5,029 / course
  No. of hours: 3.67 hours / person

Specific actions taken regarding CSR indicators and materiality

Human Resource Development and Rewards

Training options for the companies of the Group

To enhance measures that support human resource development at the Daigas Group, a range of trainings are offered that are in high demand by group companies. In addition to programs arranged by job level, a self-directed career development support program is also available. The system offers many suitable options for training to encourage self-directed career development and personal growth.



WEB Information Posted on the Web
Materiality: Diversity and Equal Opportunity
Balancing Work and Family
Acceptance of Diversity
Improving Occupational Health and Safety

Materiality Diversity and Equal Opportunity

Why materiality is important

The Daigas Group recognizes the need for the Group to foster a corporate culture that will encourage the free expression of opinions and a transformation into a corporate entity that promotes diversity in its ranks and corporate structure in a way that encourages employees to maximize their potential irrespective of gender, age, physical ability, or nationality. This intention is spelled out in the Daigas Group Diversity Promotion Policy.

Management systems and performance

Indicator: GRI Standards 405-1 Percentage breakdown of employees and executives by gender and age

Commitment

Osaka Gas has formulated the Daigas Group Diversity Promotion Policy with the aim of creating a strong organization that can create new value. The Policy guides us to be a corporate group that can accept diverse values by respecting and approving diverse human resources without discrimination.

Responsibilities

In the area of diversity and equal opportunity, we are taking action across the organization in line with the UN Global Compact, related laws, and the Daigas Group Diversity Promotion Policy to make improvements in recruitment, the development of human resources, and the workplace environment.

Performance

Based on the Act for Measures to Support the Development of the Next Generation and the Act on the Promotion of Women's Participation and Advancement in the Workplace, we have been promoting initiatives with the aim of maintaining a 30% or higher female personnel ratio in career-track positions and achieving a female manager* ratio of 5% by 2020.

* Percentage of women in managerial or higher positions

FY2019 result

- Percentage of women among personnel hired in April 2019 for career-track positions: 28.3%
- Percentage of women in management positions: 3.5% (as of April 1, 2019)

Specific actions taken regarding CSR indicators and materiality

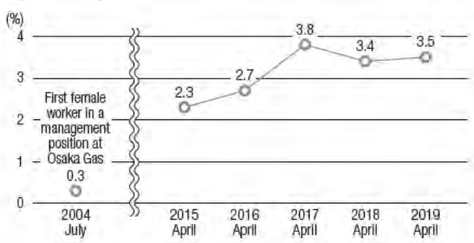
Acceptance of Diversity

Supporting a more active role for female employees

Osaka Gas makes various efforts to encourage a work-life balance between employees' professional and personal lives, while also promoting career development. As a result, the percentage of women in management positions reached 3.5% in April 2019.

In FY2109, Osaka Gas received a PRIDE Index gold award from "work with Pride," Japan's first private organization to rate companies based on their efforts to support inclusiveness of LGBT employees and other sexual minorities. Osaka Gas became the first gas provider to receive the gold award.

Change in the Percentage of Women in Managerial Positions (Osaka Gas)



work with Pride Gold 2018

Gold in the PRIDE Index

Creating a work environment for seniors

Osaka Gas has implemented a reemployment scheme to rehire employees who have reached mandatory retirement age, under which applicants are placed in jobs that match their skills and preferences. All Daigas Group companies have similar reemployment programs.

Status of Employment of Seniors at the Daigas Group

	Unit	FY2015	FY2016	FY2017	FY2018	FY2019
Seniors employed	People	1,928	1,492	1,588	1,669	1,795

Balancing Work and Family

Supporting childcare by improving the systems and the workplace environment

Osaka Gas has a number of systems to support employees both while they are working and taking care of their families. These systems are aimed at enabling employees to display their abilities to the full extent by creating a workplace environment whereby they can strike a balance between work and childcare. For example, we have a system allowing employees to take childcare leave up to the end of the month in which children reach their third birthday, as well as a system for shorter work hours until children finish their third year at elementary school. We also lend employees PCs so they can check the company intranet and email and thus keep in contact while they are on childcare leave. And we offer employees telephone counseling on matters of childcare. These are just some of the ways that Osaka Gas labor and management are cooperating to create a workplace conducive to balancing work and family duties. In addition, we have established a consultation desk in the Health Promotion Center so that employees and their families can seek advice on health during pregnancy and child-raising.

In recognition of these efforts, Osaka Gas was certified four times* by Japan's Minister of Health, Labour and Welfare as a company that actively supports childcare for its employees in accordance with the Act for Measures to Support the Development of the Next Generation.

Osaka Gas intends to support employees in achieving a balance between work and childcare in line with its 5th Action Plan (from April 2018 to March 2021).

* In April 2007, May 2011, March 2015 and February 2019

Logo of certification from the Ministry of Health, Labour and Welfare

Improving Occupational Health and Safety

Promoting safety and health management activities based on OSHMS

Osaka Gas has been systematically and meticulously undertaking activities aimed at preventing workplace accidents with establishing the "Osaka Gas Health and Safety Action Plan" based on the Occupational Safety and Health Management System (OSHMS), which was established by the Minister of Health, Labour and Welfare.

Based on the Plan, each organization of Osaka Gas is working on reducing the number of incidents leading to absence from work due to workplace accidents to zero.

The Plan, consisting of three priority themes—prevention of transportation-related accidents, prevention of general work accidents, and prevention of accidents through collaboration with business partners—is designed to enhance the level of workplace safety by implementing improvement measures under the PCDA (plan-do-check-action) cycle.

Each Daigas Group company is working on establishing the PCDA cycle to improve safety and health-enhancement activities in accordance with each company's safety and health situation while maintaining the current safety and sanitary management system and in line with the Daigas Group's Basic Safety and Health-Improvement Plan (FY2018–FY2021).

Joint safety activities with partners

Osaka Gas works closely with affiliates and partners at the sites of gas business activities. In particular, we strive to boost the level of safety by working closely with our partners through a Health and Safety Promotion Council to exchange safety-related information and hold a range of training and safety activities.

The Council, with 82 member companies, primarily in the manufacturing sector, promotes voluntary safety and health activities, with the goal of zero lost-time injury. As a key activity, the Council has designated a disaster prevention month in both the first half and second half of the year, during which we conduct safety patrols jointly with them. It also issues a Safety & Health Monthly Report that provides useful information for company efforts in preventing workplace accidents and promoting employee health.



Safety & Health Monthly Report

WEB Information Posted on the Web
- Materiality: Economic Performance
- Materiality: Supplier Assessment
- Third-Party Review / Third-Party Verification

Actions on Materiality

Materiality: Economic Performance

Why materiality is important

The Daigas Group recognizes that climate change has the potential to impact business revenue and expenditures. We understand the business risks and opportunities presented by climate change, and believe that implementing countermeasures, and making our responsibility to do so clear to our stakeholders, will lead to the sustainable development of both our business and local communities.

Management systems and performance

Indicator: GRI Standards 201-2 Financial implications and other risks and opportunities due to climate change

Commitment

We are committed to efforts that reduce greenhouse gas (GHG) emissions based on the Daigas Group Environmental Activities Policy, and will take measures to disclose information concerning risks and opportunities related to climate change.

Responsibilities

The Environment Subcommittee, CSR Committee and CSR Promotion Council (Executive Board) take responsibility for reporting, following up on, and managing climate change risks in our business plan using indicators and targets pertaining to GHG emissions.

Performance

We publish on our website the page "Risks and Opportunities Related to Climate Change" which reports details associated with climate change in the areas of governance, strategy, risk management, and indicators and targets—the core elements recommended by the Task Force on Climate-related Financial Disclosures (TCFD).

■ Response to Risks and Opportunities Associated with Climate Change

Phenomena deriving from climate change	Irregular weather conditions, disaster	Temperature rise	Change of competitiveness of products and facilities developed by Osaka Gas	Stricter regulation of GHG emissions	Change of energy preference by energy users	Booming of ESG investment	Rise of LNG prices
Risks	-Damage to manufacturing and supply facilities -Negative impact on LNG procurement	-Fall in gas sales (hot-water supply, heating)	Decline of competitiveness -Fall in demand for Osaka Gas products and facilities, and subsequent decline in their utilization -Difficulty of recollecting capital-investment cost	Concern over fossil-based fuels -Fall in gas and electricity sales -Difficulty of recollecting capital-investment cost		-Fall in capital procurement power -Decline in stock prices	-Rise in procurement cost -Fall in gas and electricity sales
Opportunities		-Increase in gas and electricity sales (air-conditioning)	Comparative advantage -Increase in demand for Osaka Gas products and facilities, and subsequent rise in their utilization	Focus on an energy system emitting less GHGs -Increase in gas and electricity sales -Expansion of renewable energy sources and energy-saving services		-Expansion of capital procurement power -Increase in stock prices	
Our response	-Make important facilities water-tight, raise the level of important facilities, divide service areas into blocks -Diversify LNG procurement sources	-Expand the scope of business fields where demand growth is expected	-Develop and Introduce highly energy efficient products and facilities, and facilities using renewable energy sources -Switch fuels to natural gas -Secure stable LNG supply by launching upstream business -Propose and promote energy-saving services -Promote research and studies of innovative technologies, such as hydrogen, clean gas and CCUS* -Step up publicity regarding GHG reduction effects, promote proposal-oriented marketing -Make policy proposals regarding GHG reduction effects -Participate in and implement the Nippon Keidanren's Commitment to a Low Carbon Society			-Promote dialogue with investors concerning the Daigas Group's contribution to GHG reduction and business vision	-Diversify procurement sources -Launch upstream business -Make conditions for procurement contracts flexible

* CO_2 isolation, recovery, use and storage

Materiality: Supplier Assessment

Why materiality is important

Our broad-based city gas value chain is built on the cooperation of various business partners. Fulfilling our social responsibilities by working with our suppliers in the value chain builds relationships of trust with our stakeholders and furthers the development of the entire value chain.

Management systems and performance

Indicator: GRI Standards 308-1 414-1 Percentage of new suppliers that have been selected using criteria regarding environment, social impact, human rights and labor practices

Commitment

Osaka Gas is committed to fulfilling its social responsibility in close cooperation with business partners in line with the Daigas Group Code of Conduct, revised in accordance with the United Nations Global Compact.

In material-procurement activities, which often involve business transactions with new suppliers, Osaka Gas requires such suppliers to observe procurement-related standards and guidelines set by the company, including our Purchasing Policy and CSR-based Purchasing Guidelines.

Responsibilities

Each organization in charge of procuring particular materials is to fulfill its responsibility in accordance with the procurement-related policies and guidelines set by Osaka Gas.

Performance

A total of 49 suppliers began new business transactions with Osaka Gas in FY2019. In the year, no business deals were barred from being started due to violations of standards set in the fields of environmental and social impacts, human rights and labor practices.

FY2019 target	FY2019 result
100%	100%

Third-Party Verification

The environmental performance data of the Daigas Group included in this report underwent third-party verification by Bureau Veritas Japan Co., Ltd. The verification was conducted to check whether the data were reliable and accurate, and consistent with the purpose of the CSR report.

Independent Verification Report (Excerpt)

Bureau Veritas Japan Co., Ltd. (Bureau Veritas) has been engaged by Osaka Gas Co., Ltd. (Osaka Gas) to provide limited assurance and to conduct an external review over sustainability information selected by Osaka Gas. This Assurance Statement applies to the related information included within the scope of work described below.

Selected information

The scope of our assurance work was limited to assurance over the following information included within the Daigas Group CSR Report 2019 (the 'Report') or the Osaka Gas' corporate website (the 'Website') for the period of April 1, 2018 through March 31, 2019 (the 'Selected Information'):

Environmental data selected by Osaka Gas which are related to the following items:
- Energy consumption · Atmospheric emissions · Water withdrawal and discharge · Chemical substances
- Waste · Gas sales by volume · Amount of LNG handled · FY2019 results to Environmental Action Targets

Note: The reporting boundaries for each data are defined by Osaka Gas.

The scope of our review work was limited to assurance over the following information included within the Daigas Group CSR Report 2019 (the 'Report') or the Osaka Gas' corporate website (the 'Website') for the period of April 1, 2018 through March 31, 2019 (the 'Selected Information'):
- The amount of contribution to CO_2 emission reduction by Daigas Group (including contribution to reductions at customer sites and overseas)

Note: The reporting boundaries and calculation methodologies are defined by Osaka Gas.

Assessment Standard

We performed our assurance work in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised), Assurance Engagements Other than Audits or Reviews of Historical Financial Information (Effective for assurance reports dated on or after December 15, 2015) issued by the International Auditing and Assurance Standards Board and ISO14064-3 (2006): Greenhouse gases – Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions. We performed our review work by using Bureau Veritas' standard procedures for external review of sustainability information.

Conclusion

On the basis of our methodology and activities described above:
- Nothing has come to our attention to indicate that the Selected Information has not been properly prepared, in all material respects, in accordance with the Reporting Criteria;
- It is our opinion that Osaka Gas has established appropriate systems for the collection, aggregation and analysis of quantitative data within the scope of our work.