Environmental Impact throughout the Daigas Group Value Chain in FY2023.3

The Daigas Group calculated the amount of greenhouse gas (GHG) emissions from companies that constitute the Daigas Group's value chain network, based on the GHG Protocol, an international emission accounting standards. 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 25.98 million tons in FY2023.3. The sum breaks down into about 4.73 million tons, or about 18%, for GHG emitted through business activities by the Daigas Group (Scope 1 and Scope 2), and about 21.25 million tons, or about 82%, emitted by others in our value chain (Scope 3).

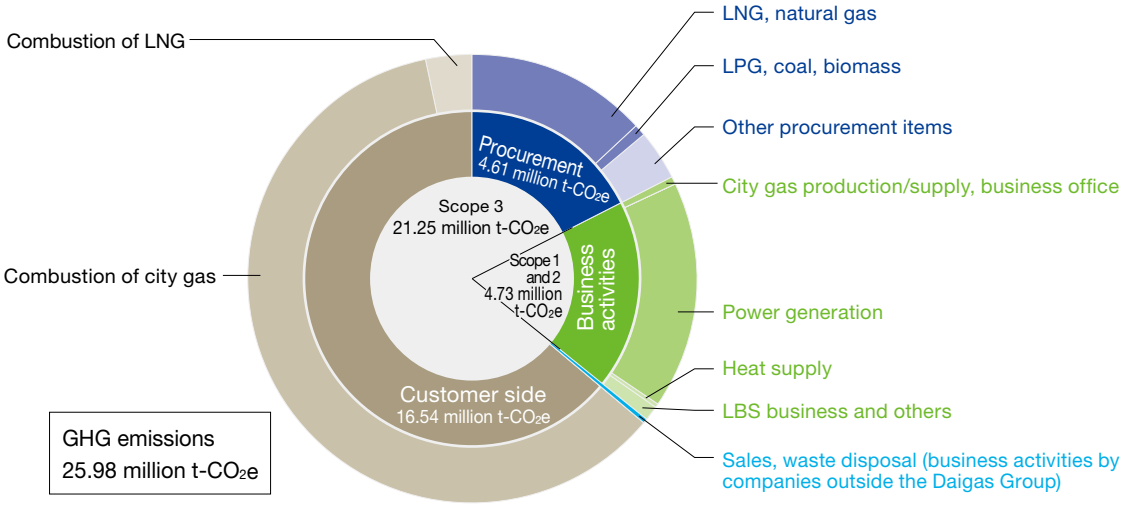
GHG emissions from city gas and LNG combustion on the customer side amounted to 16.54 million tons in the reporting year in terms of CO_2, accounting for about 64% of the total.

GHG emissions through electricity generation, as measured in terms of CO_2 in the year, amounted to 3.89 million tons, accounting for about 15% of the total emissions, which represented the majority of GHG emissions from the Group's own business activities. As a way of reducing GHG emissions from power generation, the Group will continue to actively introduce highly advanced energy-efficient power generation facilities and use renewable energy sources.

GHG emissions from material and fuel procurement totaled 4.61 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 over 70% of that amount. Under these circumstances, we will continue our efforts to improve fuel efficiency regarding the operation of LNG tankers in collaboration with resource suppliers.

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. Regarding these items, we have achieved a high recycling rate and will continue to strive to maintain this level. 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 without being consumed under strict quality control.

GHG emissions throughout the Daigas Group value chain in FY2023.3 (actual results)



Companies subject to the calculation of GHG emissions: 63 companies in total, including Osaka Gas Co., Ltd. and 62 companies among 154 consolidated subsidiaries are subject to calculation of GHG emissions. Those housed in office buildings as tenants and whose environmental data are difficult to grasp and whose environmental effects are minimal are not subject to such calculation. Also excluded from the calculation are overseas companies, except two companies.

CO_2 emission factors used (GHG scopes 1 and 2)

- Electricity: 0.65 kg-CO_2/kWh (Average emission factor of thermal power plants in FY2014.3, stipulated in the Plan for Global Warming Countermeasures issued by the government in 2021.)
- City gas: 2.29 kg-CO_2/m^3 (based on Osaka Gas data)
- Others: Factors listed under the Law Concerning the Promotion of Measures to Cope with Global Warming

Sources of emission factors used for calculating CO_2 emissions (GHG scope 3)

- Production and transmission of city gas: "Life cycle evaluation of city gas" on the website of the Japan Gas Association
- Production and shipment of LNG: Calculation of life cycle greenhouse gas emissions of LNG and City Gas 13A (papers presented at research presentation meetings of the 35th Meeting of the Japan Society of Energy and Resources, June 2016)
- Production and shipment of LPG and coal: Future forecast for life cycle greenhouse gas emissions of LNG and City Gas 13A (Energy and Resources, Vol. 28, No. 2, March 2007)
- Other main emission factors: Emission factors for calculating supply-chain greenhouse gas emissions, etc. (Database Ver. 3.3) published in March 2023 by the Ministry of Environment

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

Environmental Impact throughout the Daigas Group Value Chain

Main materials and fuels

Amount of LNG handled	**6,488 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
LPG used for calorific adjustment of city gas	**210 thousand tons**

Amount of energy used

City gas	**1,232 million m³** (including gas whose calorific value has yet to be adjusted)
Purchased electricity	**493 million kWh**
Other energy sources	**13,568 TJ**

Amount of vehicle fuel used

Gasoline	**1,553 kl**
City gas	**31 thousand m³**
Diesel	**699 kl**
LPG	**4 thousand m³**

Sales volume of main products

Gas	**6,845 million m³**
Electricity	**15,883 million kWh**

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

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

Business activities by Osaka Gas

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

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

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

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

Use at customer site

- City gas
- Gas appliances
- Electricity
- Chemical products
- LNG
- Services

GHG (scope 3*1)

	Emissions (1,000 t-CO_2e)
LNG, natural gas	3,362
LPG, coal, biomass	192
Other procurement items	1,051
Total	**4,606**

GHG (scope 1 and 2)

	Emissions (1,000 t-CO_2e)	
	Scope 1	Scope 2
City gas production	34	82
Business office (including supply)	16	15
Power generation	3,869	21
Heat supply	56	34
LBS and others	431	172
Total	**4,406**	**324**

GHG (scope 3*2)

Emissions (1,000 t-CO_2e)
99

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

GHG (scope 3*3)

	Emissions (1,000 t-CO_2e)
Combustion of city gas	15,675
Combustion of LNG	867
Total	**16,542**

Waste

	Generated	Recycled
General waste	1,103 t	96%
Industrial waste	101,654 t	96%
Excavated soil	580,000 t	100%
PE pipe	137 t	100%
Used gas appliances recovered	1,569 t	86%

Amount of water intake and water discharge

Stated on P.58

Breakdown of Scope 3 categories

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

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

*3 Category 11 (use of sold products)