

Better Energy Better World

KOGAS Sustainability Report 2019



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About This Report

Korea Gas Corporation (KOGAS) publishes its thirteenth sustainability report. KOGAS, a clean energy company that has contributed to people's lives by supplying natural gas in a stable and safe manner, has been growing along with its stakeholders based on the corporate management activities of fulfilling its social responsibilities. KOGAS is pursuing balanced values in terms of economy, environment, and society in its businesses. The results have been transparently published in annual reports since 2006; the last report was published in June 2018.

Reporting Period and Scope

This report was written on the basis of sustainability performance data from January to December 2018. Some qualitative results include those of the first half of 2019. In the quantitative results, the data of the three years from 2016 were released so that the trends can be confirmed. The scope of this report basically encompasses the KOGAS's headquarter, domestic offices, and KOGAS Research Institute, and overseas business sites as well, if necessary.

Changes from the Previous Year

For any changes in the data released in the existing published reports, the reasons are specified in the relevant pages*. Some performances and information that has not changed from the previous reports have been rewritten to help understanding.

* including P.44, Job Creation in the Private sector (2017 data)

Reporting Criteria and Assurance

This report was written according to the GRI Standards Core Option, an international standard for sustainability reports. To improve the reliability and quality of the report, we were verified by an independent external organization; the results of the verification are included in the appendix.

Additional Information

For more information, please visit our website. For inquiries on our sustainability activities or opinions on the report, please feel free to contact us.

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KOGAS, a Clean Energy Company Contributing to People's Lives



04 CEO Message

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CEO Message

Dear honorable stakeholders,

Over the past 36 years, KOGAS has been supplying natural gas safely and steadily, improving the convenience and benefits enjoyed by people in their daily lives. We have grown to become a global energy company through the construction and operation of 72 storage facilities with a total capacity of 1,147 kℓ as well as a 4,854 km pipeline network. In 2018, we supplied natural gas to 210 municipalities nationwide, contributing to the penetration rate of natural gas reaching 91.7%. In addition, to secure energy resources and broaden future growth engines, we are carrying out 25 projects in 13 countries, in relation to resource exploration, development and production of petroleum gas, LNG project and infrastructure in the field of oil and gas.

KOGAS plays a key role in the transition to eco-friendly energy. In order to improve the quality of air and sea air, we are promoting the phasing out of diesel in trucks, while also contributing to the transition to a more environmentally friendly fuel in vessels by establishing an LNG bunkering infrastructure. Moreover, we plan to aggressively build a hydrogen production and supply chain to expand the use of hydrogen as a pollution-free energy source.

KOGAS is engaged in a variety of activities for creation of social value.

We are expanding the energy welfare of vulnerable groups with our mobile One-Stop Service. In addition, we have established and currently operate a practical system for mutual growth with SMEs, including technology development support, test-bed provision, and market pioneering. We also strive to improve the quality of life of our staff by taking the initiative to introduce a human rights management system and improve the working environment of all employees.

Dear stakeholders,

KOGAS has been publishing sustainability reports every year since 2006, and has been recognized as a leader in terms of sustainability by being included in the DJSI Asia-Pacific Index for six consecutive years. Since 2007, we have been faithfully implementing the ten principles of the UN Global Compact and, in the future, KOGAS will continue to strive for harmonious growth with shareholders, local communities, and partner companies, contributing to the development of the national energy industry and becoming a company that is held in high regard by the general public. We appreciate the interest and affection you have kindly shown for the determination and efforts of KOGAS and all of our employees.

Thank you.

June 2019

Kim, Young-Doo Acting president of KOGAS





“
With sustainable
management,
KOGAS will continue to
create better energy,
a better world.
”

KOGAS Profile

KOGAS is a representative energy-based public enterprise established in 1983 to safely and steadily supply natural gas to Korean people, with a corporate philosophy of “Better Energy, Better World”.

Overview (As of December 2018's consolidated financial statement)

Company Name	Korea Gas Corporation (KOGAS)
Representative	Kim Young Doo (Acting president)
Establishment Date	August 18, 1983
Foundation for Establishment	Korea Gas Corporation Act (Law Article 16132, partly revised on December 31, 2018)
Location	120, Cheomdan-ro, Dong-gu, Daegu, South Korea


Type of Corporate Body	Corporation
Sales	KRW 26.185 trillion
Business Profits	KRW 1.2768 trillion
Earnings Per Share	KRW 5,766 (a common stock) KRW 5,518 (a diluted stock)
Employees	4,096 persons

Overseas Credit Rate

AA- S&P
Aa2 Moodys
AA- Fitch

Domestic Credit Rates

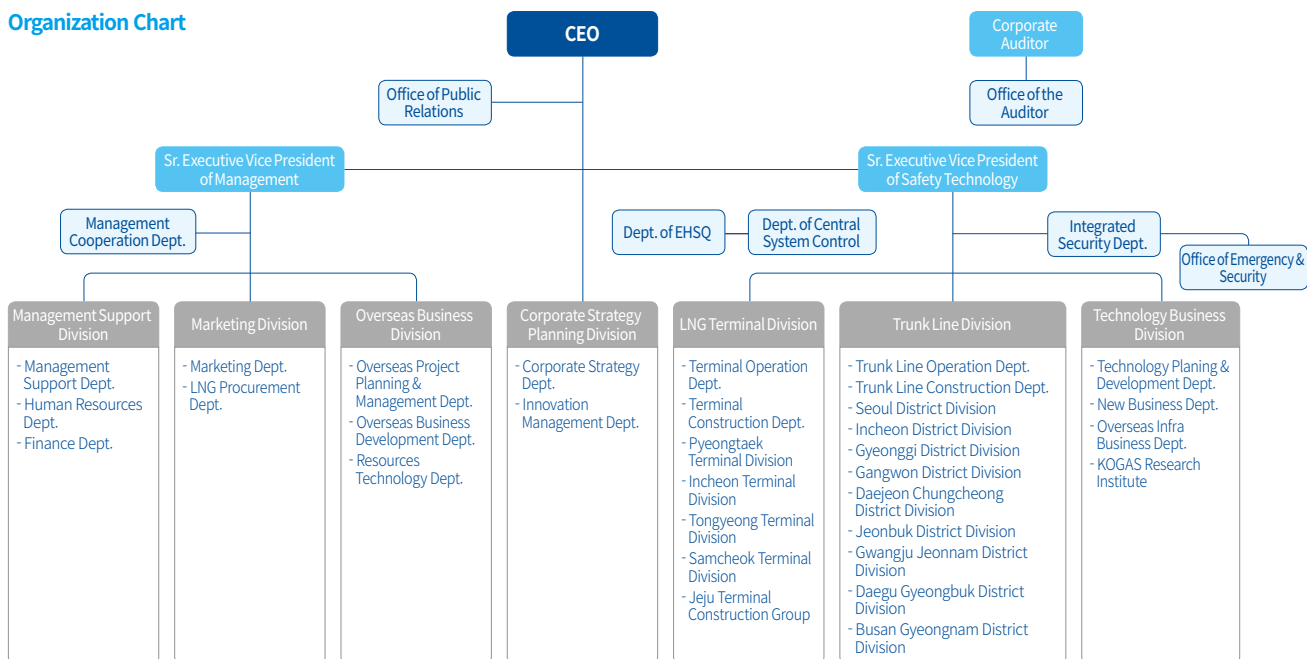
AAA Korea Ratings Corporation
AAA Korea Investors Service Inc.



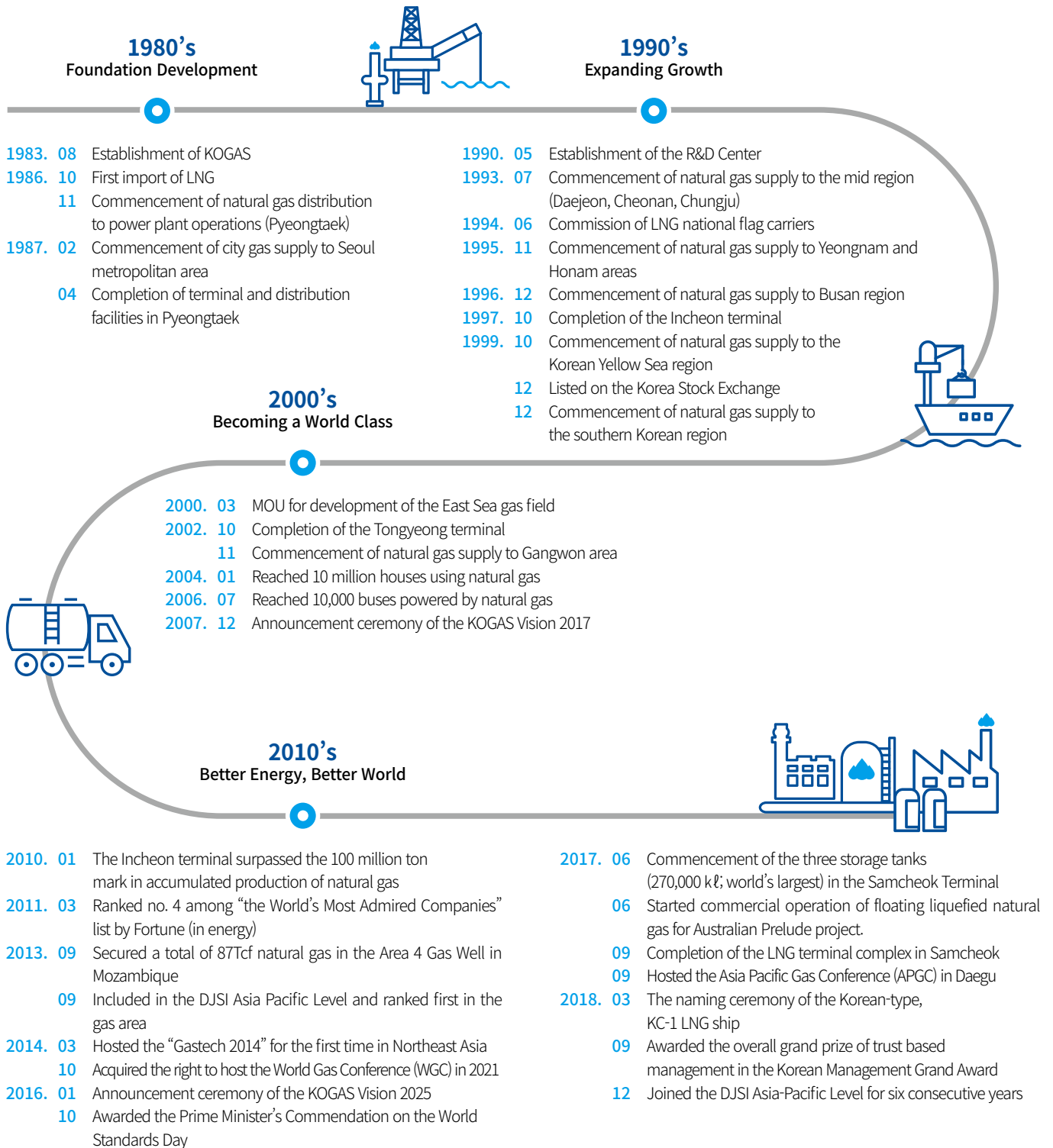
Key Business Area

- 1 Production/supply of natural gas and refinement/sale of the byproducts
- 2 Construction/operation of bases and supply chain for natural gas
- 3 Development, transport, and ex/import of natural gas
- 4 Development and ex/import of liquefied petroleum gas
- 5 Production and supply of hydrogen energy
- 6 Development and ex/import of hydrogen energy
- 7 R&D on related projects and auxiliary projects
- 8 Projects commissioned by the central or local governments
- 9 Overseas related projects
- 10 Exploration/development projects for oil resources and related projects

Organization Chart



Key Milestones



KOGAS Business Models

The natural gas industry can be classified into upstream, midstream, and downstream, based on the scope of activities. The upstream sector indicates the exploration and mining of natural gas; the midstream sector for the liquefaction and transporting, and the downstream sector for the re- evaporation and supply of the gas through pipeline for customers. KOGAS is carrying out a variety of projects in the upstream, middle, and downstream areas; these projects are located in 13 countries.



Overseas Resources Exploration

To secure a stable supply chain of natural gas, KOGAS has explored and developed overseas natural resources through international bidding and share purchase.

Outcome

- Offshore mining lots #2, #3, #9 in Cyprus
- Offshore mining lot E in East Timor

Overseas Resources Development and Production

KOGAS reviews the business feasibility of the resources discovered through resource exploration projects, and then establishes a development plan to be promoted.

Outcome

- Development and production project of A-1/A-3 in Myanmar
- Development and production project of Senoro-Toili, Indonesia
- Development and production in the oil and gas field located in Zubair, Iraq

LNG Projects

KOGAS participates in large-scale LNG projects ranged from the production, shipping, and transportation of LNG. As for floating LNG (FLNG), there is a collaboration with a domestic shipbuilding company under progress in terms of a large-scale offshore liquefaction plant capable of transporting and unloading the gas.

Outcome

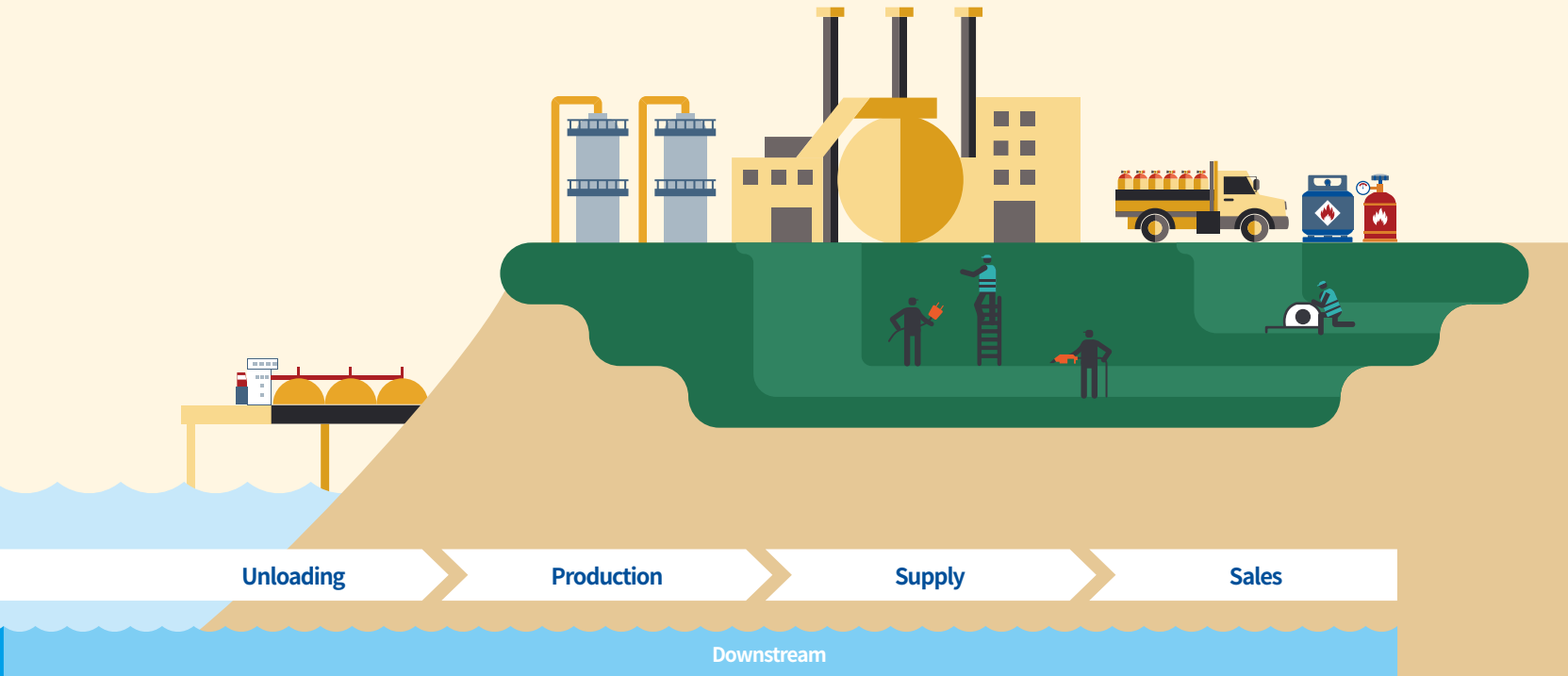
- The Coral FLNG/Rovuma LNG project in Mozambique
- LNG Canada Project in Canada

Procurement and Transportation of Natural Gas

Importing overseas LNG safely into Korea is as important as resource development. KOGAS has diversified its procurement sources from the Middle East and Southeast Asia to Australia and the United States in order to secure supply stability. KOGAS is also contributing to the growth of domestic shipbuilding industry by utilizing national vessels as LNG carriers and investing in the development of LNG transportation technology.

Outcome

- 38.17 million tons of LNG imported in 2018
- Development of Korean-type, KC-1 LNG ships



• Production and Supply

The LNG imported into Korea is unloaded to KOGAS's domestic LNG terminals and stored in large storage tanks during the summer when gas demand is low. In the winter season when the demand increases, the gas is re-evaporated and sent to city gas companies and power plants through national pipelines.

Outcome

- Total 4,854 km length of national main pipelines (as of the end of 2018)

Production Capacity

- Pyeongtaek LNG Terminal: 4,636 tons/hour
 - The world's largest storage capacity in a single base
- Incheon LNG Terminal: 6,150 tons/hour
 - The world's largest delivery capacity in a single base
- Tongyeong LNG Terminal: 3,030 tons/hour
- Samcheok LNG Terminal: 1,320 tons/hour
 - The world's largest storage tanks
- Jeju LNG Terminal
 - Scheduled to be completed in 2019

• Natural Gas Sales

As the public awareness for clean energy has grown, the sales volume of natural gas increased by 24 times in over 30 years since its first supply was initiated in 1987. The gas is sold for a variety of purposes including household use, industrial use, and power generation.

Outcome

- The natural gas sales in 2018 amounted to 36,219,000 tons (Increase by 19.1% from the previous year)

• Overseas downstream Infrastructure

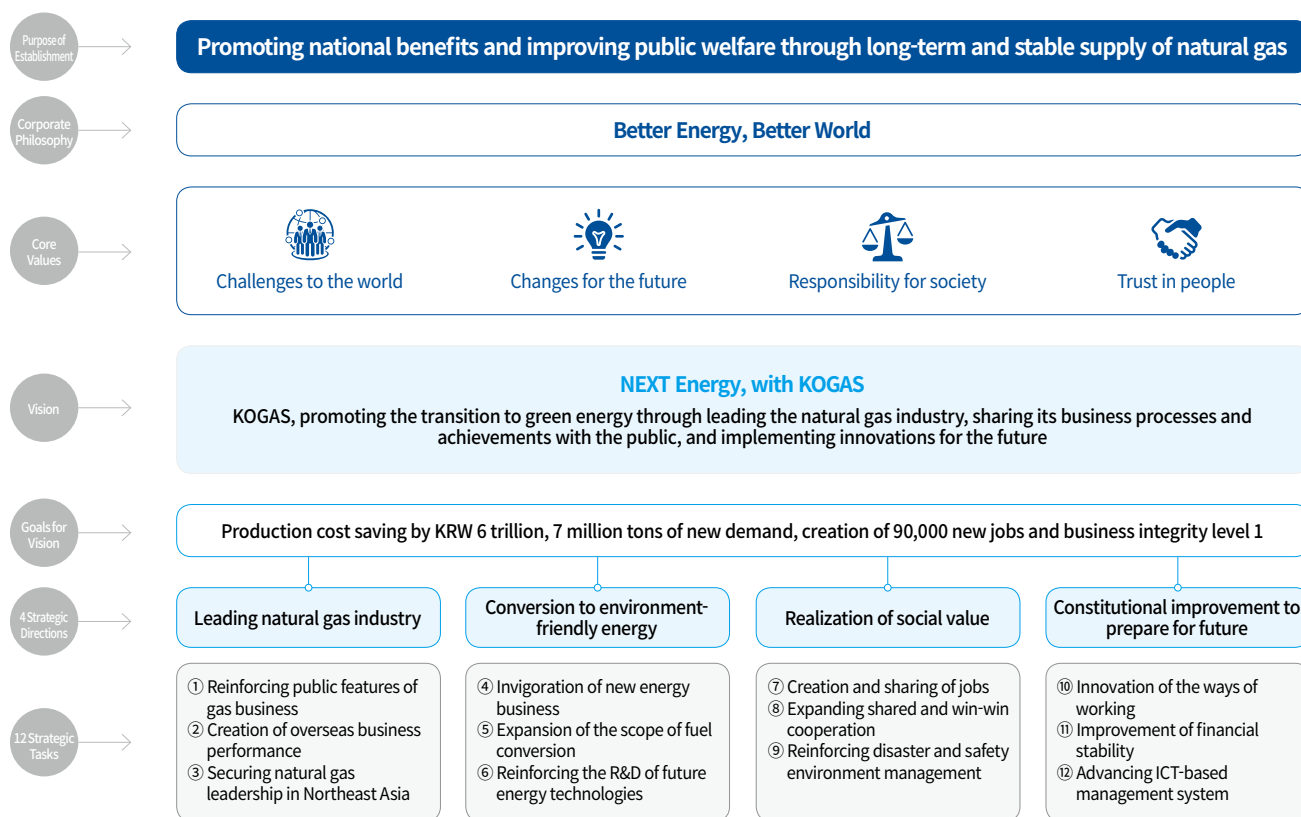
Based on the experiences of participating in overseas projects over years and the technology of constructing domestic supply chain. KOGAS is carrying out downstream infrastructure projects such as vaporization terminals and piping in foreign countries.

Outcome

- Manzanillo Terminal in Mexico
- Gas supply project in Maputo, Mozambique

Vision & Strategy

The “KOGAS 2025” is based on the vision of “NEXT Energy, with KOGAS,” consisting of 4 strategic directions and 12 strategic tasks. Each of the 12 strategic tasks identifies the achievement of the five-year mid-term goals through each key performance indicator. KOGAS will achieve the “KOGAS 2025” vision to create “Better Energy, Better World.”

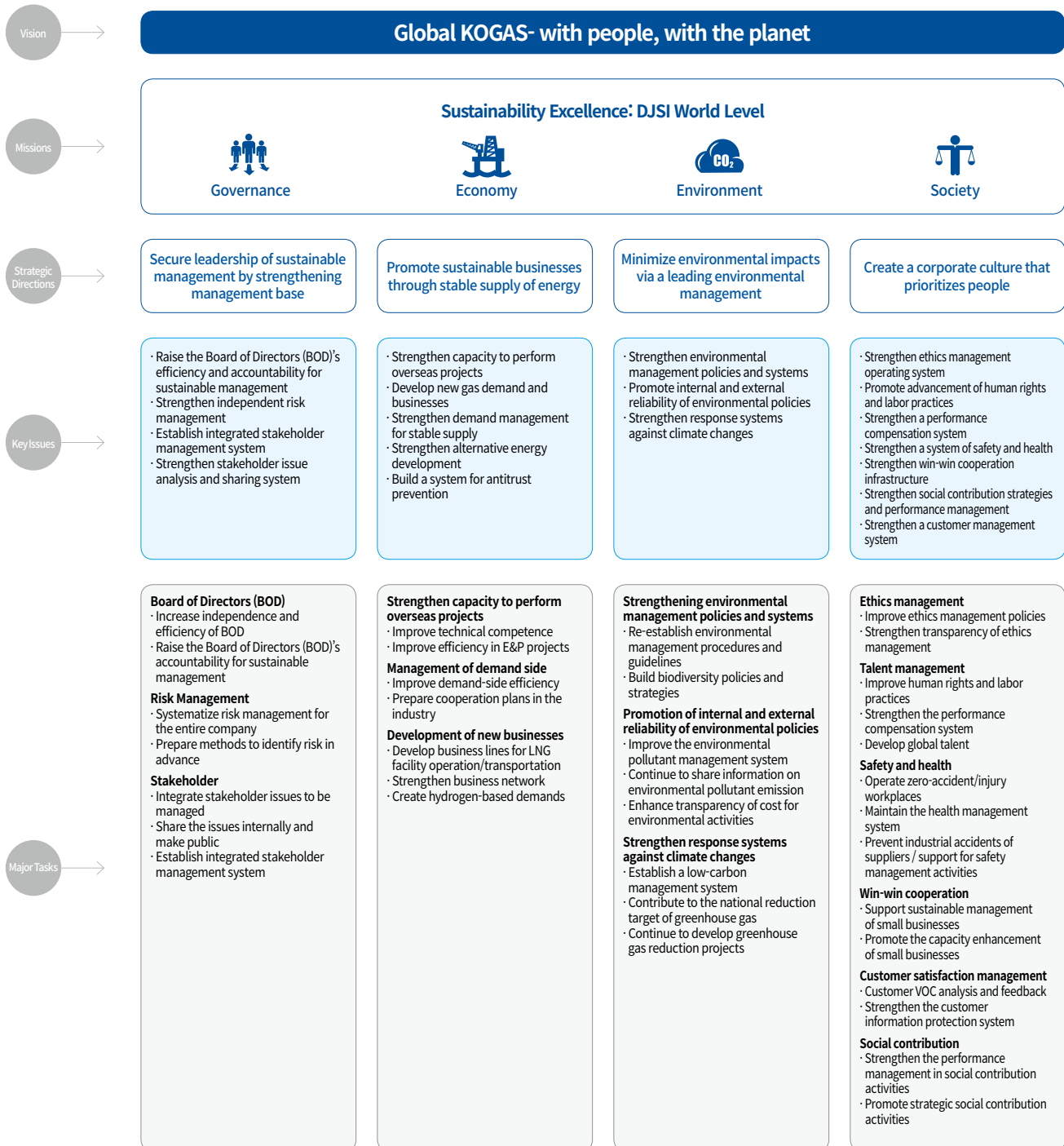


KOGAS 2025 Key Performance Indicators per Strategic Tasks and Mid-term plans(to 2023) in 2018

4 Strategic Directions	12 Strategic Tasks	Key Performance Indicators	Outcome in 2018	Goals by 2023
Leading natural gas industry	<ul style="list-style-type: none"> Reinforcing public features of gas business Creation of overseas business performance Securing natural gas leadership in Northeast Asia 	<ul style="list-style-type: none"> Reduced procurement cost (KRW billion) Overseas business investment collection (%) PNG business progress 	3,058	3,441
			27	51
Conversion to environment-friendly energy	<ul style="list-style-type: none"> Invigoration of new energy business Expansion of the scope of fuel conversion Reinforcing the R&D of future energy technologies 	<ul style="list-style-type: none"> Building hydrogen filling stations (cases) Sales volume for transportation (thousand tons) Strategic skill levels (level) 	0	110 (from 19 to 23)
			9,686	8,046
Realization of social value	<ul style="list-style-type: none"> Creation and sharing of jobs Expanding shared and win-win cooperation Reinforcing disaster and safety environment management 	<ul style="list-style-type: none"> Job Created in the Private sector (persons) Index of win-win cooperation Gas accident and injury reduction (cases) 	15,226	52,558 (from 19 to 23)
			67.5	83.7
Constitutional improvement to prepare for future	<ul style="list-style-type: none"> Innovation of the ways of working Improvement of financial stability Advancing ICT-based management system 	<ul style="list-style-type: none"> Composite index of organizational culture Debt ratio (%) Building new ICT-based systems (cases) 	4	3
			89.4	91.1
			367	259
			1	18

Sustainability Strategies

KOGAS have established a system of sustainability management strategies and listen to the opinions of a variety of stakeholders, striving to attain the balance between economic, environmental, and social values. The issues related to the KOGAS's sustainable management are taken charge of by the Corporate Planning & Coordination Team. The establishment and progress of relevant strategies are periodically reported to the Sustainable Management Committee, where the main agendas are reviewed and decisions are made.



KOGAS's Solid Foundation for Sustainability



14 Governance

16 Risk Management

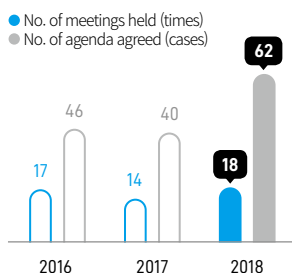
18 Stakeholder Engagement

20 Material Topic Assessment

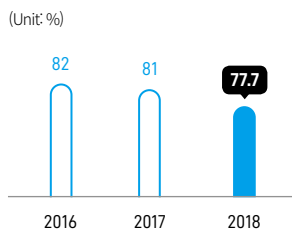


Governance

Performance of the BOD



Attendance Rate



Composition of the BOD

As of the end of 2018, The KOGAS Board of Directors (BOD) consists of eight non-executive directors and three executive directors (acting CEO, Sr. executive vice president, and corporate auditor). The BOD shall consist of seven or less executive directors, including the CEO, and eight or less non-executive directors. The number of executive directors shall be kept at less than one-half of the number of the non-executive directors, in principle. We also endeavor to appoint the successor without any operational gaps by establishing the Executive Recommendation Committee two months prior to the expiration of the director’s term. An executive is appointed by Strategy and Finance Minister after the deliberation and resolution of the Committee. According to the “Guidelines for the Management of Public and Semi-Governmental Organizations,” KOGAS appoints executives who have professional knowledge and experience in our work. To secure independence of the BOD, we have appointed a non-executive director as the Chairperson of the BOD since 2007, and those who have worked as employees in our company or companies that have important deal-making relations or are in competition with us within the past two years shall be excluded from appointment*.

* Those who shall be limited in their qualifications are those who have worked in our affiliated companies as executive directors, executive officers, or auditors, who as corporate bodies have ten-hundredths or more of total assets as the total value of their transactions during the past three business years, or who hold shares equal to or greater than one-hundredth of the total number of issued shares of the listed company.

Operation of the BOD and Increase the Efficiency

The term of the chairperson is three years, and that of executives and auditor is two years, and the directors whose terms have expired shall perform their duties until their successors are appointed. The agendas are decided by a majority vote of the directors. Directors having special interests in relation to the resolutions of the BOD shall be limited in their voting rights on relevant agenda items, to prevent conflict of interest. To increase the efficiency of the BOD, the board holds monthly meetings with at least 70% attendance rate. Non-executive directors cannot hold two or more positions except for the positions of our directors.

Diversity of BOD

KOGAS does not have any particular restrictions on gender, race or nationality in appointing directors for the diversity of the members of the BOD, and strives to ensure that gender and region are properly balanced within the BOD. To ensure that women are fairly represented on the BOD, KOGAS is making efforts to ensure that at least one director, and 20 percent of the total directors, are female. As a result, the first female non-executive director of KOGAS was appointed in 2018, which enhanced the diversity of the BOD and secured expertise of KOGAS in consumer policies as her specialized field.

Division	Name	Gender	Position	Term	Note
Executive Directors	Kim Young Doo	Male	Acting President	2018.9.28 ~ the end of his term	-
	Lee Sang Hun	Male	Corporate Auditor	2017. 4.4 ~ 2019. 4.3	-
	Lim Jong Kuk	Male	Sr. Executive Vice President of Management	2018.7.26 ~ 2020.7.25	-
Non-executive directors	Huh Nam Il	Male	Director	2018.7.30 ~ 2020.7.29	Professor of the Dept. of Global Business, Kangnam University
	Lee Dong Hun	Male	Director	2018.8.23 ~ 2020.8.22	Representative of Lee Dong Hun Accounting Office
	Kim Chang Il	Male	Director	2018.8.23 ~ 2020.8.22	Representative Attorney of Eru Law Office
	Lee Byung Hwa	Male	Director	2018.10.29 ~ 2020.10.28	Former deputy director-general of management division at Ministry of Planning and Budget
	Kim Ui Hyun	Male	Director	2018.10.29 ~ 2020.10.28	Former policy researcher of Trade, Industry, Energy, SMEs, and Startups Committee at National Assembly
	Kim Jong Chul	Male	Director	2018.12.4 ~ 2020.12.3	Representative Attorney of SaeSeoul Law Firm
	Ju Jin Woo	Male	Director	2018.12.4 ~ 2020.12.3	Member of the Presidential Committee on Jobs
Kim Hye Sun	Female	Director	2018.12.4 ~ 2020.12.3	Professor of the Dept. of Consumer Science, Suncheon National University	



Suggestions of non-executive directors on management increased

3 items were adopted in our policies in 2018

Subcommittees

KOGAS strengthens the function of checking and supervising its business through non-executive directors, appointed on the basis of their expertise and diversity. This is why KOGAS established three subcommittees under the BOD: Audit Committee, Committee of Sustainable Management, and Overseas Project Committee. In 2018, KOGAS increased the number of directors of the Overseas Project Committee to three and organized its operation system by placing the Planning and Adjustment Department and Overseas Project Planning Department under the oversight of the Committee of Sustainable Management and the Overseas Project Committee, respectively.

Division	Composition	Key Roles
Audit Committee	Executive (one) Non-Executives (two)	<ul style="list-style-type: none"> Report to the BOD on the violation of laws or articles of association of directors Items delegated by the BOD and matters specified by the laws or articles of association as agendas of the Audit Committee
Committee of Sustainable Management	Non-Executives (two)	<ul style="list-style-type: none"> Mid- and long-term administration plans and major investment projects Budget and operational plans, management evaluation, public relations projects, etc. Safety & Environment projects, ethics management, social contribution activities, etc.
Overseas Project Committee	Non-Executives (three)	<ul style="list-style-type: none"> Exploration, development, and production of overseas resources Deliberation or consultation on overseas plant projects and other overseas projects

Evaluation and Remuneration of the BOD

KOGAS has established a BOD management system that manages the members' activities and performance, including attendance rate, management suggestions, and percentage of comments, in order to ensure that the BOD faithfully performs its job and that fair and transparent compensation can be achieved. The BOD conducts self-assessments at the end of each year, and the results are reflected in the annual plan of the next BOD. KOGAS regularly conducts performance evaluations on all directors and shares the content in a transparent manner in its sustainability reports and on the electronic disclosure system.

As for remuneration, service allowance is paid to the non-executive directors, and the annual basic salary of the CEO, executive directors, and auditors is determined by the BOD within the limited amount of the remuneration approved by the general meeting of shareholders. The CEO and the executive directors receive differential remuneration according to their performance evaluation results every year based on performance indexes such as financial performance, external evaluation, and environmental and social indicators of administration activities.

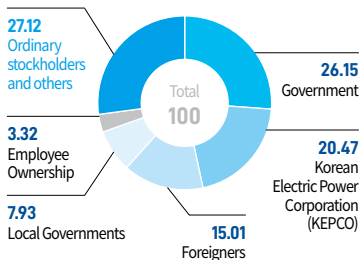
Remuneration Amount of the BOD Members in 2018

(Unit: KRW 1,000)

	The number	Total amount	Average amount per director	Note
Registered Directors	3	505,059	168,353	
Outside Directors	8	-	-	KRW 2.5 million per month (for service)
Auditor executive	1	152,183	152,183	

Ownership Structure

(Unit: %)



Ownership Structure

KOGAS, listed on the Korea Exchange on December 15, 1999, has a legal capital of KRW 1 trillion. Our shareholders are composed of public and general shareholders, and the government, KEPCO, and local governments hold 54.56 percent of the total shares. Our largest shareholder is the Korean government, which owns 26.15 percent. There have been no changes in the largest shareholder in the past three years.

Risk Management

Systems of risk Management

Strategies for Risk Management

KOGAS defines risk as an element of uncertainty and opportunity loss that hinders the achievement of strategy and business goals, including crises* and hazards**. To respond to risk, KOGAS has established an enterprise-wide system of risk management with which we can identify potential risks that would prevent KOGAS from achieving its goals from an integrated perspective, determine a level of risk allowed, take reasonable measures, and perform risk management under clear accountability.

*crises: critical threats to management or major services and facilities

**hazards: conditions that may cause loss or adverse impact to the business condition or corporate image

Organization for Risk Management

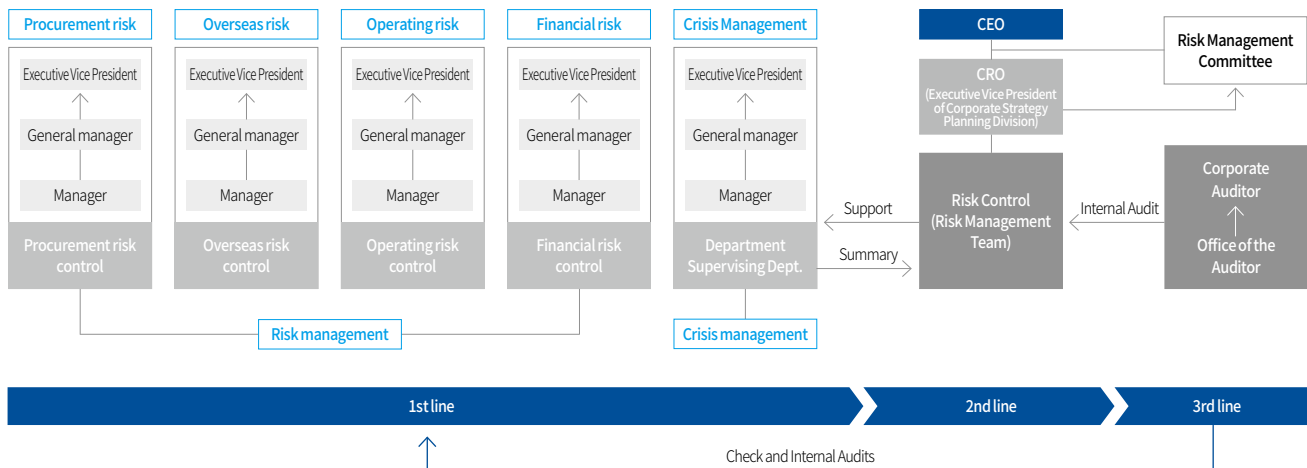
KOGAS’s risk management organization has been established on the basis of the “3 Lines of Defense” model. In Phase 1, each dedicated department conducts daily risk management tasks with the support of the department of risk management. In Phase 2, the department of risk management, directly under the Chief Risk Officer (CRO), builds a risk management system and monitors the current risk management tasks. In Phase 3, the Audit Committee oversees the procedural suitability of risk management activities through periodic internal audits.

The Risk Management Committee, consisting of the CEO, corporate auditor, and executive vice president, is responsible for overall risk management and deals with deliberating and resolving major issues. The committee is held at least once a year, reviewing corporate risk management and resolving agenda items. Through this organization, KOGAS ensures the independence of risk management.

Monitoring and Reporting Risks

KOGAS monitors the current risk management and recirculates the results to the designated departments in charge so they can effectively respond to major signs and risks on a quarterly basis. As for the reporting system, each department in charge according to the risk management organization reports the results of risk management activities to the general control department, the general control department gathers and reports them to the CRO, and finally, the CRO reports them to the Risk Management Committee.

Organization and Reporting on Risk Management



Risk Management Activities

Risk Checklist

Relevant nation
Resource confiscation and nationalization, natural disasters, political and social instability, inconsistency in policies and regulations, default of the country, lack of labor, lack of infrastructure, civil complaints, border disputes

Laws/Regulations
Regulation of foreign exchange and remittance, restrictions on export, regulations of use of local materials and companies, lack of laws/systems, local labor issues, environmental regulations

Market
Failure to secure raw material gas or sales locations, drop of commodity price, demand stagnation in sales area

Finance
Exchange risk, PF and management ability, accounting/ tax related issues, insurance related issues

Contract
Unfavorable business contracts with the government (or company) of the relevant nation, unfavorable contracts between business operators, EPC contract, SPA contract

Partner Companies
Nonfulfillment of contractual obligations by operators (participating companies), insufficient business management of operators, poor communication between business participants, nonfulfillment of liability to pay by purchasers

Technology
Exceeded CAPEX compared to a plan, underperformed facilities, delayed processes, insufficient technical analysis

KOGAS Supply Chain in 2018

Division	Number of companies
Tier 1 suppliers	131
Critical tier 1 suppliers*	56

*Suppliers of 19 specifications of 5 items, including natural gas ball valves, are identified as the critical suppliers.

Management of Emerging Risk

KOGAS has set up “emerging risks” to identify and manage risks that may be presented in future management activities in advance, carrying out response activities for each of the risks. In 2018, KOGAS identified climate and environmental changes such as greenhouse gases and airborne particulate matter, and decreases in brand value due to negative media coverage and various incidents as major emerging risks. The shift to a low-carbon economy may reduce demand for natural gas, and the lowered brand value may lead to the loss of national confidence and loss of business power. In this context, KOGAS actively responds to each risk by leading the hydrogen economy, creating demand for natural gas*, and conducting ethics management**. The response strategies and measures for each risk are included in the “KOGAS Innovation Comprehensive Plan,” which are systematically administered at the enterprise level.

*See pages 29 and 35 of this report for creating natural gas demand and leading the hydrogen economy, respectively

**See page 69-71 of this report for ethics management activities

Management of Overseas Business Risk

KOGAS proactively identifies and manages potential risks in the course of its overseas business. The departments of relevant businesses develop and use “risk checklists” of the target nations to identify these risks. Meanwhile, risk assessments are conducted for five areas (nation, economy, laws, technology, and operation) through the Investment Risk Committee as an independent organization. These overseas business risks are shared throughout the company on the investment management system so that anyone can view and analyze them.

Management of Supply Chain Risks

With the capability for quality, technical skills, and continuity of suppliers*, KOGAS manages its supply chain in an integrated manner through environmental, social, and corporate governance (ESG) activities and performance check-ups. The Supplier Code of Conduct** provides the basic environment, human rights, health, ethics standards for suppliers, recommending compliance with the statutory requirements, the contents of the Code of Conduct, and the requirements specified in the transaction agreement.

As for construction service, KOGAS conducts assessments in qualification examination based on the ISO 45001 certification, injury rate, and the infraction history according to environment-related laws. These assessments are conducted on all construction works of more than KRW 5 billion. The major equipment manufacturers (new or existing) are required to obtain ISO 9001 certification, and those who fail to acquire and maintain this certification will be dropped through regular evaluation (2 times/year). In 2018, there was no manufacturer sanctioned from the result of this evaluation.

*Suppliers of construction service and five main equipment (valves, insulated joints, metering facilities, control facilities, static pressure facilities)

**For more information about the Supplier Code of Conduct, see our website: <http://www.kogas.or.kr/DATA/contents/kogasSCoC/index.html#page=1>

Strategies of Managing Supply Chain

Quality ISO 9001 ISO 45001 Certification	Technical ability Verification of technical skills such as design/fabrication based on the delivery performance of goods	Continuity Checking on management crises (mergers, etc.)	Delivery period Actual production capability	Transparency in selection Public tender
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Key ESG Targets

- **ISO 9001 Certification** Securing proper quality through building of a quality system and the production capacity of major manufacturers
- **ISO 45001 Certification** Adding points to companies possessing the ISO 45001 certification to enhance safety and health activities of suppliers to reduce industrial accidents at construction sites

Stakeholder Engagement

KOGAS actively encourages stakeholder participation throughout its administration activities by identifying new opportunities and risks by collecting stakeholders’ needs and opinions on economic, environmental, and social aspects surrounding the public corporation and by pursuing innovation with our stakeholders. KOGAS’s stakeholders refer to individuals or groups that can be significantly affected by the activities and services of the public corporation. Conversely, the actions of the stakeholders can affect the company’s implementation of our strategies and fulfillment of our goals. KOGAS divides stakeholders by comprehensively analyzing their influences on the public corporation, making every effort for what the stakeholders expect to be reflected in its administration activities by preparing communication channels for each group of stakeholders and activating communication through the channels.



Leading Customers

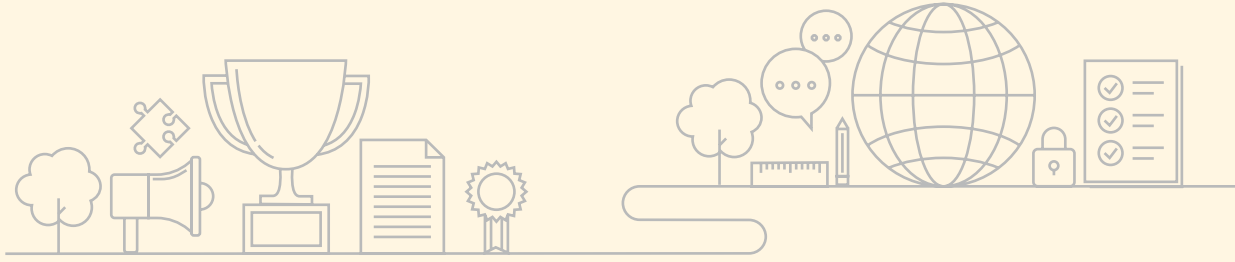
Division	Actors of national benefit and the growth of the gas industry
Stakeholder Groups	Executives and employees, labor union
Communication Channels	<ul style="list-style-type: none"> • Expanded executive council, management committee • Talk with the CEO • Labor-management council, the Intranet
Major Communication Activities and Performance	<ul style="list-style-type: none"> • KOGAS sketchbook and CEO meeting (a total of 42 times) • Managers’ listening to on-site problems and employees’ suggestions (58 times) • Joint labor-management conference (42 times) • Collected 2,412 opinions by activating communication through the company’s Intranet (La Plaza)



Cooperative Customers

Division	Relations of policy coordination for public service
Stakeholder Groups	People, the government, the National Assembly
Communication Channels	<ul style="list-style-type: none"> • Business consultations on pending issues, forums, associations • Mid- to long-term management strategy reports, etc. • Support for parliamentary activities such as parliamentary inspection
Major Communication Activities and Performance	<ul style="list-style-type: none"> • Received 22 cases of national ideas and suggestions • Strengthened communications by establishing the “Love NG” of the citizen participation innovation group • Established strategies for implementing KOGAS hydrogen business by discussing innovation promotion • Revised the Korea Gas Corporation Act and reformed the energy taxation system through persuasion of the revision of the law and the system





Coexisting Customers

Division	Contribution to benefit enhancement through gas supply and sharing of growth with partnership
Stakeholder Groups	City Gas Producers, power generation companies, direct importers for their own consumption, local communities
Communication Channels	<ul style="list-style-type: none"> • On-site orientation, business information session • Seminar on Customer Satisfaction Improvement • Social contribution activities
Major Communication Activities and Performance	<ul style="list-style-type: none"> • Through the Co-Marketing Committee*, an additional KRW 3.7 billion was saved by efforts to reduce the blind spots of welfare with the One-Stop service. *To seek social values by cooperation with city gas and wholesale and retail sales • Expanded local-specific energy welfare projects and social contribution projects through the Safe Village Councils and the social contribution budget system



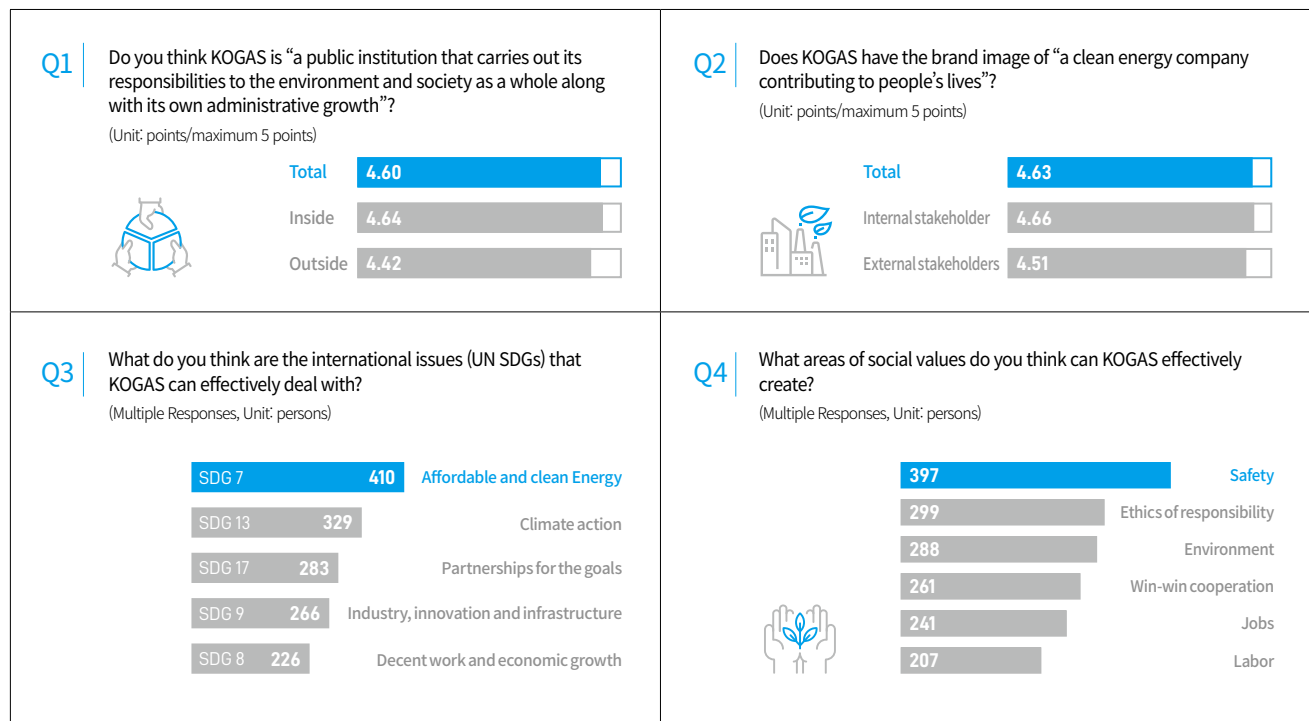
Underlying Customers

Division	Support and cooperation for performance for growth of the gas industry
Stakeholder Groups	Subsidiary companies, foreign relevant countries, contractors
Communication Channels	<ul style="list-style-type: none"> • Sharing major market trends • Intergovernmental agreements, etc. • Technology sharing and new business cooperation system
Major Communication Activities and Performance	<ul style="list-style-type: none"> • Enacted and revised six relevant regulations by conducting joint workshops between the private sector, the public sector, and the industry. • Prepared a plan to promote our hydrogen project through the hydrogen fusion alliance • Promoted university cooperation projects in Daegu and Gyeongsangbuk-do Province as the win-win platform for industry and school in the energy sector (2 cases, KRW 300 million)

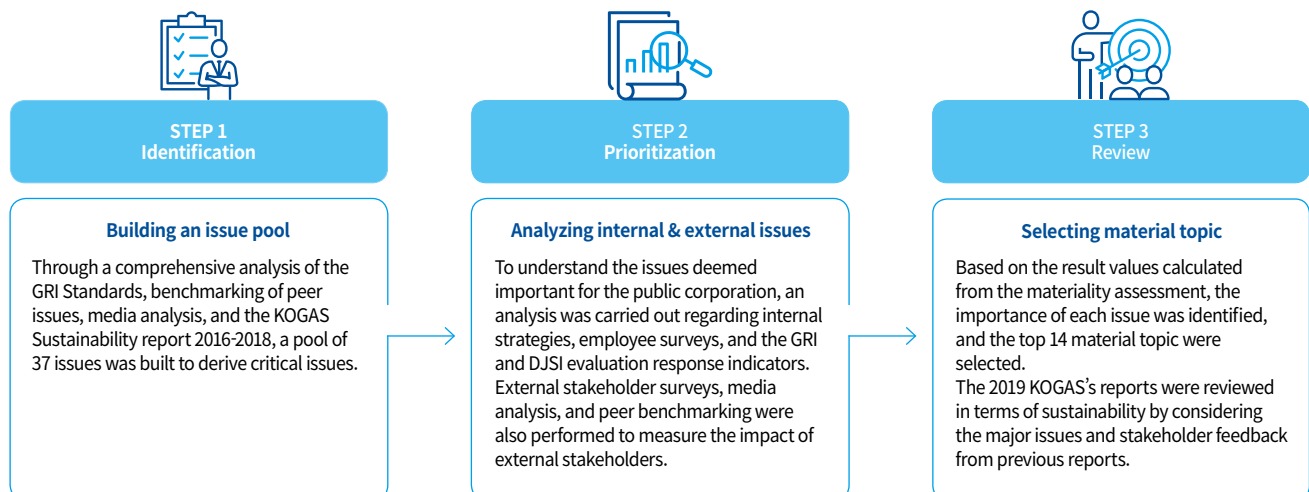
Material Topic Assessment

KOGAS has drafted 14 material topic on sustainable management in consideration of their business impacts on corporate administration and influence on stakeholders. To select the issues, KOGAS built a KOGAS-specific sustainability issue pool, collecting the opinions of 604 internal and external stakeholders, and identifying priorities on sustainable management issues. The selected material topics are systematically managed in terms of performance based on the corporate goals and strategies and are disclosed through various channels, including sustainability reports.

Awareness of Stakeholders on Sustainability Management

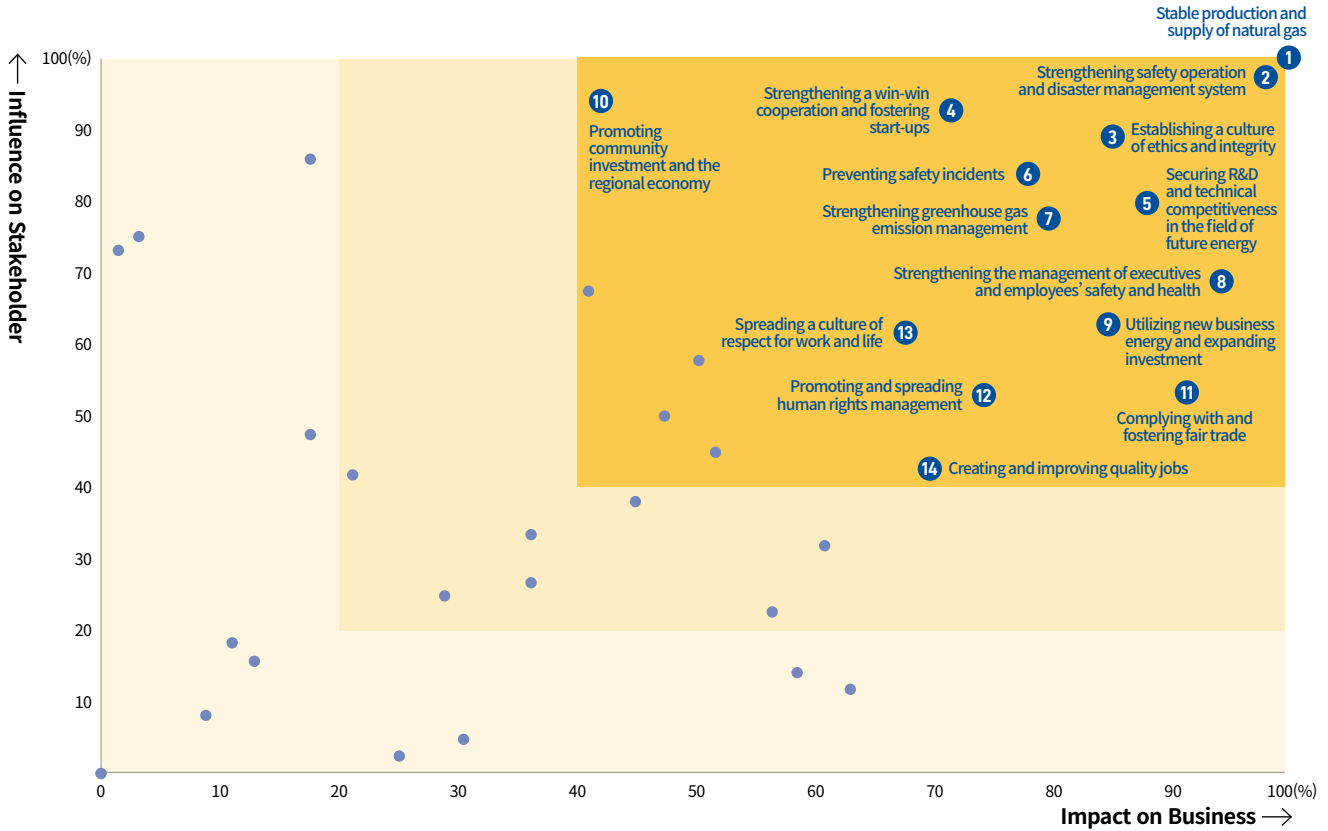


Process for the Selection of Material Topics



Material Topic Assessment Results

KOGAS performed a material topic assessment to select issues that internal and external stakeholders felt were important. The 14 most material topic in terms of business impact and stakeholder impact were selected, and the activities and results related to each issue were reported.



Material topic	GRI topic	UN SDGs	Pages
A Future Energy World Created with Global Innovation	-		24-35
Creating a Better Society Together	Local Communities Employment		36-45
Responsible Company that Prioritizes People and Nature	Occupational Health and Safety Emission		46-57
Corporate Culture of Respecting and Trusting Each Other	Anti-corruption Anti-competitive Behavior Human Rights Assessment Diversity and Equal Opportunity		58-71

* Material issues and relevant performance data cover more than 75% of our business sites based on the KOGAS's headquarter, domestic offices, KOGAS Research Institute, and overseas business sites.

Implementing Sustainable Management



24 A Future Energy World Created with Global Innovation

36 Creating a Better Society Together

46 Responsible Company that Prioritizes People and Nature

58 Corporate Culture of Respecting and Trusting Each Other



A Future Energy World Created with Global Innovation

Sustainability Context

Natural gas has been used as a major fuel in all areas of daily life - industry, transportation, cooling, and heating, replacing conventional fossil fuels of oil and coal. It also serves as a driving force for high value-added generation in connection with the front/back industries such as LNG carriers and plants. Natural gas will be more useful in the future because it can be used in fuel cells to effectively utilize hydrogen, a promising future energy source.

KOGAS Approach

As a public institution that operates the entire processes of procurement, production, supply, and sales of natural gas, KOGAS identifies safe and stable provision of natural gas and enhanced accessibility of natural gas to be its key tasks for improving the national economy and people's benefit. For this end, KOGAS is making efforts to achieve stable supply through accurate demand forecast, production management, resource exploration and development, and continuous innovative activities, taking the lead in the future energy business.



Key Performance



Interview

Jae-kyong Kim, Researcher at Korea Energy Economics Institute



KOGAS leading eco-friendly future energy through natural gas business infrastructure

Natural gas is an important energy resource accounting for 15.7% of the country's primary energy supply. It is considered to be an eco-friendly energy resource, since it not only emits little pollutant, but the thermal efficiency is also excellent. It can additionally be utilized for hydrogen supply, which is being considered as a future energy resource. Therefore, demand for natural gas is expected to increase, and, in turn, the role and status of KOGAS is expected to rise, as well.

KOGAS, which represents a major part of the domestic introduction of LNG, is establishing stable supply infrastructure based on the national pipe network and production base. Based on this, KOGAS has been dedicated to the expansion of LNG supply and decrease in fine dust and greenhouse gases, such as CNG buses and gas-powered cooling.

I am looking forward to KOGAS playing an important role in the activation of a hydrogen economy. Installing hydrogen extractors at LPG and CNG stations is necessary in order to establish a foundation for the mass supply of hydrogen at early stage, and KOGAS, with its natural gas infrastructure, has to take charge. I am looking forward to KOGAS successfully implementing a road map for the promotion of a hydrogen project, with business capability and experience, and contributing to the expansion of hydrogen supply.

Responsible Business Operation



In 2018 Reduced Procurement Cost

KRW **305.8** billion

reduced gas charges per household by
▼KRW **11,075** per year

Energy Procurement

Improving Supply and Demand Management System and Achieving Zero Emergency

KOGAS strives to proactively respond to changes in demand during winter by upgrading its natural gas supply and demand management system. In 2018, KOGAS applied the increase/decrease in demand for natural gas due to abnormal temperatures such as heatwaves to the existing demand forecasting model. After the calibration, the error rate of demand forecast was improved; it was 6.0%, a 3.1%p improvement when compared to that of 2017.

KOGAS has established an optimal inventory management system to realize uninterrupted natural gas supply. In 2018, KOGAS set up a time to secure a shortage and the monthly amount to be procured via the Supply and Demand TF and the Committee of Procurement Contract Review. As a result, despite the rapid increase in demand for natural gas due to unusual cold waves (the natural gas supply reaching the highest ever, 224,621 tons a day), KOGAS achieved “Zero” supply emergencies.

Enhancing Competitiveness of Natural Gas Pricing

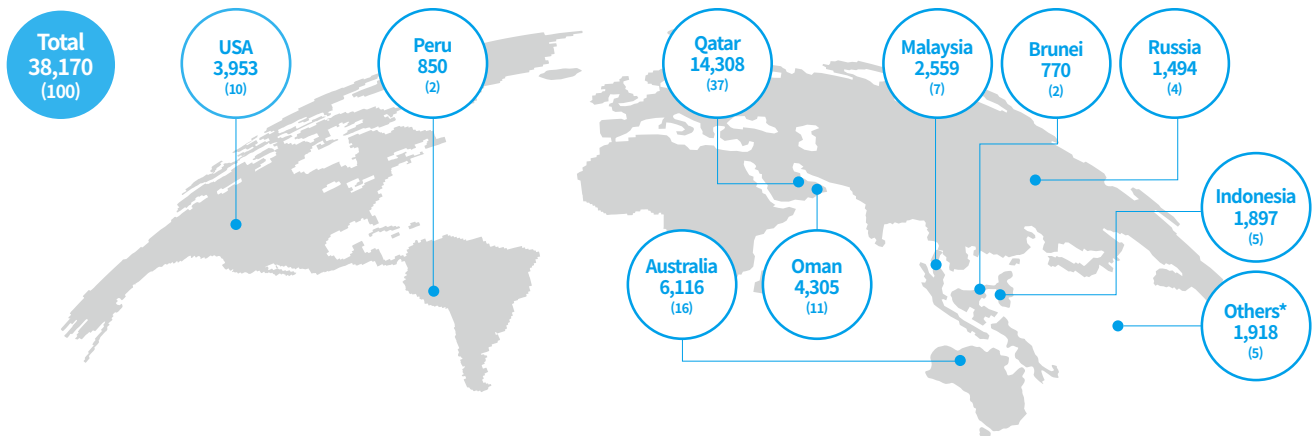
KOGAS has enhanced the procurement competitiveness of natural gas by improving the price of long-term contracts and signing new short-term contracts, consequently contributing to the reduction of the public’s burden of charges. Through the method, which deals with winter volume and lower demand volume altogether, KOGAS has additionally secured preemptive volume to respond to supply and demand crises in winter, lowering the LNG purchase cost by as much as KRW 148.1 billion.

Operating LNG Carriers

LNG carriers are essential for the stable procurement of LNG into South Korea. KOGAS has ordered 29 national flag carriers so far, contributing not only to the stable supply of LNG but also to the growth of the domestic shipbuilding and shipping industry. To enhance the stability of the LNG transport process, KOGAS minimizes the difference between the charges to be paid and those to be calculated and aims to operate the carriers without incident. In 2017, KOGAS achieved 0.18 percent in terms of transportation error rate, zero freight dispute, and 282 sailings without incident.

LNG Procurement (2018)

(Unit: Volume of procurement (thousand tons), In parenthesis: Share(%))

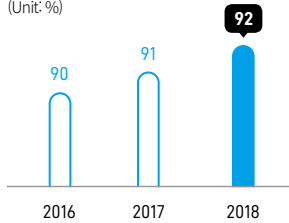


*Others: Angola, Trinidad, Equatorial Guinea, Papua New Guinea, Algeria, Singapore

Production and Supply of Energy

LNG Distribution for Local Governments

(Unit: %)



The Number of System Failures

70% decrease from
the previous year (9 cases)

Expanding LNG Supply Infrastructure

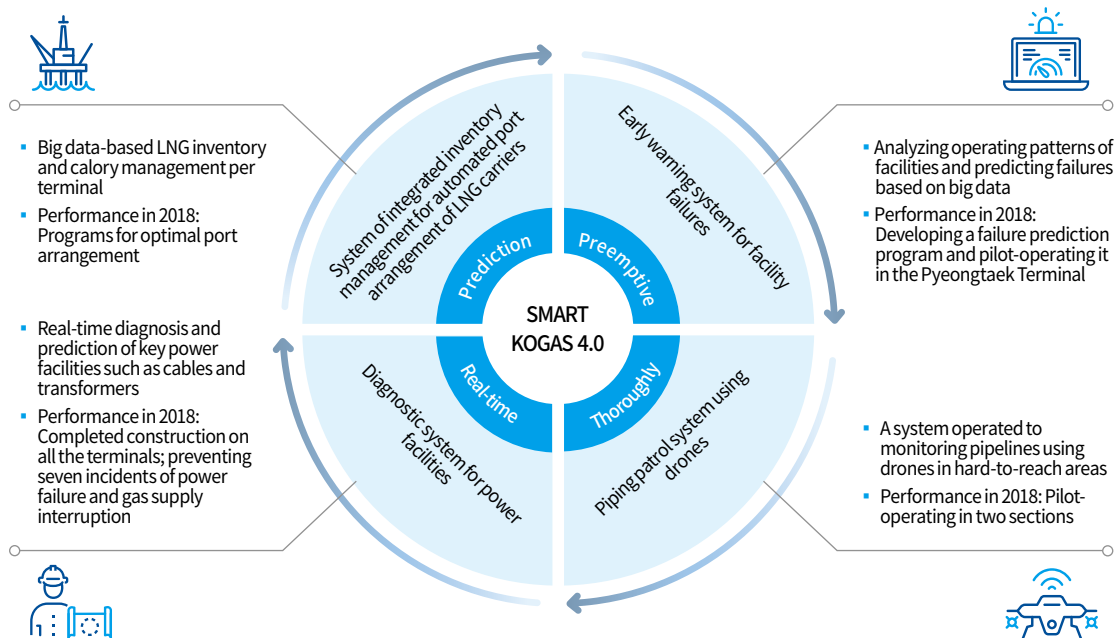
KOGAS makes efforts to expand its LNG supply infrastructure to ensure stable and convenient use of LNG in every part of the country. KOGAS currently manages 72 LNG storage tanks, the vaporization delivery facility capable of producing 15,000 tons per hour, 4,854 kilometers of main piping, and 403 supply control centers. Compared to January 2018, the main piping increased by 64km and the supply control centers increased by 6. The figures also reflect the construction of new pipes for the Honam region (from Imsil to Jinan) and for the Geoje-Jinhae section, which has recorded the longest undersea tunnel in Korea (7.8km). As part of the separation of production based in the Seoul metropolitan area, KOGAS completed a vaporization delivery facility in Incheon Terminal, which can deliver 1,080 tons of natural gas per hour, thus minimizing the risk of gas interruption due to facility failure.

Comprehensive Improvement of LNG Terminal and Supply Facilities

To ensure an uninterrupted supply of natural gas, it is essential to manage the supply systems connecting to domestic terminals and piping networks across the country. In 2018, KOGAS conducted 153 comprehensive maintenance procedures on its terminals. Its 877 long-term operating facilities with an operational period of more than 15 years received precision diagnosis, and 67 out of the 75 facilities that require reinforcement have been completed such tasks. Due to the maintenance, the number of system failures according to equipment failure was 9 in 2018, a 70% decrease when compared to that of the previous year.

Improving the diagnosis and supply management of production facilities using ICT

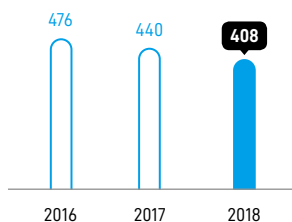
To respond to the increase in operating costs and the imbalance in the LNG inventory and gas calories due to the increase and aging of its gas production facilities, KOGAS has established a system of analyzing, diagnosing, and operating its facilities based on ICT. Now the existing personnel and systems were supplemented, which provides a stable basis of gas supply.



Overseas Projects

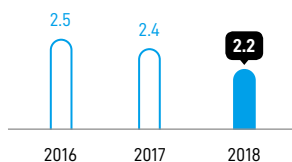
Development and Production

(Unit: 10,000 tons)



Oil and Gas Reserves

(Unit: 100 million tons)



In 2018 Net Profit from Overseas Business

KRW **42.2** billion

Resource Development Project

KOGAS has promoted projects to develop overseas resources in order to reduce reliance on imported energy and to contribute to strengthening national energy security by developing resources directly. Considering that development of resources may take a long time to generate profits and that a failure could worsen the public perception of resource development, it has been focusing on securing profitability and substantiality of resource development projects.

KOGAS is currently performing 13 E&P projects and 8 LNG projects as of 2019. It selected North America and Africa as key strategic areas, additionally securing 2.56 million tons of LNG per year for use until 2025 and actively exploring new projects to secure natural gas resources in the future.

In particular, the Prelude project in Australia started producing LNG in June 2019 at the world's largest offshore liquefaction plant (FLNG) and is expected to contribute to the stabilization of domestic energy supply by securing 10% of the production as the amount of share that can be treated.

Overseas Downstream Infrastructure Market

Overseas downstream infrastructure projects cover the development, investment, construction, operation, and technical service projects of various facilities, such as LNG plants and supply piping, for supplying natural gas from abroad. KOGAS is currently carrying out four infrastructure projects based on its 30 years of capability in the domestic gas infrastructure business. In Mozambique, it is in control of development, investment, construction, and operation from the gas pipeline to control tower; in Mexico, the company is performing the investment, construction management, operation, and maintenance of the LNG acquisition bases.

Gas Leadership in Northeast Asia

KOGAS has strengthened its gas cooperation system with Russia, which has abundant natural gas resources, in order to keep in line with the government's New Northern Policy and secure new sources to diversify its procurement lines. It also launched a joint research project with Gazprom of Russia, in order to procure PNG through a pipeline connecting South Korea, North Korea, and Russia. In addition, as part of establishing a Northeast Asian circular network to enhance supply stability, KOGAS discussed methods of cooperation with CNPC of China on a Korea-China pipeline. KOGAS will continue to improve the supply stability of natural gas by securing various energy sources, diversify supply sources, contribute to enhancing negotiating power in purchasing, and reducing the cost of importing the gas.



The Offshore Drilling Rig, Myanmar

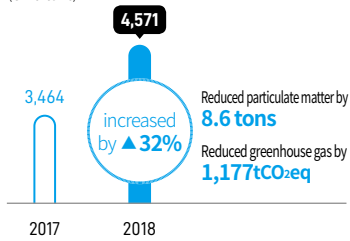


The FLNG Facilities in Prelude, Australia

Leading the Future Energy

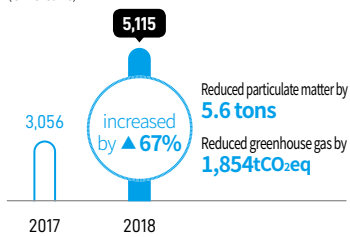
Sales of LNG for Ships

(Unit: tons)



Sales of LNG for Trucks

(Unit: tons)



Demand Creation for Natural Gas

LNG Bunkering Business

As the International Maritime Organization (IMO) has tightened its regulations on sulfur oxides (SOx) in all shipping fuels, LNG is drawing attention as a fuel that can replace the existing fuel for ships. The global LNG demand for marine fuel is expected to reach about 30 million tons/year by 2030. KOGAS is promoting its LNG bunkering project to supply LNG as a marine fuel as part of its efforts to create the demand for LNG. KOGAS promoted an institutional readjustment to expand the supply of LNG propulsion ships in 2018; it is currently working on a business plan to conduct the bunkering project in 2019. KOGAS is preparing to supply LNG to two ore carriers and two iron ore carriers on the Korea-Australia route, which are scheduled to start operations from 2021 and 2022, respectively. These efforts resulted in a 32% increase in sales of LNG for bunkering compared to the previous year.

Expanding Supply of LNG Large Vehicles

KOGAS is promoting the project to supply LNG large vehicles, in which the fuel of large vehicles such as cargo trucks, container transport vehicles, yard tractors, and ready-mix truck are converted into LNG, in order to create new demand for LNG and contribute to reducing particulate matter on the roads. In September 2018, LNG freight cars that were jointly developed with Tata Daewoo and the Korea Natural Gas and Hydrogen Vehicle Association were pilot-operated. In 2019 KOGAS is scheduled to pilot-operate yard tractors, cleaning vehicles, and concrete mixer trucks as a result of joint development. KOGAS is also in the process of expanding small-scale charging facilities to expand the infrastructure of large LNG vehicles. Due to these efforts, the sales of LNG for large vehicles increased by 67% compared to the previous year.

Expanding Gas Cooling

Gas cooling is the most reasonable method for mitigating summer energy peak problems due to its excellent replacement of electricity, requiring continuous expansion of supply. KOGAS has encouraged the use of gas cooling by providing support funds for the installation and design of the gas cooling equipment. The support funds are varied on the basis of capacity and efficiency of the equipment certified by the Korea Energy Agency as being high-efficiency energy material. As of 2018, KOGAS has supported KRW 5.8 billion to sources of demand. The sales of LNG for cooling in 2018 reached 270,000 tons due to the active promotion including seminars.



LNG Bunkering



LNG Truck

New Energy Business

Launching Hydrogen Project

Although hydrogen as an element occupies 75% of the universe, hydrogen as gas is rare in nature. Most hydrogen on Earth exists in molecular forms in water and fossil fuel (natural gas, coal, and petroleum). Therefore, use of hydrogen as energy requires its resolution, and the most economical and realistic way to produce hydrogen in quantity is natural gas reforming. KOGAS aims to lead the transfer to hydrogen economy, based on its natural gas supply technology and infrastructure managed for more than 30 years. It set up legal, organizational foundations in 2018 and signed a MOU with Woodside of Australia to strengthen cooperation in hydrogen-related R&D and human resources exchanges.

Development of Fuel Cells

KOGAS has reviewed a project of the world's largest 100MW fuel cell using Boil Off Gas (BOG)* which are generated at LNG Terminals as a part of the activation of fuel cell business. In August 2018, it signed an MOU with Korea Hydro & Nuclear Power Co., Ltd. and other partners of joint business development. KOGAS is also making various efforts for development and activation of the fuel cell technology, including building and operating a fuel cell development consultative body with relevant institutes and suggesting policies and improvements in institutions.

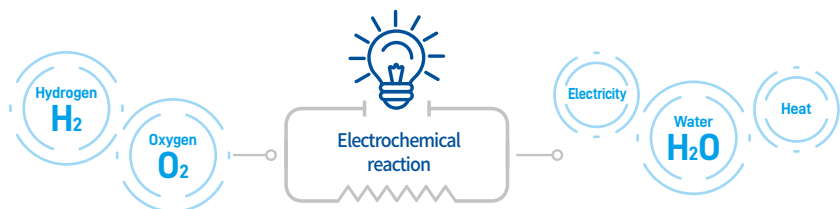
*BOG(Boil Off Gas): The gas evaporated during LNG storage, which is mostly generated in Summer

New Gas Rates System for Fuel Cells

Fuel cells refer to a technology that converts chemical energy from chemical reactions between hydrogen and oxygen by reforming natural gas into electrical energy. Therefore, fuel cells are associated with the hydrogen industry, which is considered a future energy source and growth engine, and can be expected to create demand for natural gas. Since 2018, KOGAS has undergone research of activating a distributed power system* with fuel cells and held public hearings. As a result, a gas rating system for fuel cells will be introduced in May 2019, which will lower the wholesale price of city gas used in fuel cells. This introduction is expected to popularize fuel cells by reducing fuel cost and improving economic efficiency of the cells.

*Distributed power system: Power supplies that can be distributed for arrangement around places of power consumption (houses, commercial buildings, etc.)

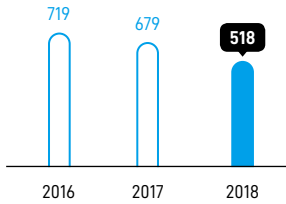
Operating Principle of Fuel Cell



Research Activities

Current Condition of R&D Investment

(Unit: KRW 100 million)



Current Condition of Intellectual Property Rights and Technical Transfer

(Unit: cases)

Industrial property right	2016	2017	2018	
Patent	Application	48	69	62
	Registration	53	45	30
Program	0	0	1	
Technology transfer (maintaining the contract)	18	19	19	

Technological Innovation through Professional Research

KOGAS makes efforts to develop new technologies that can be applied to global sites and enhance its technological competitiveness in the energy sector through investment into R&D. The Gas Research Institute of 110 researchers has conducted research on various fields, including the development of technologies throughout the entire LNG industry and the utilization of renewable energy resources. Some of the results are the Korean-type cargo hold (KC-1), a design for LNG storage tanks, and the development of state-of-the-art pipeline management technology (intelligent pig).

Major Businesses

Exploration and development of natural gas	Procurement and transportation of natural gas	Supply of natural gas	Clean energy
<ul style="list-style-type: none"> - Oil and gas field E&P - CBM* - Shale, tight gas - GM/polar resources 	<ul style="list-style-type: none"> - Design of storage tanks - Cargo hold (KC-1) - Liquefaction plant and process 	<ul style="list-style-type: none"> - Intelligent pig - Mensuration of gas quality - Risk and safety diagnosis - Integrity of methods and pipes 	<ul style="list-style-type: none"> - Hydrogen fuel cell - Natural gas cars - LNG bunkering - Synthetic natural gas - DME** - GTL***

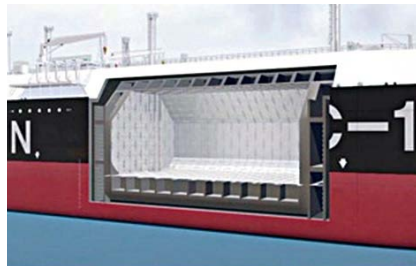
* Coalbed methane (CBM): The gas produced on the surface of coal by thermal action of microorganisms, pressure, and temperature

**Dimethyl ether (DME): A type of synthetic material produced from various raw materials such as natural gas, coal, biomass, etc.

***Gas to liquid (GTL): The technology for making synthetic crude oil from natural gas

2025 Future Solutions Portfolio

Current Key Technologies	Next major technologies	Future promising technologies
<ul style="list-style-type: none"> - Design of LNG storage tanks and terminals - Design of liquefaction plant - Risk assessment for safety diagnosis of gas facilities 	<ul style="list-style-type: none"> - Shale gas production - Pipeline gas procurement - Demand creation for new natural gas - Establishment of hydrogen infrastructure based on hydrogen - production/supply - Alternative natural gas 	<ul style="list-style-type: none"> - Design of gas field production system - Evaluation of oil and gas fields and technology to enhance production - Smart Gas Grid



The Korean-type cargo hold, KC-1



Intelligent Pig

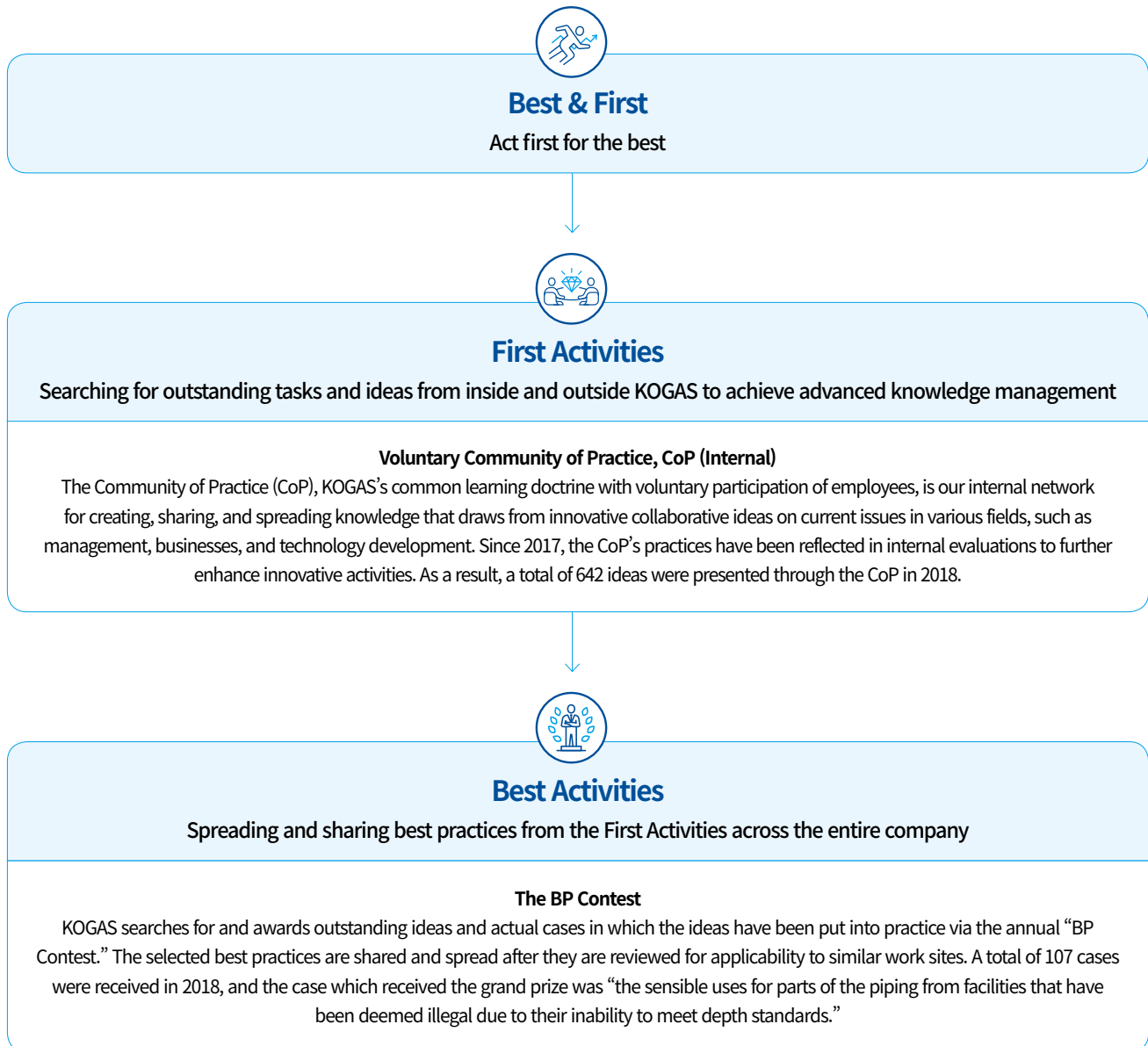
Management Innovation

Innovations in Business and Technology Via Autonomy and Openness



BP Contest

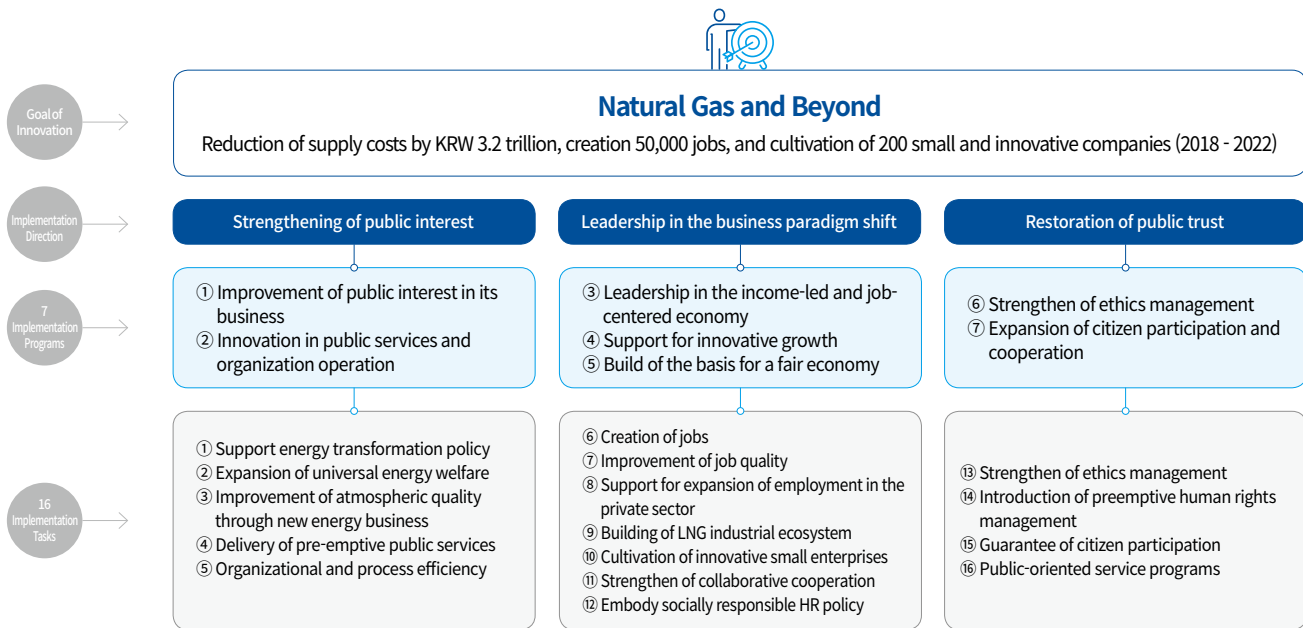
KOGAS creates outstanding collective knowledge and applies it to its managerial methods and business innovations through the autonomous participation of its executives and employees and by being transparent with outside stakeholders. To keep up with the era of convergence technology, KOGAS introduced the Open Innovation system to hold an idea contest for technology development in which the general public participated in. In addition, its executives and employees could operate voluntary learning communities and participate in the Best Practice (BP) contest, where internal ideas on innovation were collected, shared, and expanded upon. This innovative system for administration and technology via autonomy and openness is entitled “Best & First (BnF),” attracting the interest of employees and those on the outside as well.



Innovative Customer Services

Strengthen Public-centered Services

In August 2018, KOGAS announced the “Comprehensive Plan for Innovation at KOGAS” for the innovation of public services related to the public interest, job creation and collaborative cooperation, and public confidence in its business. Since KOGAS is a public corporation established to improve national welfare and benefit the public by supplying natural gas safely and stably, we are implementing company-wide innovations to increase the universal energy welfare for all citizens and meet the public's needs and expectations.



Expand Energy Welfare Service for the Underprivileged

KOGAS supports citizen energy welfare by lowering city gas fees for underprivileged customers, such as low-income families and the disabled, and for the social welfare facilities in our society. It operates the Visiting One-Stop Service as part of a joint marketing campaign with the Korea City Gas Association 33 city gas companies countrywide to expand the subjects of the fee reduction by strengthening PR and simplifying the application process. We also operate the Gas Tariff Reduction Management System to simplify the process of fee reductions. The system allows the qualified subjects to apply for fee reductions over the Internet or at a resident center without having to submit separate documents, and the approval process is linked with Haengbok-E-eum which is the government administration network.

Expansion of LNG Cold Energy Supply

Promoting Local Economy by Operating the Freezing and Refrigerating Cluster

KOGAS is carrying out a project of supplying unutilized LNG cold energy* to freezing and refrigerating logistics complexes in local communities. The project collaborated with the Incheon Port Authority and is scheduled to be constructed in 2020. We expect that it will contribute to the revitalization of the local economy through the creation of about KRW 4.3 trillion worth of added value, the employment of 26,000 persons, and saving of electricity consumption by 70%, over the next ten years.

* Cold energy: Heat generated during the storage and transport of natural gas

Efforts to Ease Public Burdens and Improve Public Benefits

City Gas Fee Reduction

KOGAS has restructured the existing fee system to ease the burden faced by citizens. We changed the time of applying the cost for profit and loss settlement from the winter season (January), when the LNG prices are relatively high, to the summer season (May), when the prices decrease, resulting in the lowering of the gas charges. In addition, we reduced the burden on the public by applying discounts to customers suffering from natural disasters, such as earthquakes or forest fires.

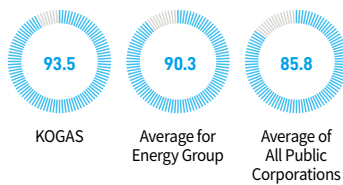
Construction of the Jeju Terminal Reflecting the Local Community's Needs

Residents in Jeju Island had difficulties and faced cost burdens when using city gas because of an inadequate supply of LNG. To solve the problem, KOGAS is constructing the Jeju Terminal in Aewol-eup, Jeju Island to minimize residents' inconvenience and enhance the image of a clean Jeju. When the construction is completed as scheduled in October 2019, KOGAS will supply city gas to 158,584 households over the next ten years to increase the distribution rate in Jeju Island to 57%. Furthermore, the gas charge will decrease by up to 40% so that residents will save KRW 14.7 billion annually in city gas costs.

Customer Communications

Customer Satisfaction

(Unit: points)



Operation of Public Communication Channel

KOGAS operates PR Centers in Daegu, Incheon, Pyeongtaek, Tongyeong, Samcheok, and Seoul and communicates using various content via online channels, including websites, blogs, and social media. Moreover, we operate a separate website for children who are future leaders. In addition, we initiated the Network for Customer Satisfaction Management to actively identify customer needs and carry out customer satisfaction projects according to customer types by the relevant departments.

Customer Satisfaction Programs Centered on Problem Solving

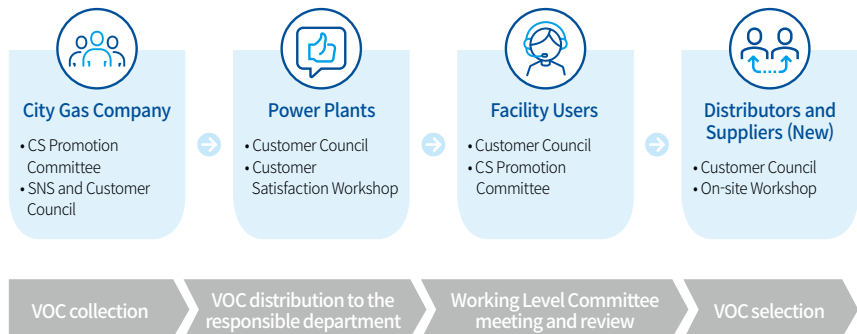
KOGAS has expanded VOC channels to understand and solve customer complaints by type. We arranged meetings with smaller distributors and suppliers through the Customer Council and On-site Workshops to receive a total of 87 VOCs and processed 39 of them by improving the gas charge payment guarantee and other measures.



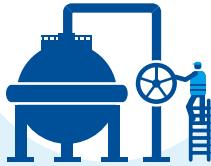
New Customer Council and Workshop for Customers which KOGAS Supply Directly

60 companies

VOC Channels and Process



Social Value 1



Strategic Cultivation of
Hydrogen Business

**First Public
Corporation**

Selection as
**the Outstanding
Innovation Case**

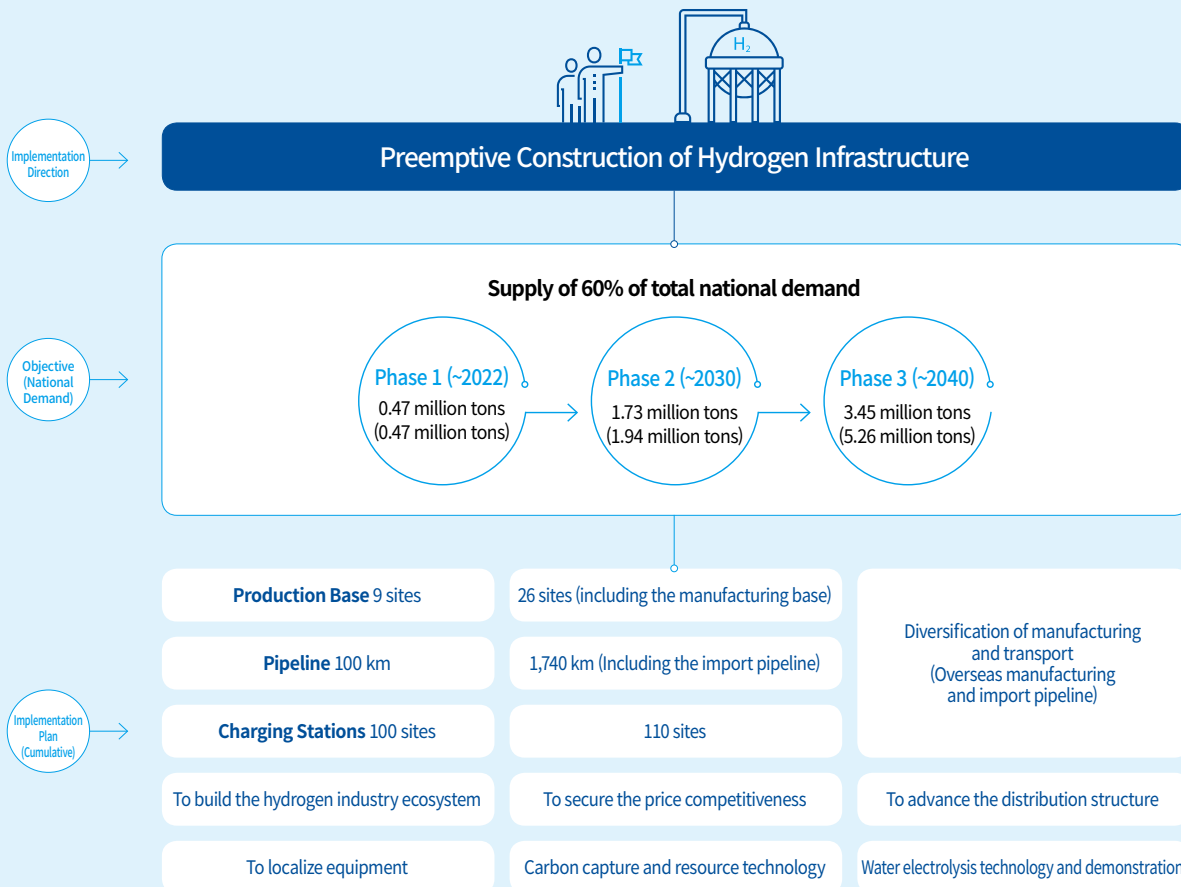
(by Ministry of Strategy and Finance)

Be a Leader in the Hydrogen Economy by Constructing Hydrogen Infrastructure

KOGAS, the Leader in Hydrogen Economy

Hydrogen business refers to the economic and industrial structure that uses hydrogen as its main energy source. Hydrogen has attracted attention as a new energy source, instead of existing fossil fuel-based energy systems, in recent years as the minimization of environmental impacts, to prevent things such as climate change and particulate matter, have become a social issue. In 2018, the Korean government selected the hydrogen economy as one of three areas for strategic investment and announced a roadmap for the promotion of the hydrogen economy as the plan to step forward and become a leading country in the world's best hydrogen economy with hydrogen cars and fuel cells as the key driving force.

KOGAS intends to take the lead in the construction of hydrogen infrastructure to lead the era of low-carbon and eco-friendly energy and promote the hydrogen economy by cooperating with the government's plan. For that purpose, KOGAS amended the Korea Gas Corporation Act to include the hydrogen business as one of the intended businesses and establish an institutional basis for constructing hydrogen infrastructure, such as the Hydrogen Committee and Hydrogen Strategy TF. Moreover, we detailed the hydrogen economy plan with the roadmap for the implementation of the hydrogen business. KOGAS intends to shift the energy paradigm and contribute to the strengthening of energy security.



Creating a Better Society Together

Sustainability Context

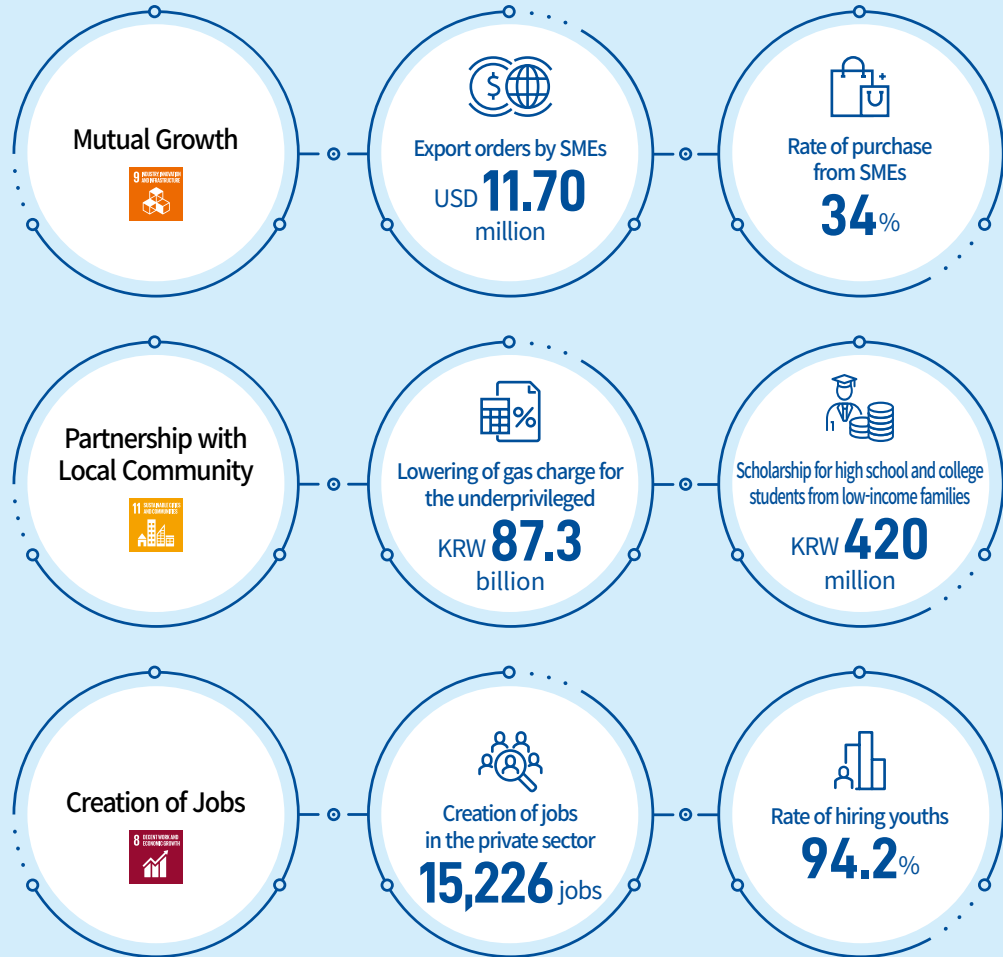
Fulfilling social responsibility has become an essential factor for corporate sustainability in recent years as the interest and demand for corporate social responsibility have increased. As such, companies are striving to fulfill their responsibilities as a corporate citizen by pursuing mutual growth with diverse stakeholders through the social return of corporate profits in addition to their core business activities.

KOGAS Approach

KOGAS carries out various activities to create a better society by contributing to the national economy and people's living. We are solidifying the partnership with local communities through mutual growth by localizing equipment and developing sales channels for small companies and the social contribution activities for vulnerable and underprivileged groups. Moreover, we are doing our utmost to become a public corporation that is trusted by the public and fulfills its social responsibility by contributing to solving job problems through recruitment of youth and creating jobs in the private sector.



Key Performance



Interview

Gab-sik Lee, Section chief of Daegu Metropolitan City Association of Social Workers



KOGAS bringing warmth to local communities

Daegu Metropolitan City Association of Social Workers and KOGAS are collaborating to promote social contribution activities in order to support people who are underprivileged, and poorly supported social welfare facilities.

The most representative social contribution we have worked on with KOGAS is a thermal efficiency improvement project, in which we aided social welfare centers and low-income households with installing insulation and boilers. This project enabled local welfare to improve by helping to reduce energy costs to welfare recipients. Aside from that, we have been implementing social contribution activities targeting every generation and stage of life.

KOGAS's social contribution programs have a huge advantage in terms of the fact that it listens to citizen opinions by holding contests for social contribution ideas and by considering constant support through satisfaction surveys after a program is complete. With such constant communication, KOGAS is distinctive compared to other companies, as it operates programs that offer welfare recipients actual aid. I hope KOGAS realizes sustainable management and keeps bringing warmth to the local community, through a variety of activities focused on social contribution and social value creation.

Mutual Growth



Export Booking by SMEs

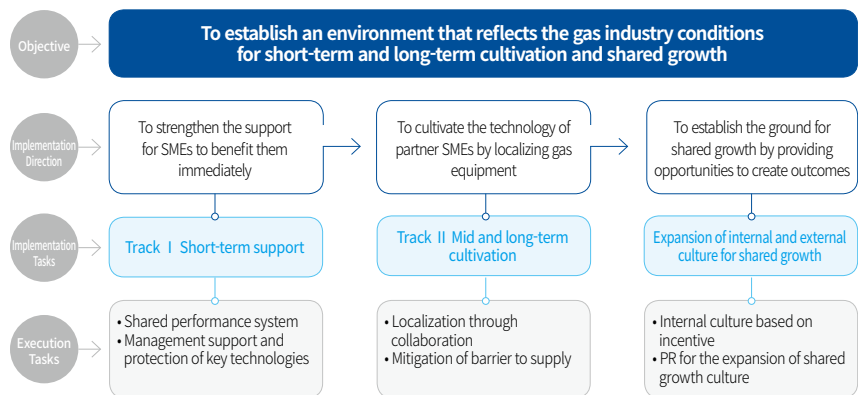
USD **11.70** million

(Highest record in KOGAS's history)

Mutual Growth Support System

KOGAS has established the two-track support system for shared growth that reflects the gas industry conditions to fulfill its social roles and responsibilities as a public corporation and to grow together with SMEs. We have set up short-term and long-term implementation projects for expansion of internal and external shared growth culture and present tasks to implement them.

Two Track Support System for Mutual Growth



Track 1. Strengthening of competitiveness of SMEs through short-term support programs

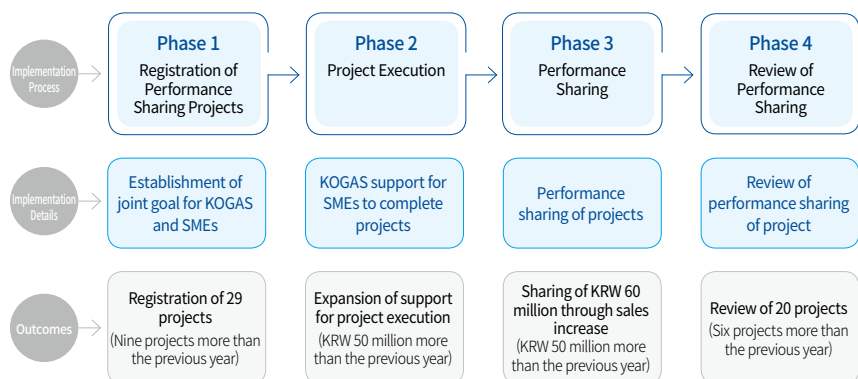


Operation of Shared Growth Hall for Natural Gas Industry at the 2018 World Gas Conference

Improvement of Competitiveness of SMEs by Supporting the Development of Sales Channels in Korea and Abroad

SMEs face many difficulties and limitations in developing sales channels. As such, KOGAS held purchasing workshops with 43 local SMEs and directly purchased KRW 9 million of products to enhance the competitiveness of SMEs. In addition, we provided five opportunities to promote SMEs for the development of overseas sales channels, and 38 small companies participated in them. We also held the regional strategic seminars through the cooperation with KOTRA and achieved the highest export orders ever worth USD 11.7 million. Other programs that contributed to helping the growth of SMEs include the support for the acquisition of patents and certification for eight SMEs.

Win-Win Shared Growth by Promoting Performance Sharing System



Track 2. Cultivation of SMEs through mid- and long-term support projects

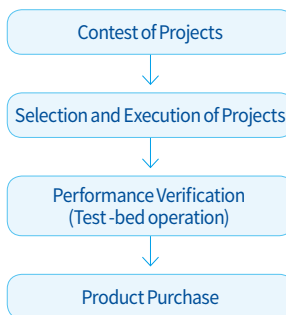
Establishment of Roadmap for Localization of Gas Equipment

KOGAS set the Roadmap for Localization of Gas Equipment to improve the know-how of domestic SMEs for localization of gas equipment and to secure the infrastructure for the performance verification. Based on the roadmap, we plan to cultivate SMEs to expand the pool of companies participating in localization and to establish open performance verification procedures and demonstration infrastructure (test-bed) to encourage SMEs to participate in localization of gas equipment.

Roadmap for Localization of Gas Equipment



Test-Bed Opening to Encourage SMEs to Participate in Localization of Gas Equipment



Improvement of Regulations and Schemes for Localization of Gas Equipment with Proven Quality

KOGAS has demanded the past shipment records to bidding companies for localization of gas equipment since the proven safety and performance were more important than anything. However, domestic startups and newly participating companies had the difficulties of having no reference and thus losing the opportunity even to bid. KOGAS listened to such VOC through the Shared Growth Committee and established the measures that expand the opportunity for domestic ventures to bid by drastically lowering the required previous shipment record to 1/10 or more or the total goods value from 1/3 or more.

Moreover, we created a new scheme of adding extra points to the localized equipment with the performance proven through the test-bed to expand and encourage the performance verification of domestic equipment. The target for localization of gas equipment was 61% in 2018, and KOGAS plans to increase it to 81% by 2022 to substitute about KRW 105.3 billion worth of imports.

Expansion of Internal and External Culture for Shared Growth

KOGAS intends to expand the culture for shared growth internally and externally to form the sound industrial ecosystem in which we can grow together with SMEs. KOGAS awarded departments and individuals who made efforts to purchase products from SMEs each year and established the sales target of participating SMEs to enhance the execution power of shared growth.

Moreover, we sponsored the production of a TV program that visited SMEs to meet the needs for promoting local SMEs and revitalizing the local economy. The program produced through the collaboration of Daegu City Hall, SME associations, and TBC has contributed significantly to enhance the image of SMEs and promote and market the products from them.



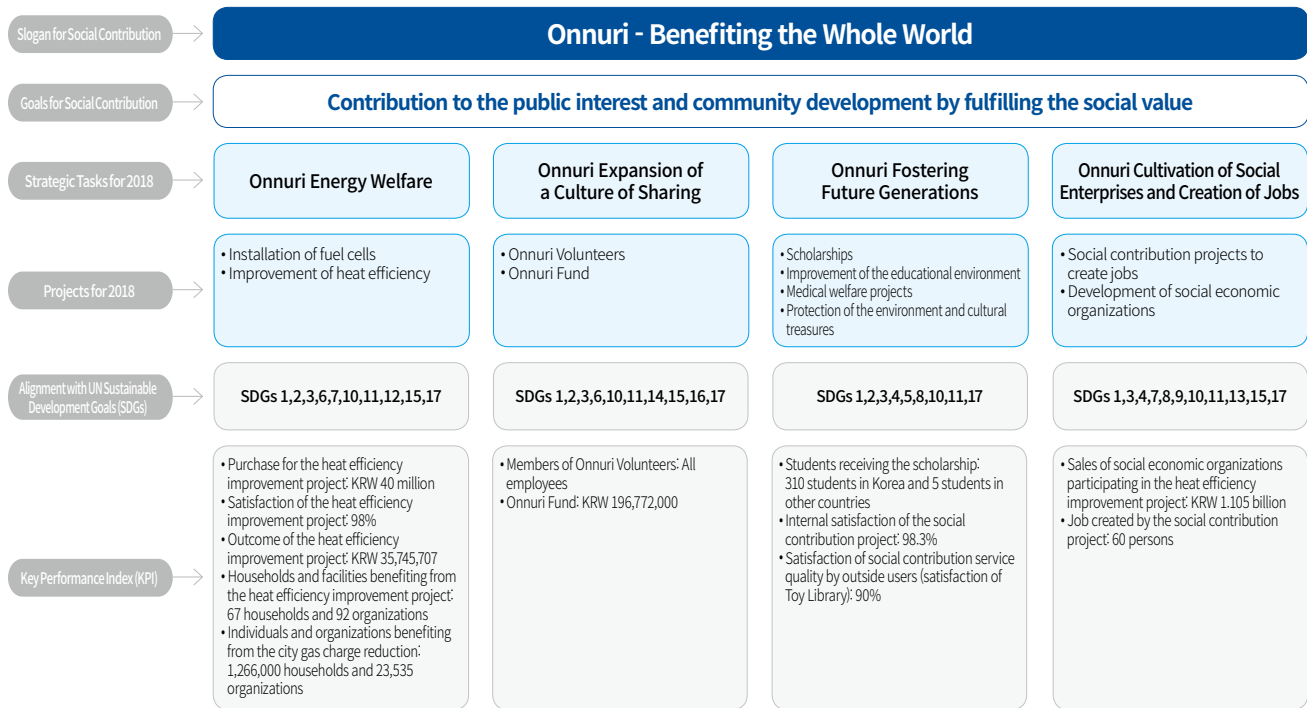
SME Participation Achievement of

103% of Sales Target
(KRW 678.6 billion)

Partnership with Local Community

Implementation System for Social Contribution Activities

KOGAS is committed to taking full responsibility as a corporate citizen by engaging in fundamental management activities which contribute to the livelihood of the public and returning corporate profits to society.



*For more details on UN SDGs, please refer to appendix.

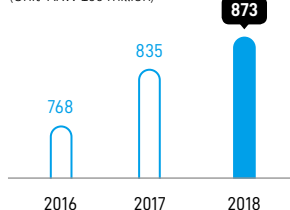
Realization of Social Responsibility through Energy Welfare Activities

Outcome of Heat Efficiency Improvement Project in 2018

Participating companies (number)	19
Sales (KRW million)	1,105
Purchase amount (KRW million)	40

Lowering of Gas Charge for the Underprivileged

(Unit: KRW 100 million)



Heat Efficiency Improvement Project

Since 2010, KOGAS has been supporting wallpaper work, floor work, insulation, and windowing for welfare facilities and low-income families and encouraged the participation of social economic organizations in the project to help cultivate social enterprises and create jobs. We have invested KRW 1.67 billion in 163 locations in Daegu and Jeju regions as part of heat efficiency improvement project in 2018 and have supported KRW 16.8 billion in a total of 1,698 locations, including 899 low-income households and 799 welfare facilities nationwide since 2010. In the future, KOGAS plans to carry out various social contribution projects and lead the efforts to realize national energy welfare.

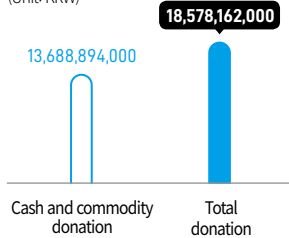
Gas Charge Reduction for Underprivileged Groups

KOGAS has lowered the gas charge to underprivileged groups to expand universal energy welfare. We introduced the online verification system to simplify the administration procedure and minimize the inconvenience of targets of city gas charge reduction such as the disabled, low-income families, and families with many children and upgraded the charging scheme to reduce the burden on heating expenses. As a result, the underprivileged groups managed to save KRW 3.7 billion more in the gas charge than the previous year, and 114 social welfare facilities received the charge reduction.

Community-Oriented Social Contribution Activities to Fulfill Various Needs

Investment in Social Contribution

(Unit: KRW)



Received
**'Award by the Ministry of
the Interior and Safety'**

in the Enterprise Sector for Prevention
of Crime in Korea by the National
Policy Agency



Moving-in Ceremony for Happy Nest



Delivery of Silver Carts

Contribution Projects Customized for Stakeholders

KOGAS has carried out projects that reflect the needs of stakeholders to improve the benefits of social contribution projects. We adjusted the construction period for the winter season from November to September to improve the thermal efficiency and increased the support for underprivileged households by 2% from the previous to save 490,000 kWh of energy annually and maintain 98% satisfaction for two years in a row. Moreover, we fulfilled the need for concentrated education and in-depth curriculum by separating the wallpaper work and floor work at the Architectural Academy and achieved more than 60% employment of graduates for two years in a row. KOGAS continues to carry out effective contribution projects that reflect the needs of the beneficiaries.

New Projects for the Underprivileged

KOGAS initiated new projects for the underprivileged through open collaboration to increase the awareness for local partners. We collaborated with local agencies and supported the installation of CCTVs in 40 areas vulnerable to crimes to improve the environments for the groups that are exposed to crime and supported the expenses of livelihood and psychotherapy for 36 crime victims. As a result, KOGAS received the "Award by the Ministry of the Interior and Safety" in the enterprise sector for prevention of crime in Korea from the National Policy Agency. Moreover, we held a contest for social contribution projects and received 182 ideas from citizens and plan to carry out the selected idea of "the project to distribute fire extinguishers to underprivileged groups."

Happy Nest for Residential Stabilization of Low-Income Families

KOGAS is carrying out the "Happy Nest Stepping Stone for Residential Stabilization" program that remodels deserted and vacant houses, and rents them free of charge to improve the residential stability and the quality of life of low-income families in Dong-gu, Daegu as part of the urban regeneration project. In addition to 10 households for Happy Nest in 2016, 21 households have received free rent by 2018, and KOGAS plans to continue the programs to support the underprivileged groups to become self-sufficient.

Expansion of Energy Welfare in Local Social Welfare Facilities

KOGAS has been supporting the installation of fuel cells since 2016 to enhance the energy welfare in social welfare facilities in Daegu region and expand the distribution of new & renewable energy. Beginning in last year, we have linked the program with the fuel cell installation subsidy program by Korea Energy Agency. In 2018, we installed 5 kW fuel cells in three social welfare facilities in Daegu. Fuel cells help to lower the heating cost, which can be a burden to welfare facility operation, significantly and to reduce carbon dioxide emission to affect the environmental protection positively. KOGAS plans to continue its efforts to lower the energy expenses of welfare facilities and improve the welfare of the underprivileged groups in the region by expanding the distribution of fuel cells.

Walking with Senior Citizens

In October 2018, KOGAS delivered silver carts to more than 100 senior citizens at Dongchon Social Welfare Center in Daegu to assist them in walking and provided pedestrian safety education to prevent traffic accidents. We supported 1,100 silver carts and 5,000 calendars as part of the specific project for senior citizens, who are the vulnerable groups in the community, and served health food in hot seasons. The branch offices nationwide provided gifts for Chuseok holidays. In the future, KOGAS plans to expand its opportunities to share warm hearts as a member of the Daegu community by carrying out various substantial social contribution projects specialized for the region.

Monthly Activities of KOGAS Onnuri Volunteers

January

- Campaign for fire prevention safety in multi-use facilities in winter

February

- Campaign for promoting national safety assessment
- Sharing of rice cake soup with senior citizens in the Lunar New Year holiday

March

- Pep rally for 2018 Pyeongchang Winter Paralympics

June

- Cleaning, goods delivery, and donation for an orphan center

August

- Serving of chicken soup and donation of massage chair to senior citizens in a welfare center

September

- Support for the rehabilitation of severely disabled children



Scholarship for fostering of human talents

Expansion of Voluntary Sharing Culture by Employees

KOGAS operates KOGAS Onnuri Volunteers who practice the corporate philosophy of “Better energy, a Better world.” KOGAS Onnuri Volunteers celebrated the 19th anniversary in 2018 and carried out the joint volunteer services with nine public institutions in Daegu Innovation City. The volunteer group has expanded the shared culture by distributing rice cake soup to senior citizens in the Lunar New Year holiday. In addition, KOGAS operates the Onnuri Fund with the voluntary donations from wages of all employees and carries out the learning assistance and career experience learning for teenagers from multicultural families to help them adapt to the local community and supports the training and livelihood expenses for self-sufficiency of unwed mothers. Going forward, KOGAS will continue to do its best to embody true sharing through caring for neglected neighbors and become a cornerstone of a happy world.

Fostering Future Generations for a Better Future

Support for Rehabilitation of Severely Disabled Children

KOGAS has been carrying out the Onnuri R-Bank project since 2010. The name signifies Rehabilitation and Recycling. This project repairs and reforms the rehabilitation aids that no longer fit the disabled children as they grow and recycles them to other disabled children from low-income families. Until now, 375 children have received recycled rehabilitation aids. In addition, KOGAS’ Onnuri R-Bank project provides free mobile medical treatment to children in the vicinity of its business sites. As a result, 1,116 disabled children countrywide received the treatment.

Support for Teenagers from Multicultural Families and Immigrant Children

KOGAS supports youths in various ways to support socially neglected groups and develop future leaders. In November 2018, KOGAS held the opening ceremony for “Support for Teenagers from Multicultural Family and Immigrant Children” program in Social Welfare Center in Dongchon, Daegu. Named YaoF (You are our Future), the project sponsored by Onnuri Fund established with the donation from wages of KOGAS’ employees supported the customized learning, psychological exam, and career experience learning of 25 teenagers. The program can contribute to increasing the academic achievement and career development of teenagers from multicultural families and immigrant children to help them adapt to society.

Support for High School and College Students from Low-Income Families

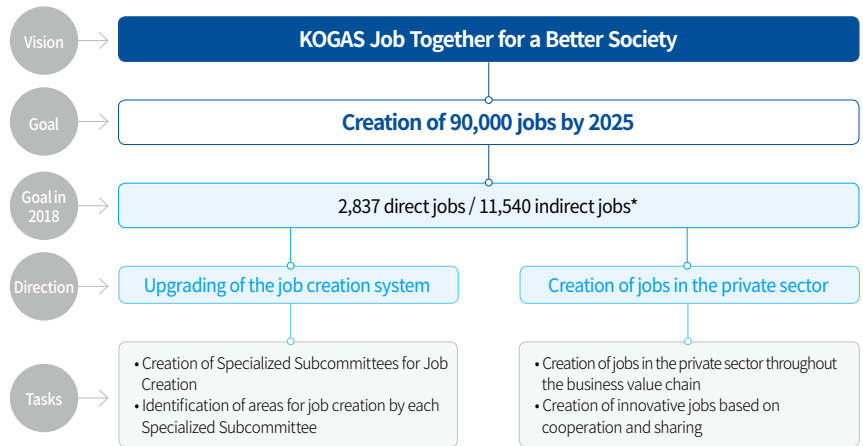
KOGAS has been carrying out Onnuri Scholarship programs to assist high school and college students from low-income families since 1999. We are currently cooperating with Daegu’s Dong-gu Office and the Community Chest of Korea to offer scholarships to high school students and the Korea Student Aid Foundation for college students. In 2018, we paid the scholarship for the total amount of KRW 420 million to 200 high school students in Dong-gu, Daegu and 110 college students near the business sites nationwide. KOGAS realizes the great significance in supporting the unlimited possibilities and dreams of underprivileged students and plans to continue expanding collaborative cooperation programs to support the cultivation of future leaders.

Creation of Jobs

Establishment of Sustainable Job Strategy

Creating quality jobs is the crucial government agenda as youth unemployment has become a social issue. KOGAS carries out various efforts to create jobs by organizing Job Creation Subcommittee under the Social Value Committee in each division to fulfill our social obligations as a public corporation. KOGAS set the vision of "KOGAS Job Together for a Better Society" to create sustainable jobs. Intending to create 90,000 quality jobs by 2025, we select and implement the programs to create jobs.

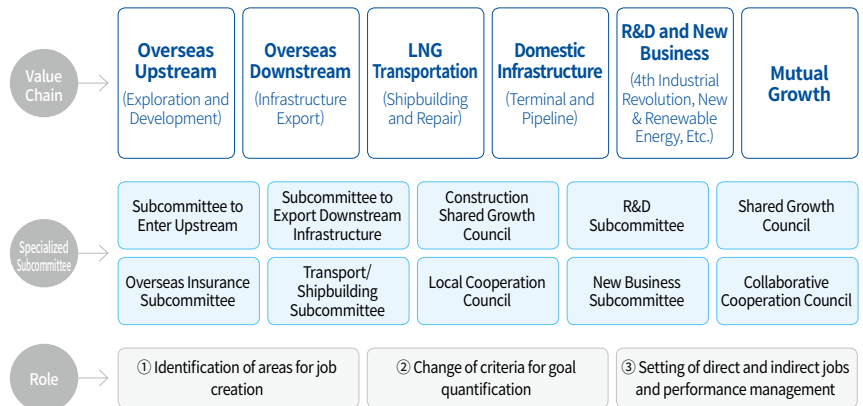
Sustainable Job Strategy

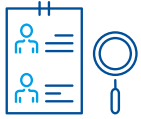


*Indirect job: Calculated by applying the employment inducement coefficient (the inter-industry table by the KDB Bank) of the related fields to the investment cost by each business

Job Creation System

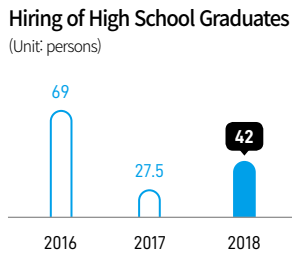
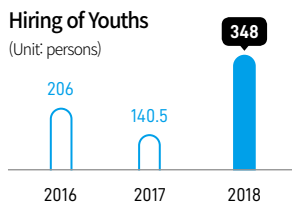
KOGAS organized 24 Specialized Job Subcommittees throughout the natural gas industry's value chain to reorganize the job creation system. We plan to identify 5,001 jobs in new areas by 2023 by continuing to consult with shareholders and power plant operators through the Specialized Job Subcommittees and establishing the private-government-public collaboration system. Moreover, we improved the sense of experience and reliability by changing the criteria for quantifying job creation goals and established specific and challenging job creation goals in all of our businesses.



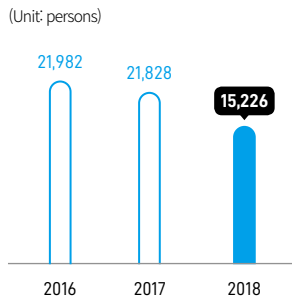


Experience-type interns increased by

16.7 times
compared to the previous year



Creation of Jobs in the Private Sector



*Change has occurred in 2017 data by reflecting employment inducement coefficient at job creation performance

Resolving Youth Unemployment by Expanding Hiring of Youths

Creation of Jobs by Expanding Youth Interns

KOGAS expanded the experience-type internship linked with 18 universities and local governments (Daegu Metropolitan City) near its home office and branch offices by 16.7 times compared to the previous year to alleviate the employment barrier against young people and strengthen their employment capabilities. We provided the opportunity for on-the-job training by assigning 167 experience-type interns in production bases and regional headquarters and conducted global education to enhance job competency. It led to the enhancement of the employment capability of young people, and eight of the interns went to work in other organizations such as the Korea Gas Safety Corporation, and two joined KOGAS.

Record High Hiring of Youths

KOGAS promoted youth employment by hiring the record number of youths to solve unemployment among young people. In 2018, we held 23 employment seminars at universities nationwide and conducted simulated interviews with professional interviewer as part of the support to increase the employment rate of young people. As a result, young people accounted for 94.2% of recruits, contributing to increasing the employment rate of young people.

Realization of Social Value by Expanding Open Recruitment

KOGAS realized the need to provide jobs specific to high school graduates and carried out the policy of preferred hiring of high school graduates. We specified the jobs such as equipment operation and testing that are suitable for NCS-based high school graduates and exempted the language skill qualification to lower the employment barrier and recruit talented people based on inherent capability rather than apparent specification. As a result, the hiring of high school graduates increased to 153% of the previous year. In the future, KOGAS plans to strive for open recruitment to lead the social equity employment culture.

Creation of Jobs in the Private Sector

KOGAS created jobs directly or indirectly throughout the value chain, including overseas business, LNG transport, and infrastructure construction in the private sector. In 2018, we created 3,081 direct jobs and 12,145 indirect jobs in the private sector.

Job Created in the Private Sector in 2018

Value Chain	Main Duties	Direct Jobs Created (number)	Indirect Jobs Created (number)	Total
Overseas Upstream	• Plant construction and booking support	629	5,494	6,123
Overseas Downstream	• Terminal design and management and entry into overseas infrastructure business jointly with private enterprises	726	419	1,145
LNG Transportation	• Cultivation of the domestic shipbuilding industry by ordering and operating domestic ships	455	24	479
Infrastructure Building	• Expansion and addition of domestic production and supply equipment such as tank • Construction of supply pipeline	1,226	6,082	7,308
R&D and New Business	• Joint R&D and identification of new energy business • Research of big data and AI with the instrument analysis system	10	28	38
Mutual Growth	• Support of social economy and social contribution projects • Support of business fund of SMEs	35	98	133
Total		3,081	12,145	15,226

Social Value 2



Productive Welfare through Social Contribution

Helping Hand for the Homeless and Residents in Slums to Find Jobs

Since 2016, KOGAS has been operating Onnuri Architectural Academy that trains construction techniques such as woodworking, flooring, wallpaper work, waterproofing, and insulation to help the homeless and residents in slums to be self-sufficient. Students learned specialized skills through the 3 hours a day and twice a week training for 6 months and participated in voluntary services to repair houses in slums in Daegu. In 2018, a new intensive course was set up to let the students select the specialty for in-depth training. As a result, 13 out of 25 graduates succeeded in finding jobs.

Productive Welfare to Business Startup beyond Jobs

Two of the KOGAS architectural academy graduates who completed the six-month curriculum went beyond finding jobs and succeeded in even starting a social cooperative named "Friends of the Street." The Architectural Academy program is regarded as a good example of productive welfare in that it goes beyond just supporting the underprivileged of our society and guides them to become economically independent.



Art Exhibition by 'Friends of the Street'

Responsible Expansion of Continuous Support

In June 2018, KOGAS held the Architectural Academy Exhibition to increase the awareness of the social cooperative started by its graduates and help them develop the sales channel. The event was participated by Friends of the Street, and social enterprises including Daul and Happiness Sharing House for the residents in slums. In the future, KOGAS plans to establish a stable employment base for the homeless through the support of the Architecture Academy program and actively respond to the government's job creation policies and promote various regional cooperation projects.



Completion Ceremony of 3rd Onnuri Architectural Academy

Responsible Company that Prioritizes People and Nature

Sustainability Context

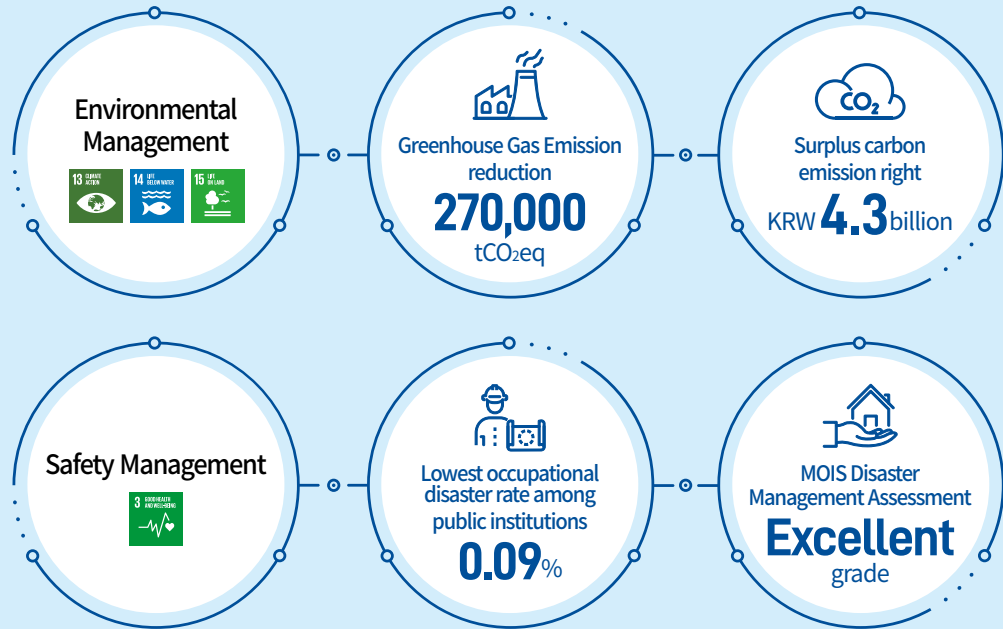
Natural gas has gained attention as an eco-friendly fuel since it discharges little pollutant other than water and carbon dioxide even after combustion as it is processed through desulfurization and dehydration during the liquefaction process. Although it has relatively safe properties compared to other fuels, gas leakage or fire during an accident can lead to a major disaster, and thus the safety management of the employees and nearby residents has become a crucial factor.

KOGAS Approach

KOGAS minimizes the environmental and safety risks in its business sites based on the management that integrates the environment, safety, health, and quality (EHSQ). We reduced the generation of pollutants by upgrading processes and applying advanced technologies and preemptively responded to climate change by establishing countermeasures and detailed tasks. Moreover, KOGAS improves the level of the safety culture of our employees through safety preventive activities and the countermeasure system for each type with the goal of zero accident and zero loss.



Key Performance



Interview

Kyung-seon Kim, General manager of disaster management team, KOGAS

KOGAS contributing to fostering of safe and secure society through global-level safety management

Our institute was reminded again of the importance of safety management, due to a gas explosion of a gas supply base in 1994. Afterward, we have been establishing advanced safety management systems, such as organizing KOGAS-typed safety systems and establishing EHSQ systems for the first time in public institutes.

We implement safety inspections on a regular basis to prevent disasters and accidents, and conduct global-level safety management by receiving international safety certifications, such as OHSAS 18001. We also secure the safety of gas facilities for preventive safety management, and conduct safety trainings. With such activities, our institute was selected as the institute with the lowest disaster rate for 2 consecutive years and received a presidential commendation as our institute was selected as an excellent institute in the “performance research of disaster management by institutes in 2018” by the Ministry of the Interior and Safety.

Our institute is making a political effort by selecting 8 major promotion projects for constant improvement of the level of safety culture, and also enhancing site-centered safety management activities, such as reinforcement of the monitoring EHSQ management system. Our institute will try our best to secure a high level of safety culture awareness and foster a safe society through systematic safety management as well in the future.

EHSQ Management System

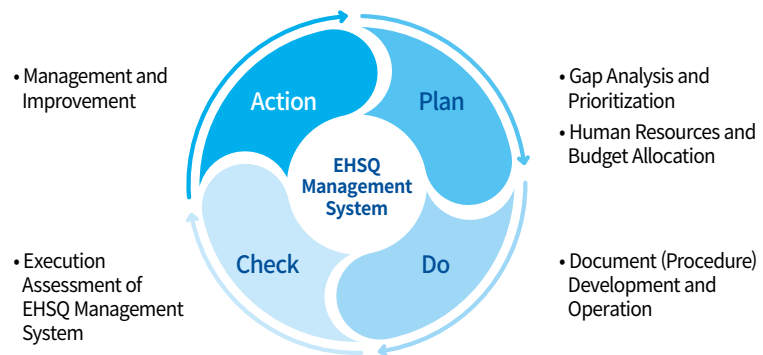
KOGAS-EHSQ Management System

KOGAS has developed and is operating the KOGAS EHSQ management system that integrates environment, safety, health, and quality, giving the utmost priority to “respecting human and nature.” We have acquired ISO 9001, ISO 14001, OHSAS 18001, and ISO 29001 certifications for the system to minimize risks and improve productivity by managing EHSQ issues in an integrated and efficient manner. We continuously upgrade the system through the PDCA (plan-do-check-adjust) process.



EHSQ Management Vision

KOGAS pursues improving the health and quality of life of all employees and citizens and providing excellent quality and service that meet customer needs and expectations by establishing the safe and comfortable environment through the application of the safety, health, environment, and quality (EHSQ) as its top priority and continuous improvement and mutual cooperative prevention activities.



Components of KOGAS EHSQ Management System

- | | |
|--|--|
| 1 → General rules | 8 → Crisis management and accident investigation |
| 2 → Policy | 9 → Environmental management |
| 3 → Organization | 10 → Health management |
| 4 → Information technology | 11 → Education and drill |
| 5 → Risk management | 12 → PR & complaints |
| 6 → Design, materials, and construction management | 13 → Compliance |
| 7 → Facility operation and maintenance | 14 → Measurement and improvement management |

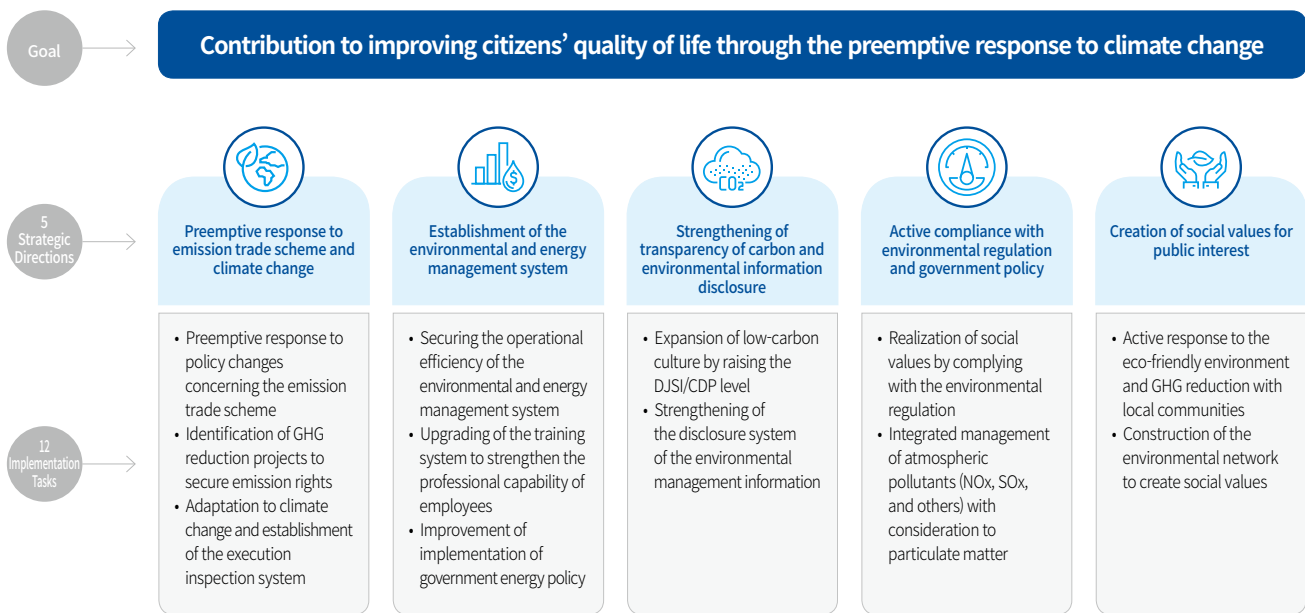
EHSQ Global Assessment System

A management system requires steps of system inspection, evaluation, and upgrade to be in operation continuously. We developed and applied an objective and quantitative global evaluation system (Management & Assessment Tool for Efficient Rating, MASTER) to ensure continuous improvement of the operation of the EHSQ management system and achieve the best performance.

Environmental Management

Environment Management System

Since KOGAS declared the environmental management in 1997, we have maintained the ISO 14001 certification and are operating the environmental management system that integrates environmental impact management and response to climate change with the objective of "Contribution to improving citizens' quality of life through the preemptive response to climate change." We examine the environmental impact of all processes and disclose it through the environmental information disclosure system and present it to all business sites and suppliers to alleviate the environmental risk.

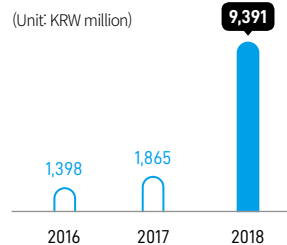


Costs of Environmental Activities



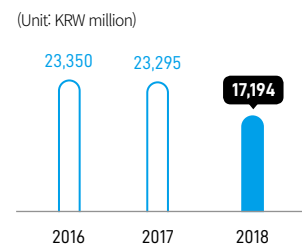
Pollutant Treatment

(Unit: KRW million)



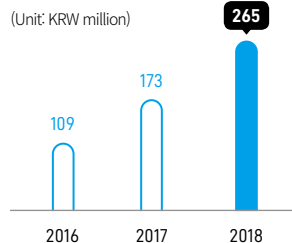
Pollution Prevention

(Unit: KRW million)



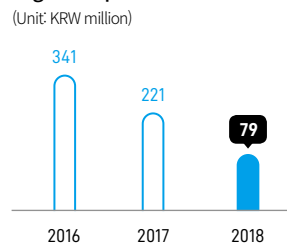
Stakeholders Activities

(Unit: KRW million)



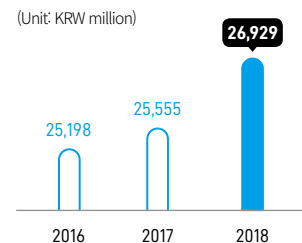
Legal Compliance

(Unit: KRW million)



Environmental Activities

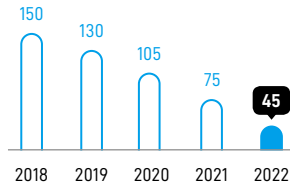
(Unit: KRW million)



Minimization of Environmental Impact

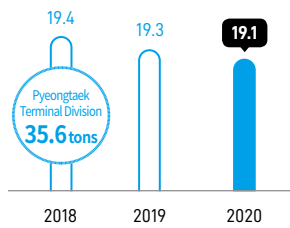
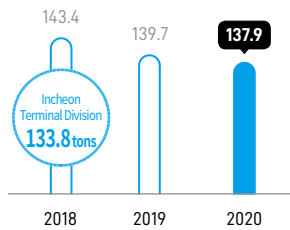
NOx Emission Allowance Criteria

(Unit: ppm)



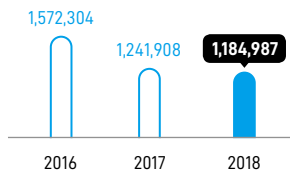
Allowable NOx Emission

(Unit: tons)



Water* Usage

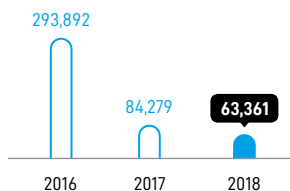
(Unit: thousand m³)



*Seawater, water supply, and underground water

Total Waste* Discharge

(Unit: tons)



*General, designated, and construction waste discharge

Atmospheric Pollution Management

Natural gas production and supply facilities generate atmospheric pollutants such as nitrogen oxide (NOx) and sulfur oxide (SOx) through the submerged combustion vaporizer (SCV) and salt water heater (SWH). KOGAS manages the discharge from the environmental management system over the intranet monthly and carries out the reduction plan and improvement measures when the record exceeds the annual target emission. Although the natural gas, which is the clean fuel, generates less atmospheric pollutants compared to other energy sources when combusted, it generates NOx which causes particulate matter. As such, KOGAS manages atmospheric pollutants by applying the criteria that are stricter than the allowable emission criteria as prescribed by the Clean Air Conservation Act. The Incheon Terminal Division and Pyeongtaek Terminal Division that are located in the Seoul metropolitan area, in particular, are classified as air pollutant emission-cap regulation sites according to the Special Act on the Improvement of Air Quality in Seoul Metropolitan Area. As such, we manage them methodically to control the NOx emission within the allowable limit set for each site.

Water Pollution Management

Although KOGAS uses utility water and seawater heavily in its vaporization process, there is no environmental impact since the seawater fed into the open rack vaporizer (ORV) is for heat exchange. Water treatment facilities are installed in LNG terminals to manage water pollutant concentration to below the allowable emission criteria. The Pyeongtaek, Incheon, and Samcheok Terminal Divisions, located on the coast, have their sewage treatment facilities to discharge sewage at the concentrations below the emission limit after cleaning and treatment. The wastewater of Tongyeong Terminal Division and supply office of regional headquarters is disposed of in the wastewater treatment plants.

Chemical Material Management

KOGAS uses NaOH and HCl in SCV, but they are controlled at low concentration to adjust the pH in the vaporizer tank and are not classified as a hazardous chemical substance. We disclose the chemical substance discharge from each site through the environmental information disclosure system.

Waste Management

KOGAS minimizes the generation of waste from business activities such as natural gas production and supply processes and construction and strives to make it easier to dispose of waste and recycle resources by type and use. We also prohibit the use of disposable items in offices according to the Guidelines for Reducing Disposables in the Public Sector, and our in-house coffee shop charges an environmental fee on beverage purchase in disposable cups to establish the eco-friendly consumption culture.

Protection of Biodiversity

KOGAS conducts the environment impact assessment to predict and evaluate the impact on the environmental change and prepare the measures to preserve the ecosystem for constructions and operations that can affect the nearby ecosystems. We then organize a council consisting of project contractor, representatives of residents, and experts such as the environmental groups in the assessed area to discuss the process and results of the environmental impact assessment and establish the improvement measures. We continuously monitor the surrounding ecosystem through the post-project environmental impact investigation after the project completion and operation. In 2018, KOGAS carried out the otter, flying squirrel, and rare plant preservation project to restore the habitat of endangered species as part the ocean and forest ecosystem preservation program.

Social Value 3



Construction of Eco-Friendly Business Site as Response to Climate Change

Reduction: GHG Emission Reduction

KOGAS has been managing GHG emissions systematically since it was designated as the emission allocation subject following the introduction of the emission trade scheme in 2015. We expanded the capacity of the ORV to reduce GHG from the natural gas production process and upgraded the methane collection system for maintenance, resulting in the direct GHG reduction of 9,387tCO₂eq. Furthermore, we minimized the electricity usage by introducing the pre-cooler which is the cold energy recycling system, resulting in the direct GHG reduction of 2,252tCO₂eq. Moreover, we established and monitored the GHG emission goal for each site and selected and awarded five excellent sites in achieving the goal.

GHG Emission and Emission Right Trade Scheme Status

(Unit: tCO₂eq)

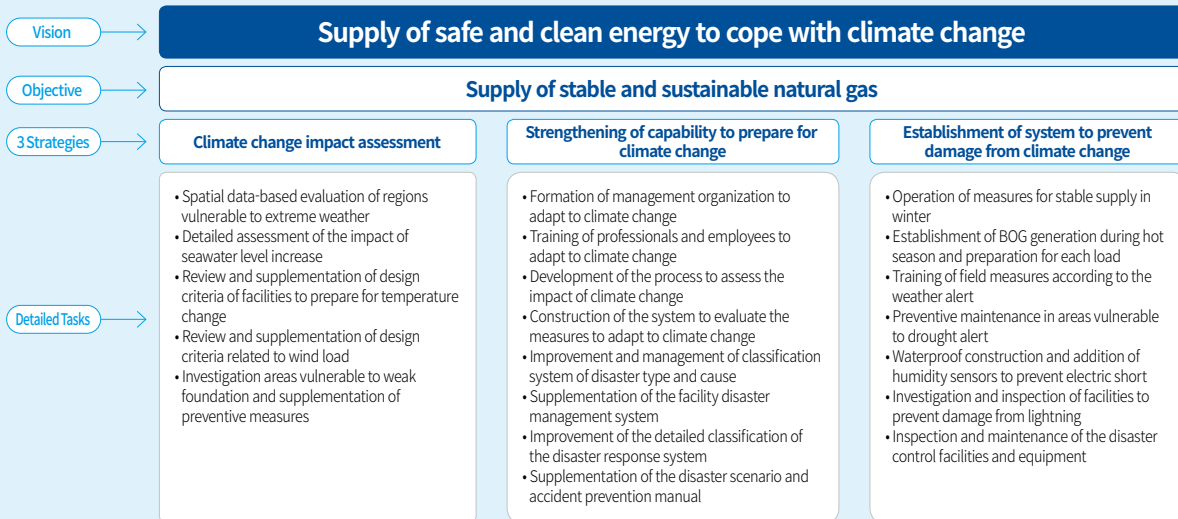
Type	2015	2016	2017	2018	
GHG emission right allocation*	758,231	704,565	666,240	745,268	
Emission (Including omission)	Direct GHG	456,413	469,305	551,549	663,206
	Indirect GHG	352,277	359,290	360,571	388,593
Surplus emission right (reduction)	About 270,000 tons			-	

* The allocation in the 1st plan period (2015 - 2017) excludes omission and includes it for the assignment in the 2nd plan period (2018 - 2020).

Adaptation Strategy to Cope with Climate Change

Reduction and response measures to climate change that is accelerating globally are emphasized worldwide. As such, KOGAS established the measures and detailed plan to cope with climate change to reduce the damage of gas facilities from climate change and supply safe natural gas to the public. We analyzed six impact factors such as heat and cold waves for each area such as the production and supply facility, workers, and public service and established various detailed plans based on three strategies.

Three Strategies and Detailed Plans to Cope with Climate Change



Environmental Performance

KOGAS practices environmental management to minimize the negative environmental impact occurring during business activities and actively copes with climate change with low-carbon management including the GHG emission reduction programs. Moreover, we received the environmental management system (ISO14001) and energy management system (ISO50001) certifications and manage the atmospheric and water pollutants actively by setting the criteria that are stricter than the legal standards. KOGAS intends to fulfill its social responsibility and contribute to sustainable development through continuous environmental improvement programs through its business activities.



Input

Energy Usage

Total: 14,557 TJ

(Direct: 6,583 TJ, Indirect: 7,980 TJ)

Chemical Material Usage

Total: 352,288 kg

(9.74 kg/thousand tons)



Output

GHG Emission

Total: 1,051,799 tCO₂eq

Direct: 663,206 tCO₂eq

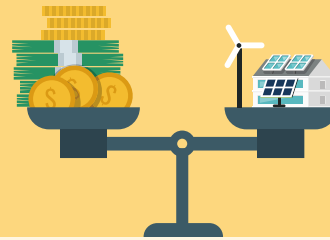
Indirect: 388,593 tCO₂eq

Emission of Air Pollutants

NO_x: 311,538 kg (8.60 kg/thousand tons)

SO_x: 1,535 kg (0.04 kg/thousand tons)

Dust: 4,606 kg (0.13 kg/thousand tons)



Water Usage

Total: 1,184,987 thousand m³

Seawater: 1,184,457 thousand m³,
Water supply: 520 thousand m³,
Underground water: 10 thousand m³

Environmental Activities Cost

KRW 26,929 million



Emission of Water Pollutants

BOD: 73.1 kg (0.0020 kg/thousand tons)

COD: 52.9 kg (0.0015 kg/thousand tons)

ss: 84.2 kg (0.0023 kg/thousand tons)



Emission of Waste

Total: 63,361 tons

(1.75 ton/thousand tons)

General: 1,892 tons

Designated: 155 tons

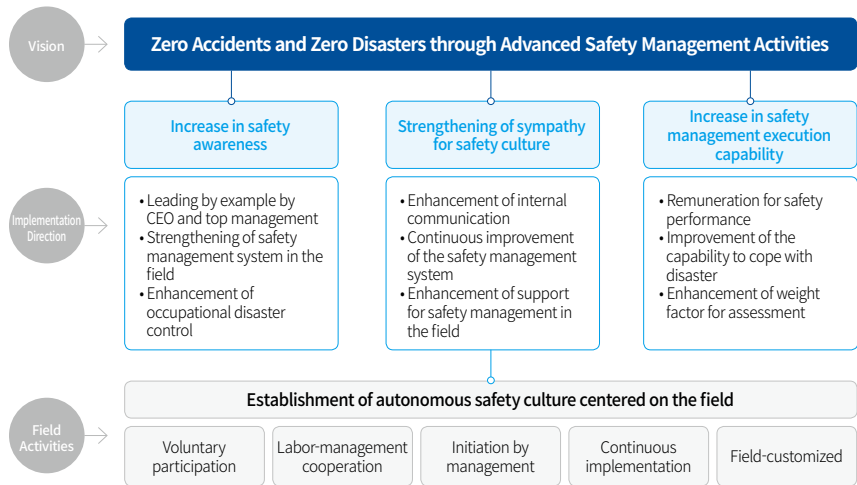
Construction: 61,314 tons

Safety Management

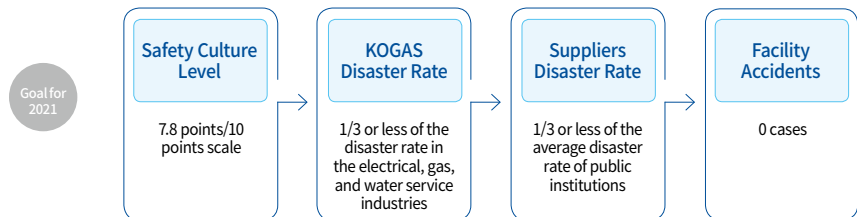
Safety Management Strategy

KOGAS has established the advanced safety culture that highlights zero accident and zero disasters to prevent accidents. We implement global level safety and health management by maintaining the OHSAS 18001 certification.

Safety Management Implementation Strategy



Mid-term and Long-term Objective of Safety Management



Lowest Occupational Disaster Rate

Average of public institutions: 0.53%

KOGAS **0.09%**

Prevention of Industrial Disasters

Priority to Prevent Accidents in Construction Sites

KOGAS preemptively blocks the possibility of accidents through the unannounced inspection 44 locations and safety fences to enhance the safety of construction sites of the gas supply chain. Moreover, we conduct the risk assessment with suppliers to enhance safety management by KOGAS employees as well as the supplier’s employees. KOGAS achieved “Zero death of suppliers employees” for two years in a row by the prevention through the safety inspection.

Remote Surveillance of Risky Sites

KOGAS carries out remote surveillance of underground gas pipelines in areas where it is difficult for vehicles or personnel to enter or risky areas. In 2018, KOGAS participated in the drone project conducted by the Ministry of Land, Infrastructure and Transport and conducted the pipeline patrolling and surveillance of unauthorized excavation using a drone in two areas. When there is an abnormality, the drone sends a signal to the pipeline drone control center which analyzes the pipeline status and improves it if necessary. We plan to expand the drone applied areas to seven and optimize the KOGAS drone system to enhance the safety of the gas pipeline.



heatstroke patients

0 persons



Satisfaction of Employee Psychological
Counseling

4.4 points

Establishment of Safe Workplace during Heat Waves

Many heatstrokes can occur in the outdoor sites during summer heat waves. KOGAS preemptively responds to diseases to protect the safety of field personnel from heat waves. We minimize the damage of heat waves by suspending all outdoor work between 13:00 - 15:00, installing mobile rest facilities in the field, and providing beverages to prevent dehydration.

Employee Disease Prevention

KOGAS manages employees' health and safety based on the comprehensive health management system to establish a comfortable and healthy organizational culture. KOGAS conducted the special medical examination of 1,253 employees who are in shift work and work in labs and operated the "Finding My Heart Happiness" to relieve job stress as a way to improve the mental health of the employees. A psychological consultation on the satisfaction of our executives and employees showed that they recorded as high as 4.4 points out of 5 points, indicating that the program contributed to their health and prevention of stress. We have also prepared guidelines for responding to infectious diseases at each stage to minimize the damage from the outbreak of infectious diseases. As a result, there was no case of infection among the employees who were dispatched or traveling at the time of issuance of the crisis of the MERS crisis in September 2018.

Minimization of Injury

KOGAS has been conducting systematic safety management to prevent the possibility of employee injuries. We conducted the work safety analysis of employees, suppliers, and construction workers and the risk assessment before construction to correct the risk factors. The risk assessment in 2018 improved and corrected 359 cases such as fire, collision, and jamming incidents in the workplace. In addition to risk assessment, KOGAS systematized safety and health education as a preventive measure against injuries and recorded 4 injuries in the workplace, which was the lowest compared to the average of public institutions.

Safety and Health Education in 2018



Finding My Heart Happiness

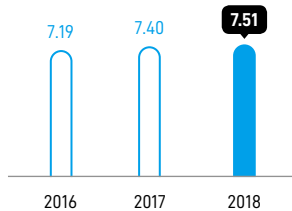


Safety and Health Education

Dissemination of Safety Culture

Safety Culture Level Indicator (ISRS-C)

(Unit: points)



Dissemination of Safety Mind

KOGAS establishes the safety culture that emphasizes the communication and participation to improve the safety consciousness of employees. We shared the field safety letter to promote safety communication between management and field workers and conducted BBS*, which is the autonomous safety recommendation program, in all sites. As a result, it received 7.51 points, which was significantly higher than the domestic average of 5.76 points, in ISRS-C** in recognition of the global-level safety culture.

*BBS (Behavior Based Safety Program): A program to encourage safe actions by identifying unsafe behaviors

**ISRS-C (International Safety Rating System-Culture): The internationally accepted rating for safety culture developed by DNV-GL

Sharing of Safety Culture with suppliers

Safety management of suppliers has become a crucial factor because construction contractors cause many injuries. KOGAS conducted the construction safety prevention experience and gas fire training with the theme of “Falling, Collision, and Jamming,” which are three disasters that occur most commonly in workplaces, for 450 supplier employees and residents to contribute to the improvement of safety. Moreover, we spread the KOGAS’ safety culture through safety guidance, system diagnosis, and consulting support. As a result, the safety satisfaction of suppliers in 2018 was high at 82.3 points.



In MOIS Disaster Management Assessment

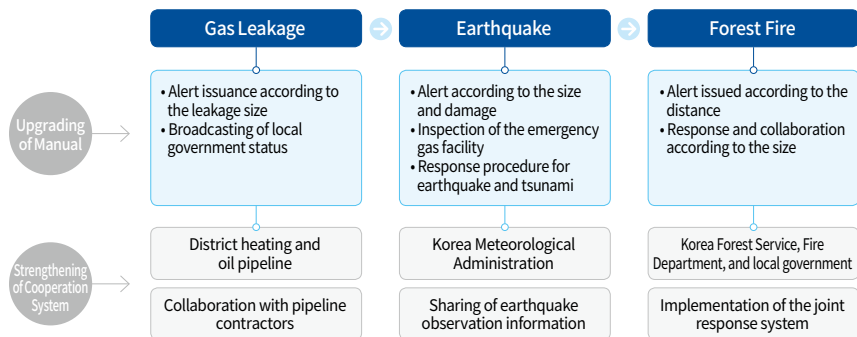
Excellent grade
for 3 years consecutive years

Specialization of Disaster Management

Strengthening of Response for Each Disaster Type

KOGAS upgraded the safety manual and preparation system for each disaster type enacted last year to help to respond to disasters such as the gas leakage, earthquake, and forest fire quickly. We built the collaboration system with the local government and relevant organizations for each disaster type to establish joint response measures for quick evacuation of residents in the disaster area and conducted the disaster response training to strengthen the disaster management capability. As a result, KOGAS received the “Excellent” grade for the third consecutive year in the Disaster Management Assessment of the Ministry of the Interior and Safety in 2018 and also achieved the “Excellent” grade in disaster response training by the Ministry of Trade, Industry and Energy.

Response System for Each Disaster Type

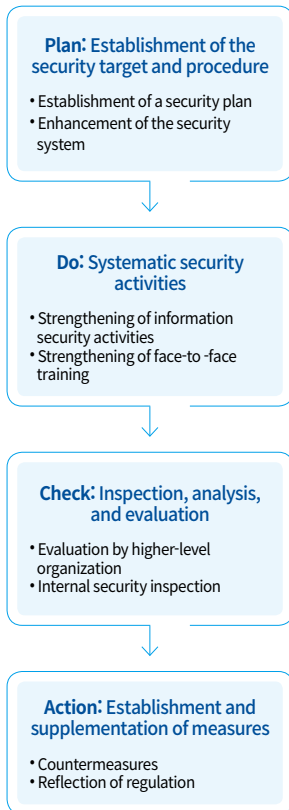


In-house Development of Forest Fire Radiated Heat Analysis System

Gas facilities near forests can cause grave damage due to the radiated heat when there is a forest fire. As such, KOGAS developed Korea’s first forest fire numeric analysis system and enacted the forest fire manual based on the analysis results to minimize the danger of forest fire. We conducted the numerical analysis of forest fire radiated heat of 135 gas facilities near forests and reinforced the 44 gas facilities that require improvement. There was no damage from forest fires in 2018.

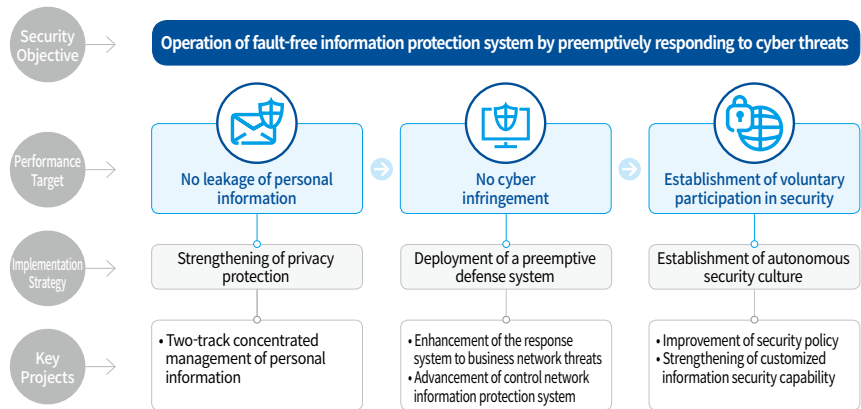
Information Security

Information Security Execution System



Information Security Strategy System

It is becoming important to manage customer information safely and respond quickly to infringement incidents as various types of security incidents such as personal information leakage and ransomware have occurred recently. KOGAS has implemented the information security strategy system focusing on personal information protection, cyber infringement, and security culture to secure the ability to respond to security incidents.



Absolute Protection of Personal Information

KOGAS is strengthening the safety of personal information by managing it in two tracks based on management and technology. We have strengthened information management through the customized education of privacy protection and regular disclosure of information transfer history. We changed the exposure inspection from once a year to once a month to prevent information leakage on the web system and upgraded the bidirectional encryption system to unidirectional encryption to reduce the risk of leakage. We inspected 40,000 personal information records and 10,000 expired DB records to delete unneeded information.

Securing Cyber Safety

KOGAS has implemented the cyber defense system to respond to new attacks preemptively. We expanded the business network blocking policies to 15 and added the OTP authentication for e-mails to restrict the access by unauthorized users. Moreover, KOGAS operates the company council for a preliminary review of security and has implemented the malware detection system specialized in the control systems. As a result, KOGAS received the "Excellent" rating in vulnerability analysis and assessment of the information and communication infrastructure held by MOTIE.

Establishment of Autonomous Security Culture

KOGAS has designated 2018 as the "Year of Establishing an Autonomous Security Culture" to spread awareness of information security so that employees can perform the security job more actively. We jointly conducted various activities such as hacking education with universities and professional organizations to strengthen the customized information security capability, the online education "Jikyjob (Protect) Show!," and the joint workshop to enhance the privacy protection system to enhance the employees' security capability. Moreover, KOGAS improved the employees' security consciousness using the PC screen saver. "Information security is the FIRST, you practicing it is the BEST!" that was the winning motto in a contest was used as the message for the PC screen saver.



Joint Workshop to Strengthen Personal Information Protection System

Corporate Culture Respecting and Trusting Each Other

Sustainability Context

Recently, the importance of realization of social value is becoming higher. The government is emphasizing human rights and ethics by establishing 「The Third National Human Rights Plans of Action」, 「Five Year Comprehensive Plan for Anti-corruption」. With this trend, internal and external stakeholders are required to establish a culture of respect for human rights and settle a foundation of ethics management for the constant growth of public institutions and security of competitiveness.

KOGAS Approach

KOGAS is making efforts to realize the social value of human respect. For this, we are practicing an approach to internalize a human rights management system and activities by proactively establishing the system. In addition to this, we are carrying out a policy for a family-friendly system, establishment of nondiscriminatory working culture and so forth. We are also trying to eradicate corruption through integrityðics management and to secure the public's trust by enhancing transparency with various innovative activities of integrity.



Key Performance



Interview

Seung-ki Shim, General manager of corporate culture team, KOGAS

KOGAS dedicated to invigoration of culture for respecting human rights, by embracing inclusive human rights management

Human rights are an important value to secure our institute's sustainability. KOGAS is committed to cultivating a culture of respecting human rights by introducing human rights management as a management principle that includes internal and external stakeholders. We established a mid- and long-term road map in 2018, regarding human rights management. In particular, we conduct human rights impact assessments for different value chains, to identify risks to human rights in each area. Until now, no serious problems or particularly weak areas have been detected, but comprehensive and inclusive promotion of human rights management for stakeholders in the supply chain has been limited by policy. In order to improve this point, we have been promoting the human rights of construction workers and we are making efforts to resolve violations of human rights by suppliers.

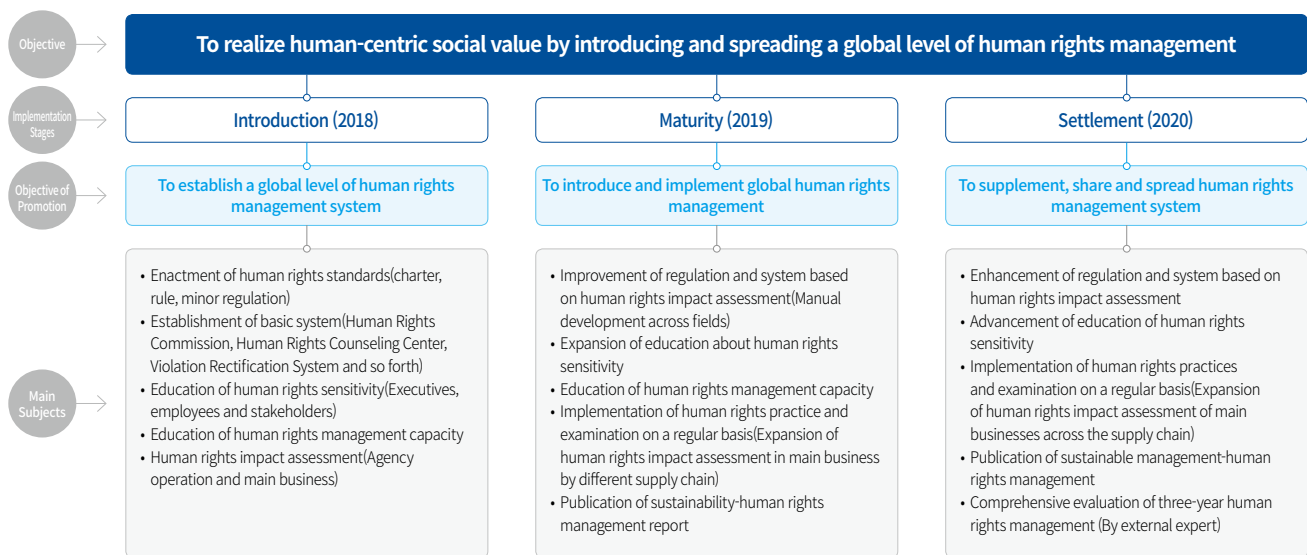
As a leading public authority in the field of human rights, we are dedicated to the spread of human rights culture by presenting at the 2019 National Human Rights Management Forum and sharing introductory examples of human rights management with local communities and public institutes. We will continue to lead the way in realizing human rights culture, rather than simply regarding human rights management as a system and slogan.

Human Rights Management

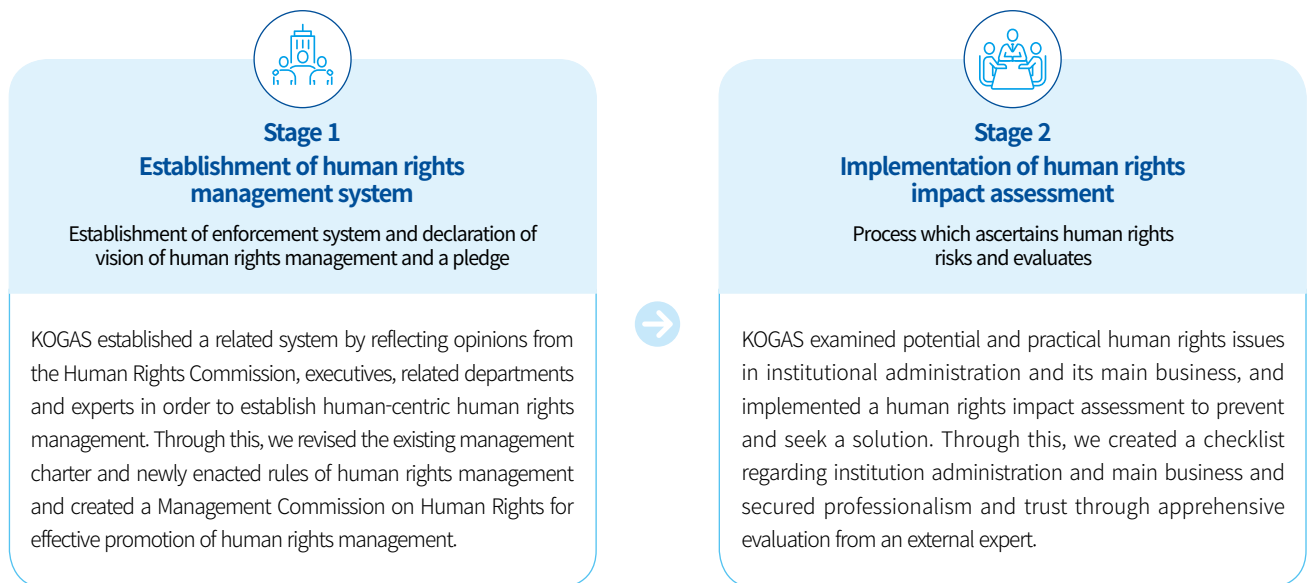
Policy of Human Rights Management

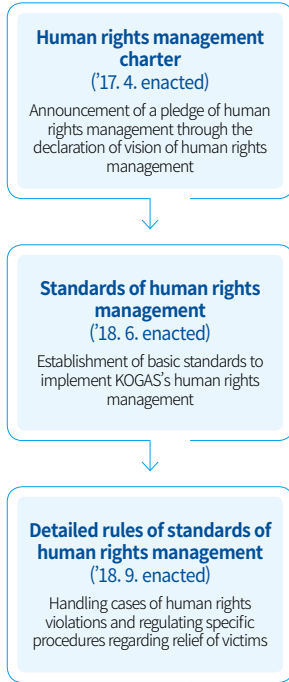
Mid and Long-Term Road Map for KOGAS Human Rights Management

KOGAS is establishing a global level of policy for human rights management by devising a mid- and long-term roadmap for KOGAS human rights management and seeking to realize a goal of human-centric social value. We are planning to link human rights with an enterprise-wide managerial objective, system and evaluation of management and reflect them, and create a synergy effect by connecting them with existing ethics management and sustainable management system. In addition, we are attempting to realize human rights management by gradually promoting subjects by stages according to a three-year master plan.



Establishing Process of Human Rights Management System





Standards of Human Rights Management

KOGAS declared a vision of the company's human rights management and enacted a standards of human rights management. We are planning to apply this norm to all the executives, employees of the company and stakeholders, including suppliers. As well as that, we are making an effort to let a foreign branch comply with the standards of human rights management by adding the item of respect for human rights onto a contract of a foreign subsidiary.

Exclusive Organization for Human Rights Management

KOGAS runs the 'Management Commission on Human Rights' and 'Deliberation Committee.' The Management Commission on Human Rights is a legislative organization that is entirely in charge of planning, evaluation, system and policy all related to human rights management and composed of a board of directors, including CEO. The Deliberation Committee is an organization of petition and deliberation, and it also aids cases of human rights violations separated from Management Commission on Human Rights and is composed of more than half of external members and designates a chairperson to improve independence and speed of aiding the handling of violations of human rights.

Exclusive Organization for Human Rights



Stage 3

Implementation and disclosure of human rights management

Reflect current status of human rights, prevention of violation of human rights and mitigation measure on management

KOGAS established a master plan for human rights management reflecting mid and long-term management objectives and management environment based on the evaluation result of human rights to internalize human rights management into the organization. Through this, we created foundation which systematically implements human rights management.



Stage 4

Provision of aiding procedure

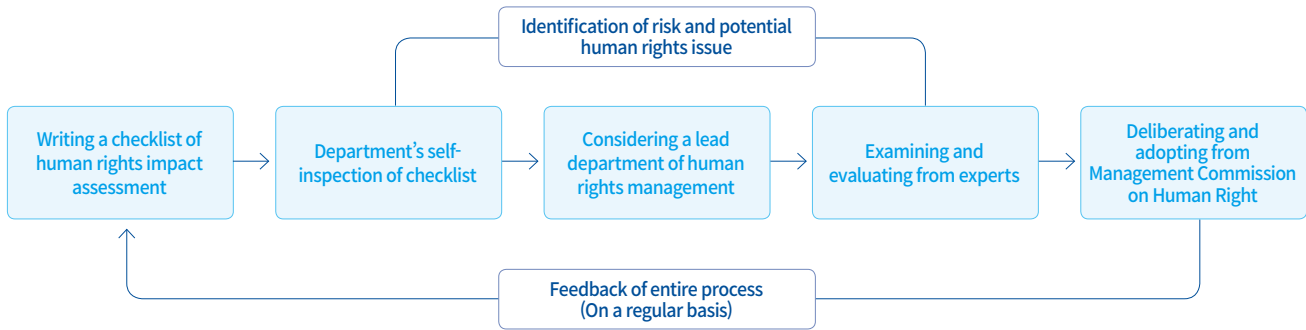
Receipt of petition from victims and Resolution of conflicts and restoration of victims

KOGAS created the Consultation Center for Human Rights and Deliberation Committee to relieve victims and eradicate similar cases through case consultation by internal and external stakeholders and receipt of petition.

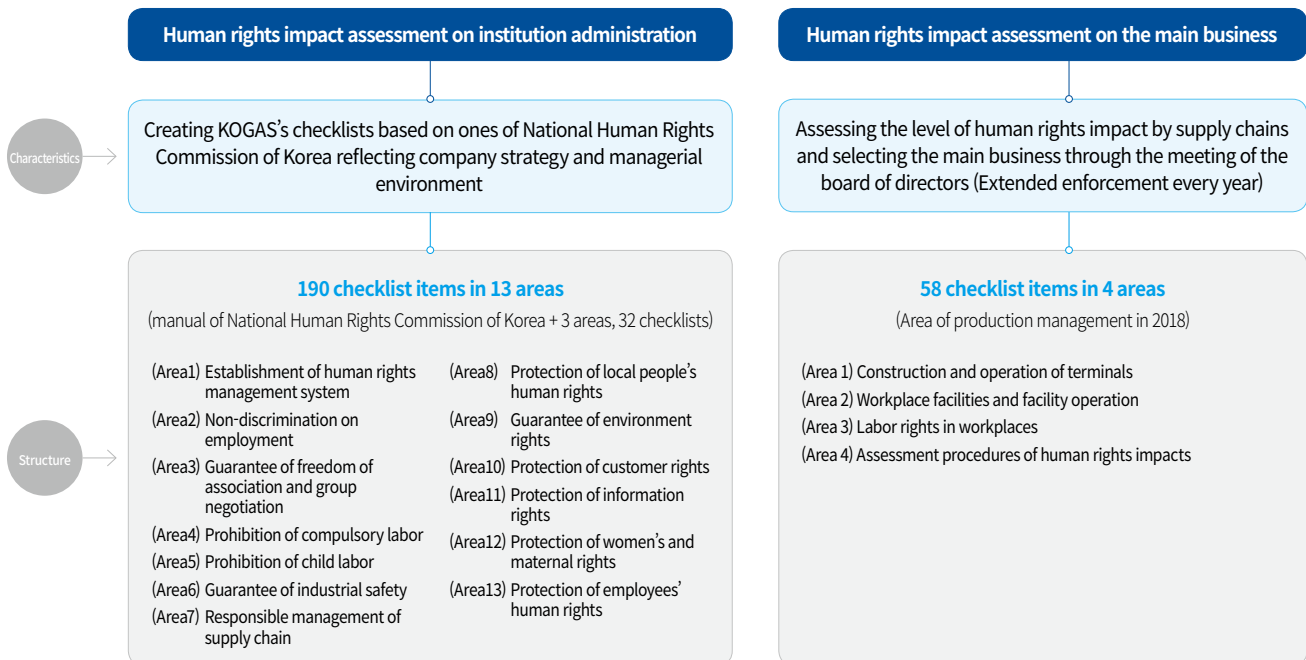
Implementation of Human Rights Impact Assessment

KOGAS implemented the human rights impact assessment targeting entire workplaces and supply chains in order to figure out potential and practical human rights risks that could occur in management and business, and prevent and find solutions. We carried out examination and evaluation from experts based on human rights management charter and standards after self-inspection and Management Commission on Human Rights finally considered and adopted. In addition, we created a checklist for 190 institutions in 13 areas for assessing human rights impact that reflects the business environment and characteristics, and implemented a comprehensive human rights impact assessment with external experts based on self-inspection and raised professionalism and trust. Based on the result of the human rights impact assessment such as urgency, we established a three-year promotion road map and KOGAS's human rights management system including establishment of KOGAS's master plan in the mid- and long-term. KOGAS will make a constant effort for improvement of human rights of internal and external stakeholders.

Process of Human Rights Impact Assessment



Checklist for KOGAS Human Rights Impact Evaluation



Settlement of Culture of Respect for Human Rights



Training of Human Rights for Employees

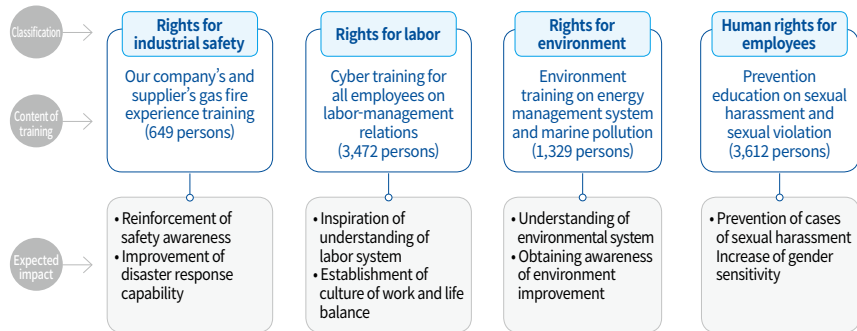
Efforts to Preemptively Eradicate Human Rights Violations through Customized Education by Different Areas and Targets

KOGAS performed customized education of human rights so as to raise executives' awareness of respect for human rights. We conducted courtesy training on human rights management and respect for human rights for 2,104 executives and employees and special training for departments in charge by areas of human rights. Members of the committee for human rights management participated in a session for studying global human rights managing trends.



Appointment Ceremony of Deliberation Committee

Implementation of Special Training by Areas of Human Rights



Preparation of KOGAS's Own Human Rights Aiding Process for Protection of Human Rights

KOGAS created its own support process against violations of human rights with independent stakeholders by adding a Consultation Center for Human Rights and Deliberation Committee to the existing support process. In particular, the Deliberation Committee, an exclusive organization for deliberation of cases of human rights violation, consists of more than half of external members and secured professionalism and independence by designating a chairperson from external members. In 2018, we had face-to-face talks with employees, executives in charge and the other party and ascertained all the facts after reporting a case of human rights violations with a supplier, and held the Deliberation Committee to advise CEO of a supplier to conduct self-operated education of human rights and prepare a solution for prevention of recurrence. As well as that, we informed a petitioner of the result and raised the effectiveness of protection of human rights by promising information on an external support system when protesting against a decision.

Human Rights Violation Relief Process



Spreading a Culture of Respect for Human Rights

Leading Human Rights Management of Public Institution by Spreading Benefits of Human Rights Management

KOGAS was selected as a model institution of human rights management manual of the National Human Rights Commission of Korea and proactively established a human rights management system. With this effort, we presented an example of KOGAS's promotion of human rights management at the '2018 Human Rights Management Forum'. We will constantly dedicate to the realization of human-centered sustainable administration by advancing human rights management system of KOGAS.

Mutual Cooperation for the Spread of Human Rights Management

KOGAS is co-operating with other institutions to spread a culture of respect for human rights. With the experience that we proactively introduced a human rights management system, we shared the promotion result of our human rights management system with 37 public institutions such as the Korea Water Resources Corporation and Korea National Oil Corporation and through this, we are attempting to expand public human rights management. In addition, we are sharing information relating to human rights management by signing a business agreement with Daegu Innovation Town public institutions (KOGAS, Credit Guarantee Fund and Korea Evaluation Institute of Industrial Technology) and making a mutual effort to settle culture of anti-corruption and integrity. Through this, we are seeking to spread a culture of human rights management and inspire competitiveness regarding anti-corruption.

Establishment of A System of Respect for Human Rights for the First Time among Public Institutions

With the increase of danger of safety accidents due to intense heat, the necessity of establishing a system of respect for human rights such as health and resting rights for construction workers has increased. Regarding this, KOGAS protected 2,354 construction workers' human rights by prohibiting working amid heat wave warnings and preserving wages during prohibition time of working and improving the resting environment on construction sites. Furthermore, KOGAS is aiming to introduce a system of respect for human rights to construction sites by launching a consultative group for improvement of human rights on construction sites. We will do our best to protect worker's human rights and secure people's safety by creating human rights-prioritized construction sites.



Protecting Human Rights of

2,354

construction workers



2018 Human Rights Management Forum



Agreement ceremony of human rights and ethics management

Social Value 4



Transparent Recruiting Process through Audit System

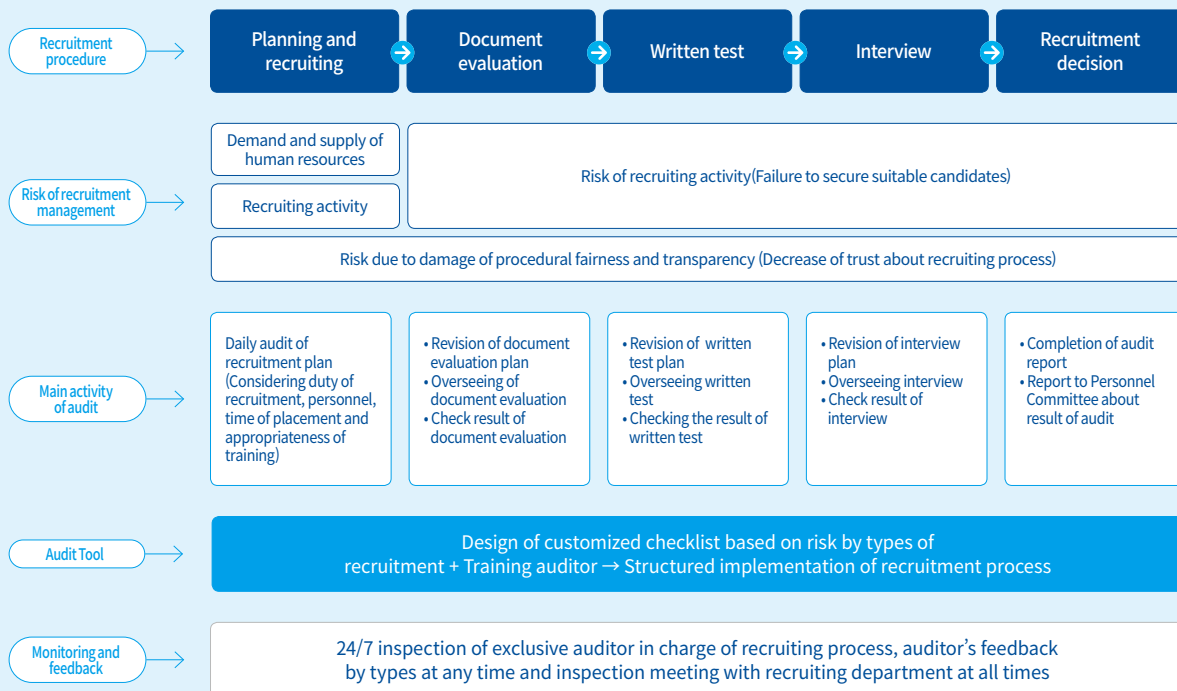
With a recent issue of the recruiting scandal of public institutions, people's concern regarding transparency and fairness of recruiting has increased. KOGAS developed and adopted KOHAS(KOGas Hiring process internal Audit System) for the earlier stage of recruiting on its own at the instigation of standing members of the audit and the department of audit in order to prevent corruption scandals in advance that can happen in the process of recruiting.

We determine adequacy about the necessary capability of work and potential candidates of recruiting and implement thorough audits in the whole types and process of recruiting. As a result, we could obtain positive effects of prevention and management of pre and post risks related to recruiting and enhancing stakeholders' trust as well as simply auditing the process of recruiting.

In addition, we sought to concentrate on cooperation with executives and the department of audit and settle culture of mutual respect and secure an optimal number of audit members for the successful settlement of KOHAS. We, especially, actively invited external audit members and expanded the number of audit members and shared process of recruiting inspection so as to secure audit members.

KOGAS introduced a blind interview for the first time among public institutions and NCS (National Competency Standard) and created quality jobs, and will create an intellectual culture that people can trust by reinforcing the cooperation system of the audit with other public institutions.

KOGAS Hiring process internal Audit System (KOHAS)



Great Company to Work



Satisfaction of work and life balance

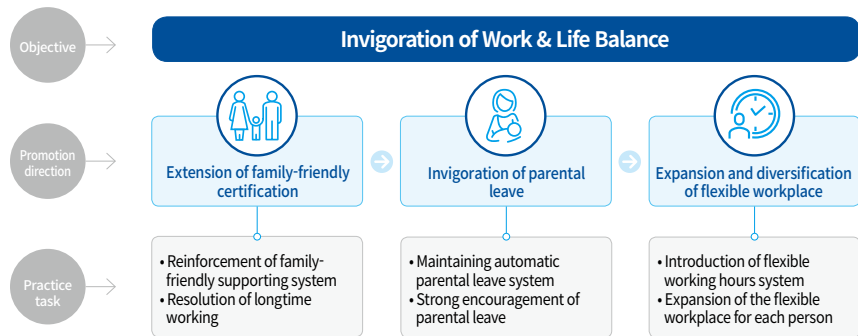
79.1 points

Work and Life Balance

Creation of Work&Life Balance Culture

KOGAS is making efforts to realize executives and employees' work and life balance regarding the development direction of working conditions. We are dedicated to the improvement of life quality through invigoration of a family-friendly system and parental leave, and expansion and diversification of flexible work shifts.

Promotion Plan for the Culture of Work and Life Balance



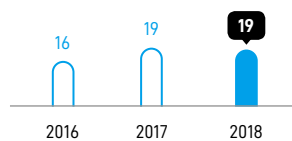
Continued Operation of the Family-friendly System

KOGAS is conducting a family-friendly system to establish a culture of organization that balances work and life. We are supporting childbirth through shortened working time and provision of childbirth subsidy and helping to mitigate executives' and employees' burden of child care through operation of six nursery facilities, and we realized a work & life balance for executives and employees by resolving a problem with longtime work by changing to a shift system in 2018. In addition, we tried to establish a familial culture of organization by more extensively implementing 'Day of Family Love' and running 'Campaign of Long Leave', and we successfully achieved certification of the family-friendly institution from Ministry of Gender Equality and Family.

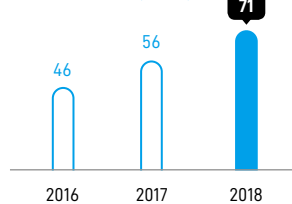
Status of parental leave

(Unit : persons)

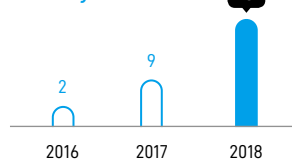
Automatic parental leave system



Parental leave (Total)



Paternity leave



Revitalization of Parental leave

We reformed the system to resolve hardship of application due to concerns of employee's career gap from a parental leave and aggravation of colleagues' burden of work. We supported cyber training during parental leave for a career gap of employees and reduced the burden of employees on parental leave by supplementing substitute workers in the occurrence of parental leave. We also removed concerns on penalties of the personnel because of parental leave by reforming the system to arrange desired workplaces first. With this effort, applicants for parental leave increased with 15 people in 2018 and especially, the number of men applying for parental leave went up to 16 people which was an increase of 78% compared to last year.

Expansion of Flexible Workplace

KOGAS implemented a customized, flexible workplace more extensively by reflecting many different suggestions from employees. In 2018, we created a flexible workplace by inspiring work effectiveness and invigoration of work and life balance culture. The flexible workplace is to change and operate working hours for employees concentrated on workload for a certain period, and it enables to inspire effectiveness of work through an arrangement of working hours. Furthermore, we promoted institutional improvements such as application of flexible work, simplification of approval, an extension of reasons for this and various introductions of time selection. With these improvements considering task characteristics, we activated operation of the system more extensively as employee's right for work time selection.

Working Culture with Non-discrimination

Operation of Fair Personnel System

KOGAS is applying 100% equal wage with no discrimination by gender or educational background and welfare benefits system to offer employees an equal opportunity reasonable wages, and managing fairly and properly in terms of personnel and training.

KOGAS complies with the Labor Standards Act and Act on Gender Equality in the Employment, and is based upon the principle of equal provision of wages according to the same value of labor regardless of gender. There is only a wage difference between gender due to the working period, and we offer employees in the same salary bracket and equal position wages. In February 2018, we designated a female executive vice president for the first time among public institutions to realize gender equality within the organization.

When it comes to the personnel, the entry for sixth grade used to be applied by those who graduated from university, however, in 2018, four of the people who graduated from high school were recruited after expanding recruiting criteria and length of service. In addition, if work performance of new entrants from high school meets a certain standard, they can be promoted at the same degree as those from university, and we are also trying to make an equal personnel system by applying the same wage between entrants from high school and those from university.

Operation of Non-discrimination System

KOGAS is constantly operating a non-discrimination system to exclude discriminative factors about contract position for an indefinite period, short-term positions and separate positions. For regular positions and indefinite positions, the equal wage welfare is applied, and the same degree of wage system, position treatment and annual salary system are equally applied to short-term positions. In addition, we are supporting constant management by transferring recipients of salary peak to special positions and applying the same welfare system. Continuing to operate these non-discrimination systems, KOGAS will make efforts to ban unreasonable discrimination toward thorough elimination of discriminatory elements.

Facility Improvement for Vulnerable Workers

KOGAS sought to foster the improvement of facilities and working environment for vulnerable workers. In 2018, we ascertained requirements of vulnerable workers and conducted improvement of facilities. We guaranteed the right of mobility and extension of accessibility by installing more braille boards for the blind where they used to be limited only in the washrooms of the first to the third floor. Also, by accepting the requirement to install nursery rooms, we expanded vulnerable workers' amenities by building a lounge only for pregnant women, ladies-friendly washrooms considering pregnant women's scope of activity and parking lots considering the shortest distance for pregnant women. In the future, KOGAS will be striving to improve the working environment in order for all the workers of KOGAS to work in a great and safe working environment.



Facility Improvement for Vulnerable Workers



Cultivation of Human Resources

Training Program for Executives and Employees

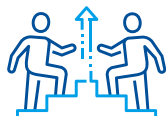
KOGAS established a training roadmap to achieve a mid-long-term management strategy and is now operating a development program of human resources based on a strategic objective and employee's needs. Furthermore, we contributed to improvement in the satisfaction of training under the annual plan established for the viewpoint in the mid-term by implementing training to secure growth capability and improving training environment through system improvement.

Increase in Satisfaction of Training

83.8 points → **85.9** points

2018 Training by Capabilities

Capability	Global capability	Leadership capability	R&D capability	Social value capability	Innovation capability	Task capability
Content	<ul style="list-style-type: none"> · Training process of global leaders · Implementation of special training by areas of E&P 	<ul style="list-style-type: none"> · Implementation of administrative executive's innovation capability training 	<ul style="list-style-type: none"> · 32 programs such as special training for filming 4th Industrial Revolution trend cyber training by drone, policy training of supply expansion of air-conditioning by gas 	<ul style="list-style-type: none"> · Training for understanding of human rights management and respect for human rights for executives and employees · 8 training programs such as a process for technicians of air environment and special training by Environmental Preservation Association 	<ul style="list-style-type: none"> · Implementation of collective intelligence training(Idea generating and creativity inspiring) · Innovation academy(Once per each quarter), site briefing session and so forth 	<ul style="list-style-type: none"> · Session for safety specialist · Implementation of equipment and maintenance and safety session
Result	<ul style="list-style-type: none"> · E&P capability↑ (Level 3.36 → 3.6) · LNG capacity↑ (Level 2.8 → 3.0) 	<ul style="list-style-type: none"> · Capability inspiration of executives' leadership · Won the grand prize of innovative management(society part) 	<ul style="list-style-type: none"> · Achieved Zero accident through reinforced safety management with advanced technology 	<ul style="list-style-type: none"> · Won a grand prize of environmental energy 	<ul style="list-style-type: none"> · Activation of innovative ideas and finding excellent examples 	<ul style="list-style-type: none"> · Level of safety culture 7.51 points · Excellent in disaster safety evaluation by MOTIE



Labor-management System

KOGAS has constantly been operating a 4Way channel since 2017 to cultivate sound labor-management relationship through communication. In 2018, we analyzed both advantages and disadvantages of existing communication environment for enhancing communication and management capability, and implemented improvement activity by determining some parts needed to be supplemented. We expanded communication between executives and employee by creating a CEO communication channel. We also dedicated to the improvement of working condition and organizational culture through direct communication between each representative of labor and management. It led to an increase in communication score from 66.9 points to 70.0 points in 2018.

Increase in Labor-management Communication Index

66.9 points → **70.0** points

Comparison of Communication with Last Year

4Way channel	Names of channel	Achievement of operation	4Way	
			2017	2018
Institution-centered	Joint labor-management conference	Improvement of managing method and direct participation of representatives of labor-management	36 cases	42 cases
	Joint committee of labor-management	Operating 3 sub-division: personnel, welfare and organizational culture	7 times	13 times
Executives-centered	CEO meeting	KOGAS sketchbook and brown-bag meeting	7 times	42 times
	Executives' site visit	Dealing with grievances and suggestions of employees	34 times	58 times
Bottom-up type	La Plaza, Blind	Improvement of irrational customs and activation of communication	1,050 number	2,412 number
	Committee of the Youth	Overcoming generation conflicts and improving organizational culture	2 times	20 times
Site-centered	Briefing session of pending issues by head of business	Sharing pending issue of management and direction of business	114 times	182 times
	Team building	Reinforcement of teamwork by sharing core value	2,213 persons	2,321 persons
	Various Day activities	Holding a variety of activities suitable for characteristics of site	14 times	26 times

Integrity & Ethics Management



Level of Overall Integrity

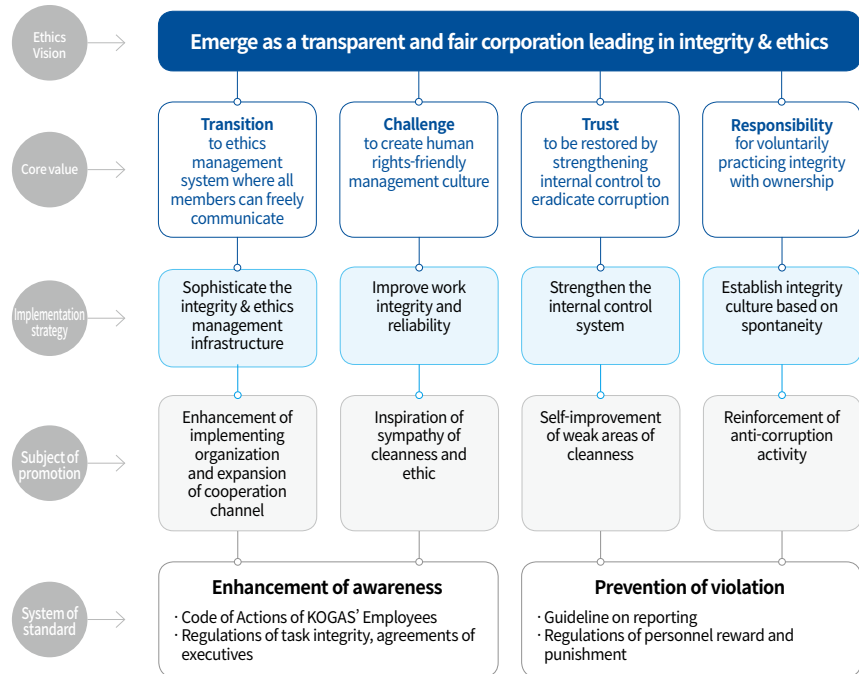
3rd Grade

(1 grade higher than last year)

Integrity and Ethics Management System

Promoting Integrity and Ethics Management System

KOGAS is going further to realize a 'transparent, fair, clean and ethics management institution' by establishing a clean and ethics management system based on KOGAS's four core values. KOGAS cultivates the integrity and ethics culture of the organization with the clean and ethics system.



Reinforcement of Executing Team of Integral and Ethics management

KOGAS newly established an independent ethics management committee called 'Integral and Ethics Management Committee' to promote a system of integrity and ethics across the company. This committee is KOGAS's best legislative organization of integral and ethics policy. CEO presides over the committee and functions as a control tower that decides important policies and implements a master plan for integral and ethics management in the mid and long-term. In addition, we achieved the integrity and ethics management of human respect by unifying the organization that was divided into two groups, covering integrity, anti-corruption, and human rights.

Expansion of Cooperation Channel of External Integrity and Ethics business

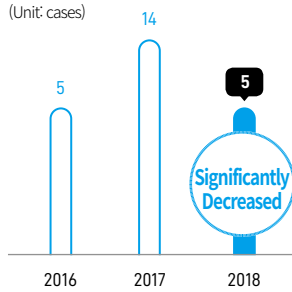
KOGAS is enhancing the level of integrity and ethics by communicating and co-operating with external institutions. We concluded business agreements with two excellent institutions in the field of ethics and human rights and established an ethics department of Industry-University-Institute Collaboration with three major universities of Daegu and Gyeongsangbuk-do and utilized them to establish integrity and ethics plan in the mid- and long-term. KOGAS has been conducting co-operative activities by establishing an integrity network such as Daegu Private-Public Committee for Integrity and Integrity Cluster.



Working-level Meeting of Partner Institution of Integrity in Daegu Innovation Town

Realization of Clean and Ethic Organizational Culture

Four Major Corruption Actions



Strict Regulation on Four Corruption Actions

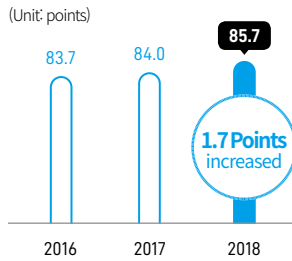
KOGAS is seeking to find solutions to deal with employees' bribery actively. We apply the zero-tolerance policy four major corrupting actions* and adopt One Strike Out system to eradicate corruption. Furthermore, we reinforced the level of punishment by newly creating a degradation system and imposing collective responsibility on managers. With these actions, KOGAS is seeking to eradicate four major corrupting actions and enhance the transparency of the organization.

*Four major corrupting actions: Bribery, speculation, sex crime and corruption of personnel

Eradication of Actions Against Ethics through Operation of Various Report Channels

KOGAS is running many report channels to eradicate actions against ethics by activating internal reports fundamentally. In case of the currently operated anonymous corruption report (Red Whistle) and reporting center of sexual harassment and sexual violation, they are used internally and thus we encouraged utilizing reporting centers by adding an external reporting channel. In addition, we also created a channel for reporting power trips, and a consultation center in which reporting violations of human rights are available. KOGAS is enhancing the overall transparency of corporation by implementing various internal and external reporting systems.

Level of Self-evaluation of Ethics

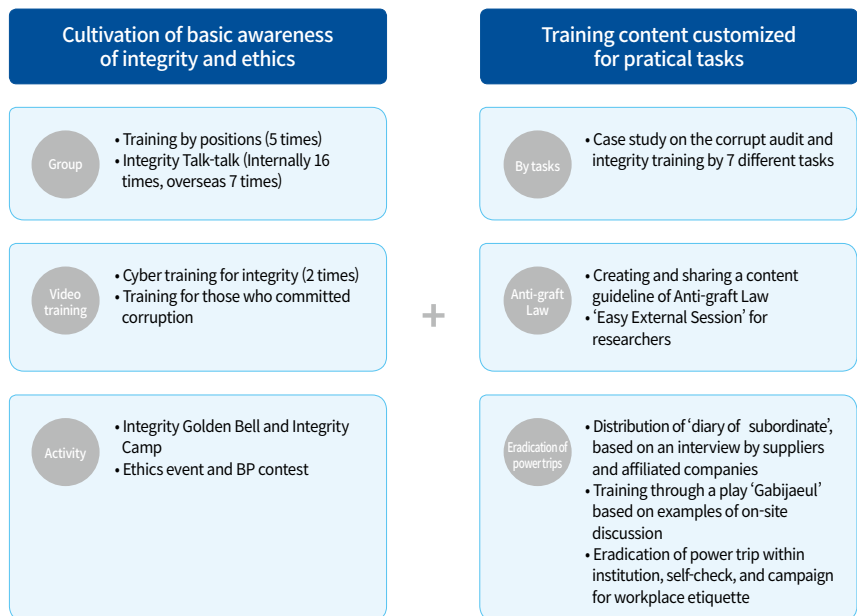


Reinforcement of Training on Awareness of Ethics

KOGAS is operating various programs to cultivate integrity culture within the organization by enhancing executives' and employees' awareness of integrity and ethics. We conducted training such as training by positions and Integrity Talk-talk for cultivation of basic awareness of cleanness and ethics and reinforced participation activities such as Integrity Golden Bell and completion of good examples of ethics for executives and employees in order to take training easily. In addition, we developed task-customized educational contents to increase the sympathy of executives and employees about clean and ethics management and carried out ethics training by seven different tasks. As a result of such an effort, satisfaction of curriculum of integrity and ethics training went up to 82% compared with last year.



Challenge! Golden Bell for Integrity



Evaluation of Policy on Anti-corruption

Excellent

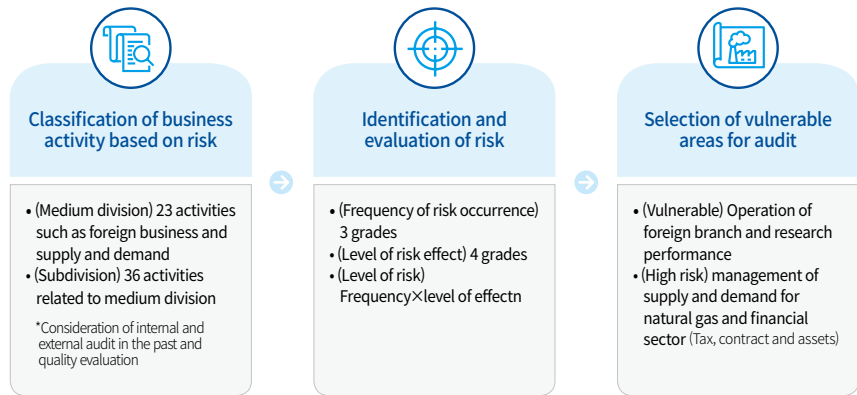


Strengthening of Responsibility for Integrity and Ethics

Reinforcing Internal Audit Based on Risk

KOGAS is inspiring internal integrity by conducting audits regarding areas vulnerable to high risk. We divided business activities based on risks based on previous internal and external audit results and quality evaluation to conduct an intensive audit. Afterward, we identified and evaluated a level of risk, considering its frequency and level of effect on business activity. KOGAS are enhancing the responsibility of integrity and ethics and transparency of the organization by operating such internal audit system.

Selecting Process of Vulnerable Area for Audit



Satisfaction of 'Law-abiding system'

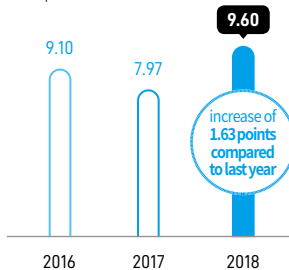
95%

Law-abiding System for Self-compliance

KOGAS newly implemented KOGAS's self-compliance system, 'law-abiding system' which prevent corruption through the participation of employees. This system is a program that enables to perform functions of monitoring and guiding about conventional ignorance of compliance with the law by designating two representatives in a headquarters and each branch. Designated representatives provide information on compliance with the law for belonged employees and enable employees to take part in the improvement of related systems by thoroughly monitoring compliance with the law across the business. Through this, we realize the innovation of organizational culture by overcoming the limit of post control method based on punishment and forming sympathy of executives and employees regarding compliance with the law.

Level of Integrity in Construction Industry

(Unit: points)



Establishment of Fair Economy

KOGAS is making an effort to establish a fair economic order by resolving unfair contract condition. In 2018, we enhanced transparency by improving the unfair customs of every construction business. We also identified the current status of unfairness such as an unfair reduction in construction cost and uncovered 107 cases of absurd practice by holding a joint workshop with KOGAS, suppliers, non-governmental organization and Anti-Corruption & Civil Rights Commission. In order to improve it, we dedicated ourselves to the invigoration of fair construction culture and eradication of unfair activity by creating specific criteria of design change and implementing a blind test of the technical proposal.

Appendix

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Sustainability Performances

Economic Performances

Main economic result(Based on consolidated financial statement)

Classification	Unit	2016	2017	2018
Sales	KRW 100 million	211,081	221,722	261,850
Business profits	KRW 100 million	9,982	10,352	12,769
Net profit(loss)	KRW 100 million	(6,125)	(11,917)	5,267

Main financial metrics(Based on consolidated financial statement)

Classification	Unit	2016	2017	2018	
Growth index	Increase rate of sales	%	(18.98)	5.04	18.10
	Increase rate of net profit	%	(309.75)	(94.58)	144.20
Profitability Index	Return of Asset	%	(1.49)	(3.09)	1.37
	Return on Equity	%	(6.31)	(14.03)	6.36
Stability Index	Current ratio	%	155.82	115.05	100.54
	Debt ratio	%	322.70	356.24	367
	Capital ratio	%	23.66	21.92	21.41
Productivity Index	Productivity of capital	%	5.64	5.15	10.20

Summary of consolidated statement of financial position(Based on consolidated financial statement)

Classification	Unit	2016	2017	2018	
Assets	Current assets	KRW 100 million	86,580	75,822	99,249
	Non-current assets	KRW 100 million	313,840	295,572	297,648
	Total assets	KRW 100 million	400,420	371,394	396,897
Liabilities	Current liabilities	KRW 100 million	55,562	65,904	98,712
	Non-current liabilities	KRW 100 million	250,127	224,086	213,205
	Total liabilities	KRW 100 million	305,689	289,990	311,917
Stockholders' Equity	Paid-in capital	KRW 100 million	17,651	17,651	17,651
	Others	KRW 100 million	75,953	60,482	64,277
	Equity Attributable to Owners of Parent (subtotal)	KRW 100 million	93,604	78,133	81,928
	Non-controlling interest	KRW 100 million	1,127	3,271	3,052
	Total assets	KRW 100 million	94,731	81,404	84,980

Economic value distributed(Based on consolidated financial statement)

Classification	Unit	2016	2017	2018
Sales	KRW 100 million	211,081	221,723	261,850
Business profits	KRW 100 million	9,982	10,352	12,768
Net profit(loss)	KRW 100 million	(6,125)	(11,917)	5,267
Wage and welfare benefit for executive and employee	KRW 100 million	3,480	3,848	3,918
Dividend	KRW 100 million	-	-	1,192
Interest	KRW 100 million	8,408	8,295	7,854
Corporate tax payment	KRW 100 million	3,146	2,729	0
Donation and activity cost of social contribution	KRW 100 million	183	171	186

Research · development(Based on consolidated financial statement)

Classification	Unit	2016	2017	2018
R&D investment expenses	KRW 100 million	719	679	518
Patents for technology(accumulative)	Cases	347	378	373

Environmental Performances**Emission of greenhouse gas**

Classification	Unit	2016	2017	2018
Total GHG emissions	tCO ₂ eq	525,573	623,639	1,051,799
Direct emissions	tCO ₂ eq	166,283	263,068	663,206 (2018 Target) 590,454
Indirect emissions	tCO ₂ eq	359,290	360,571	388,593 (2018 Target) 345,966

Total energy consumption

Classification	Unit	2016	2017	2018
Total amount of energy	TJ	10,651	12,624	14,557
Direct energy	TJ	3,248	5,187	6,583
Indirect energy	TJ	7,414	7,442	7,980

Total amount of energy

Classification	Unit	2016	2017	2018
Non-renewable energy fuel purchased and consumed for energy use	MWh	902,222	1,440,833	1,813,858
Purchased non-renewable electricity	MWh	765,337	769,532	830,694
Purchase of steam/heating/cooling and other energy	MWh	18,333	13,611	14,633
Purchase or production of renewable energy	MWh	2,059	3,249	1,425
Total amount of non-renewable energy	MWh	1,686,666	2,223,976	2,659,186 (2018 Target) 2,526,226
Total cost of energy consumption	KRW	125,190,729,333	141,935,706,750	173,580,142,885

Amount of water usage

Classification	Unit	2016	2017	2018
Total amount of water usage	m ³	1,572,304,237	1,241,908,454	1,184,987,205 (2018 Target) 1,395,500,000
Sea water	m ³	1,571,859,597	1,241,441,822	1,184,456,715
Water supply	m ³	436,182	459,130	519,919
Underground water	m ³	8,458	7,502	10,571

Amount of chemicals usage

Classification	Unit	2016	2017	2018
Sales volume of natural gas	Thousand tons	32,773	32,162	36,219
Amount of use	kg	142,358	87,302	352,288
Basic unit	kg/thousand tons	4.34	2.71	9.73

Emission of environmental pollutants

Classification	Unit	2016	2017	2018			
Sales volume of natural gas	Thousand tons	32,773	32,162	36,219			
Air pollution	NOx	Amount of emissions	kg	278,257	212,995	311,538 (2018 Target) 335,000	
		Basic unit	kg/thousand tons	8.49	6.62	8.60	
	SOx	Amount of emissions	kg	749	1,175	1,535	
		Basic unit	kg/thousand tons	0.02	0.04	0.04	
	Dust	Amount of emissions	kg	2,363	3,548	4,606	
		Basic unit	kg/thousand tons	0.07	0.11	0.13	
	Water pollution	BOD	Amount of emissions	kg	124.2	55.9	73.1
			Basic unit	kg/thousand tons	0.004	0.002	0.0020
COD		Amount of emissions	kg	48.6	61.3	52.9	
		Basic unit	kg/thousand tons	0.002	0.002	0.0015	
SS		Amount of emissions	kg	139.5	124.5	84.2	
		Basic unit	kg/thousand tons	0.0043	0.0039	0.0023	
Waste	General	tons	3,300	547	1,892		
	Designated	tons	198	53	155		
	Construction	tons	290,394	83,679	61,314		
	Total	Amount of emissions	tons	293,892	84,279	63,361 (2018 Target) 213,627	
		Basic unit	ton/thousand tons	8.97	2.62	1.75	

Danger and opportunity of climate change

Emission of carbon resulting in global warming is constantly increasing, and attention to the solution of climate change is also increasing after the Paris Agreement. Recently, a positive review of the direction of conversion of power generation fuel (coal, etc.) has been made in Korea, and the role of natural gas (LNG), a low-carbon emission fuel, is expected to be strengthened, which will serve as an opportunity for KOGAS. Furthermore, KOGAS is conducting diversification of business towards such as hydrogen energy and LNG bunkering, and it is anticipated to contribute to an increase in sales and financial structure.

KOGAS is pursuing reduction projects such as purchase of emission rights and facility improvement in accordance with the government's phased reduction of emission rights quota (including taxable allocation) and recognizes the need for CDM projects in the future. In addition, we selected and analyzed the risk list by weather impact factors (hot weather, cold waves, heavy rain, heavy snow, strong winds, and rising sea levels) that affect gas facilities, and established measures to adapt to climate change and manage risks through continuous implementation evaluations.

KOGAS operates a climate change/energy committee and a working-level committee to proactively respond to climate change risks and establish plans for energy management, and has prepared indicators to evaluate each base and regional headquarters' compliance with allotment of greenhouse gas emissions and energy-saving efforts to make use of climate change as an opportunity for development.

Violation of environmental law and regulations

Classification	Unit	2016	2017	2018
Violation of statutory obligations/regulations	Times	0	0	0
Amount of penalty	KRW	0	0	0

Social Performances

BOD operation Performance

Classification	Unit	2016	2017	2018
Number of holding committee meeting	Times	17	14	18
Agenda items agreed upon	Cases	46	40	62
Rate of preliminary review	%	95	86	80
Revised agree-upon agenda items	Cases (%)	1(2)	0(0)	1(2)
Reported agenda items	Cases	29	21	21
BOD attendance rate	%	82	81	77.7
Attendance rate of non-executive director	%	79	77	72
Substance of statements/ motions delivered by non-executive directors	%	56	68	59

Status of labor union membership

KOGAS notifies administrative changes such as a change in articles and organization, open and closure of regulation regarding labor condition, a general meeting of stockholders relating to rights and interests of union members, boarder's meeting, submitted items and consequence of Committee of Management with documents and specifies those contents on a collective agreement.

Classification	Unit	2016	2017	2018
Number of labor union member	Persons	3,186	3,242	3,650
Labor union membership rate	%	86.1	84.7	88.6

Occupational safety and health

Labor rate represented by the Joint Health and Safety Commission of Labor and Management is 73.73%(End of 2018, total: 3,742, branches: 2,759) and it is in accordance with Article 19 of the Korean Industrial Safety and Health Act and Article 25-2 of Enforcement Ordinance, and we are targeting the establishment of prevention of industrial accidents, harm/danger or safety/health followed by introduction of equipment or machinery as agreement. KOGAS implements annual medical examinations for employees to prevent work-related illnesses, and we also implement special medical examinations annually for shift workers and security guards.

Classification		Unit	2017		2018	
			Figure	Note	Figure	Note
Injury rate		%	0		0.02	1 case(Traffic accident while commuting)
Absenteeism Rate		%	0		0	
Number of Occupational deaths	Executives and employees	Persons	0		0	
	Contractor	Persons	0		0	
Lost Time Injury Frequency Rate	Executives and employees	Number/Million Working time	0		0.12	
	Contractor	Number/Million Working time	0.24		0.43	

Information security

Classification		Unit	2016	2017	2018
Violation of client information security		Cases	0	0	0
IT infrastructure breach		Cases	0	0	0

Status of suppliers

Classification		Unit	2016	2017	2018	2019 Target
Number of critical tier 1 suppliers		Number	85	93	56*	-
Self-evaluation rate		%	100	100	100	100

*Share of total procurement spent for our critical suppliers in 2018: 4.98%

Product of suppliers and purchasing contract

Classification		Unit	2016	2017	2018
Purchase of products from SMEs		KRW 100 million	2,983	2,705	3,229
Purchasing rate of products from SMEs		%	28.1	29.1	34

Support for SMEs' competitiveness

Classification		Unit	2016	2017	2018	2019 Target
Joint research and development	Number of cases	Cases	18	22	17	18
	Participating companies	Number	18	21	16	18
	R&D budget	KRW 100 million	10	17	12	15
Training executives and employees SMEs partners	Training for technical/research personnel	Persons	-	180	83	90
	On-the-job training	Persons	-	16	35	35
	Online training	Persons	37	40	151	151
	Subtotal	Persons	37	236	269	276

Customer satisfaction

Classification	Unit	2016	2017	2018	2023 target
Public-service Customer Satisfaction Index(PCSI)	Grade (points)	S(94.9)	A(94.4)	A(93.5)	S

Status of employees

Classification		Unit	2016	2017	2018
Total number of executives and employees		Persons	3,626	3,752	4,096
Type of employment	Full-time (Male) Standing members included	Persons	3,215	3,331	3,570
	Full-time (Female)	Persons	390	411	472
	Temporary position (Male)	Persons	7	0	27
	Temporary position (Female)	Persons	14	10	27
	Non-affiliated person	Persons	1,196	1,211	1,176
Working hours per day	Full-time	Persons	3,574	3,710	4,031
	Part-time	Persons	26.75	28.35	8.225
Locations	Domestic	Persons	3,518	3,644	3,985
	Overseas	Persons	108	108	111
Age	Under 30	Persons	1,374	1,410	1,705
	40s	Persons	1,578	1,527	1,397
	Over 50	Persons	701	815	994
Female	Female executives and employees*	Persons, (%)	390(10.8)	412(11.0)	473(11.7)
	Female managers**	Persons, (%)	37(1.03)	4(0.11)	7(0.2)
Recruitment based on social equity	Disabled people	Persons	131	122	128
	High school graduates	Persons	497	521	540
	Patriots and Veterans	Persons	356	367	385
	Local talents	Persons	1,749	1,756	1,883

*Rate of female executives and employees(%): Number of female executives and employees / Total number of executives and employees

**Rate of female managers(%): Number of female managers / Total number of executives and employees

Rate of female managers were measured for Senior Manager position(level 3) and above until 2016. From 2017, the boundary has changed for female managers in General Manager position(level 2) and above.

Status of training for employees

Classification	Unit	2016	2017	2018
Investment expense of educating and training	KRW million	8,364	8,660	8,470
Education hours per person(full-time)	Hours	102	114	104
Education expense per person	KRW thousand	2,382	2,530	2,078
Satisfaction compared to education cost	Educational satisfaction/ education cost(KRW 100 million)	0.99	0.97	1.01

Rate of employees' returning to work after parental leave

Classification	Unit	2016	2017	2018
Number of applicants for parental leave	Persons	46	56	71
Number of male applicants for parental leave	Persons	2	9	16
Returning rate after parental leave	%	92	100	100

Performance evaluation of executives and employees

Apart from exceptional cases of dispatched workers and long-term trainees, we receive regular self-review, review by supervisor and opinions from entire employees of the company and manage them on the system.

Classification	Unit	2016	2017	2018
Rate of application of performance evaluation	%	96.5	96.0	96.8

Employees' satisfaction rate

Classification	Unit	2016	2017	2018
Satisfaction of internal education	points	83.4	83.8	85.9
Satisfaction of personnel system	points	66.2	70.6	72.1

Employees' retirement management

KOGAS supports employees' preparation for retirement by operating a retirement pension. We are providing opportunities to choose by operating DB and DC based system. On the other hand, we are implementing educational subsidies in order to support a life plan (KRW 2 million per person) after the retirement of recipients of salary peak and running commissioned education to design a process and have them attend.

Classification	Unit	2016	2017	2018	
Retirement pension	Amount of asset under management	KRW 100 million	2,566	2,494	3,065
	Number of participants in retirement pension	Persons	3,640	3,666	3,561
Number of retired employees	Retirement	Persons	0	0	53
	Voluntary retirement	Persons	10	18	9

Case of violations and prevention of anti-corruption

We monitor the entire business activities of all branches by establishing an internal monitoring system on a regular basis. Aside from this, we prevent anti-corruption and management risk through counseling and monitoring activities from Integrity ombudsman and Integrity auditors by operating an internal reporting system. Prevention and inspection system for enhancement of control of main anti-corruption and management risk is operated as follows.

Classification	Unit	2016	2017	2018
Case of violation of anti-corruption	Cases (Persons)	1(22)	3(3)	2*(2)

*1 case of obtaining treat, 1 case of violation of code of conduct

Human rights policy and education of employees about process

Classification	Unit	2016	2017	2018
Completion of ethics education	Persons	3,144	3,422	3,324
Completion of on-line education of code of conduct	Persons	5,980	6,877	7,242
Completion of education of human rights	Persons	-	-	2,104
Hours of training for workers on human rights policies and procedures related to business	Hours	-	-	1
Percentage of workers trained in human rights policies and procedures related to business	%	-	-	95

Social contribution activities

Classification	Unit	2016	2017	2018
Total hours of service	Hours	34,711	45,093	14,392
Hours of service per person	Hours	9.4	14.4	3.5
Reduction in gas cost	KRW 100 million	768	835	873

Job creation through social contribution business (2018)

Classification	Business cost (KRW million)	Number of Jobs	Note
Onnuri improvement project of thermal efficiency (Energy welfare)	1,670	25	Indirect jobs
Independence program for the homeless (architectural academy)	150	15	
Relief factory, operation of Office Café (BIG HANDS)	-	13	
Toy library, multicultural child support project	120	7	
Subtotal	1,940	60	

Amount of contributions






Classification	Unit	2015	2016	2017	2018
Total contributions (Trade associations or tax-exempt groups)	KRW	5,107,753,500	4,452,000,260	3,909,700,000	4,889,268,000

*No contributions to lobbying, interest representation and political activities






Top five source of contributions

Classification	Unit	2017	2018
Foundation for Overseas Resources Development	KRW	610,000,000	1,366,000,000
Korea Energy Economics Institute	KRW	700,000,000	1,000,000,000
Korea Energy Agency	KRW	700,000,000	800,000,000
The Korea Gas Union	KRW	700,000,000	700,000,000
Foundation for Cooperation of Large Enterprises and SMEs in Agriculture and Fishery	KRW	404,700,000	476,129,000
Total	KRW	3,114,700,000	4,342,129,000



GRI Standards Index




Universal Standards							
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance
GRI 102: General Disclosure							
Organization profile	102-1	Name of the organization	Korea Gas Corporation			6	○
	102-2	Activities, brands, products, and services	Introducing LNG from overseas natural gas production sites, supply to domestic power generation company and city gas company, development of overseas resources exploration and development and infrastructure such as LNG plants			6	○
	102-3	Location of headquarters	120, Cheomdan-ro, Dong-gu, Daegu			6	○
	102-4	Location of operations	Korea and 13 countries in abroad			-	○
	102-5	Ownership and legal form	Corporation			6	○
	102-6	Markets served	Natural gas and related business			6	○
	102-7	Scale of the organization	Total number of executives and employees: 4,096 Sales: KRW 26,185,038 million	6.3.10/ 6.4.1/ 6.4.2/6.4.3/ 6.4.4/6.4.5/ 6.8.5/7.8		6	○
	102-8	Information on employees and other workers	See Sustainability Performances			73-80	○
	102-9	Supply chain	Promoting shared growth to enhance the competitiveness of SMEs in energy and natural gas			38-39	○
	102-10	Significant changes to the organization and its supply chain	None			-	○
	102-11	Precautionary Principle or approach	Preventing environmental pollution across the business and fostering a sustainable environment			48-53	○
	102-12	External initiatives	UN Global Compact, UN SDGs support			-	○
	102-13	Membership of associations	See Prizes and Awards/Memberships			94	○
Strategy	102-14	Statement from senior decision-maker	See CEO Message	4.7/6.2/7.4.2		4	○
Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	See Corporate Culture of Respecting and Trusting Each Other	4.4/6.6.3	 Responsibility and ethics	58	○
Governance	102-18	Governance structure	Operation of board of directors, top decision-making group	6.2/7.4.3/ 7.7.5	 Responsibility and ethics	14	○
Stakeholder engagement	102-40	List of stakeholder groups	Executives and employees, citizens, government, parliament, research institution, city gas company, public institution, venture and small business and socially disadvantaged people or group			18	○
	102-41	Collective bargaining agreements	Employees applied by joint agreement are 89% out of whole employees			-	○
	102-42	Identifying and selecting stakeholders	See Stakeholder Engagement	5.3	 Participation	18	○
	102-43	Approach to stakeholder engagement	See Stakeholder Engagement				○
	102-44	Key topics and concerns raised	See Stakeholder Engagement and Material Topic Assessment			18-20	○





Universal Standards							
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance
GRI 102: General Disclosure							
Reporting practice	102-45	Entities included in the consolidated financial statements	See Sustainability Performances			73	○
	102-46	Defining report content and topic Boundaries	See About This Report and Material Topic Assessment	5.2/ 7.3.2/ 7.3.3/ 7.3.4		20	○
	102-47	List of material topics	See Material Topic Assessment			20	○
	102-48	Restatements of information	None			-	○
	102-49	Changes in reporting	See Material Topic Assessment			20	○
	102-50	Reporting period	2018. 1. 1 ~ 2018. 12. 31. (First half of 2019 partially included)				○
	102-51	Date of most recent report	2018. 6.				○
	102-52	Reporting cycle	Annual				○
	102-53	Contact point for questions regarding the report	Korea Gas Corporation (Tel. +82-53-670-0114)				○
	102-54	Claims of reporting in accordance with the GRI Standards	Complying with GRI Standards Core Option		7.5.3/ 7.6.2	-	○
	102-55	GRI Content Index	Reporting key index of universal standards and at least one index of topic-specific standards				○
	102-56	External assurance	Implementing the third-party assurance from special organization, Korean Standards Association for open information and trust				○

Topic-specific Standards																			
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance												
GRI 200: Economic Disclosures																			
Economic Performance																			
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	See KOGAS Profile			6	○												
Economic Performance	201-1	Direct economic value generated and distributed	See Sustainability Performances	6.8.1/ 6.8.2/ 6.8.3/6.8.7/ 6.8.9	Mutual cooperation	6	○												
Indirect Economic Impacts																			
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	As a public company aimed at developing, refining, supplying and refining natural gas, KOGAS supplies natural gas to the people in a stable manner.				○												
Indirect Economic Impacts	203-1	Infrastructure investments and services supported	KOGAS creates indirect economic effect through social value creation across business such as construction of national pipeline network, supply of city gas, reduction in fine dust and emission of greenhouse gas	6.3.9/ 6.8.1/ 6.8.2/6.8.7/ 6.8.9	Environment, safety and health welfare	24-35	○												
Procurement Practices																			
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	KOGAS is playing a leading role for mutual growth and fostering conditions for mutual growth with small and social businesses in order to realize social value				○												
Procurement Practices	204-1	Proportion of spending on local suppliers	<p>Performance of purchasing products from small businesses (Unit: KRW 100 million, %)</p> <table border="1"> <thead> <tr> <th>Classification</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Amount of purchasing products from small businesses</td> <td>2,983</td> <td>2,705</td> <td>3,229</td> </tr> <tr> <td>Rate of purchasing products from small businesses</td> <td>28.1</td> <td>29.1</td> <td>34</td> </tr> </tbody> </table>	Classification	2016	2017	2018	Amount of purchasing products from small businesses	2,983	2,705	3,229	Rate of purchasing products from small businesses	28.1	29.1	34	6.4.3/ 6.6.6/ 6.8.1/6.8.2/ 6.8.7	Mutual cooperation	36-45	○
Classification	2016	2017	2018																
Amount of purchasing products from small businesses	2,983	2,705	3,229																
Rate of purchasing products from small businesses	28.1	29.1	34																
Anti-corruption																			
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are implementing monitoring entire institutions and business activities on a regular business through internal control system and cultivating foundation of integrity and ethics management and practicing related activities				○												
Anti-corruption	205-2	Communication and training about anti-corruption policies	<p>Examples of violation of anti-corruption (Unit: cases (persons))</p> <table border="1"> <thead> <tr> <th></th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td></td> <td>1(22)</td> <td>3(3)</td> <td>2*(2)</td> </tr> </tbody> </table> <p>*1 case of obtaining treats, 1 case of violation of code of conduct</p>		2016	2017	2018		1(22)	3(3)	2*(2)	6.6.1/ 6.6.2/ 6.6.3	Responsibility and ethics	58-71	○				
	2016	2017	2018																
	1(22)	3(3)	2*(2)																
Anti-competitive Behavior																			
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are trying to improve customs of unfair trade and foster a fair culture of competition				○												
Anti-competitive Behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	None	6.6.1-6.6.2/ 6.6.5/6.6.7	Mutual cooperation	36-45	○												

Topic-specific Standards							
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance
GRI 300: Environment Disclosures							
Energy							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are aware of energy consumption by business and administration activity and dedicated to the spread of renewable energy through business capability			46-57	○
Energy	302-1	Energy consumption within the organization	See Sustainability Performances	6.5.4	Environment	73-80	○
	302-4	Reduction of energy consumption	See Sustainability Performances	6.5.4/6.5.5		73-80	○
Water							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are aware of the total use of water and quantity of water intake by sources of supply and use of seawater is very high, but we are managing it in order to prevent environmental influences			46-57	○
Water	303-1	Water withdrawal by source	See Sustainability Performances	6.5.4		73-80	○
Biodiversity							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	When implementing construction or business which could have effects on an entity in the vicinity, we are conducting an evaluation of environmental influence to prepare for solution for prevention of ecosystem deterioration			46-57	○
Biodiversity	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	We restored the habitat of endangered species by conducting prevention business of otters, flying squirrels and endangered plants as a part of the protection activity of ocean and ecosystem	6.5.6	Environment	73-80	○
	304-3	Habitats protected or restored	When conducting business, we hold joint meetings composed of local representatives of residents, experts of environment preservation association	6.5.6		73-80	○
Emissions							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are actively preparing for climate change by practicing low carbon management through reduction of emission of greenhouse gas and dedicating to the reduction of air pollution by managing emission of air pollutants such as NOx and SOx			46-57	○
Emissions	305-1	Direct (Scope 1) GHG emissions	See Sustainability Performances	6.5.5	Environment		○
	305-2	Energy indirect (Scope 2) GHG emissions	See Sustainability Performances	6.5.5		73-80	○
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	See Sustainability Performances	6.5.3			○
Effluents and Waste							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are making an effort to minimize wastewater and waste caused by administration activity and facilitating the process by discharging waste by types and purposes of use and dedicating to activation of the cycle of resources			46-57	○
Effluents and Waste	306-1	Water discharge by quality and destination	See Sustainability Performances		Environment	73-80	○
	306-2	Waste by type and disposal method	See Sustainability Performances	6.5.3			○
Environmental Compliance							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are actively managing by creating more enhanced standards than legal one about pollutants such as atmospheric aspects and water quality			46-57	○
Environmental Compliance	307-1	Non-compliance with environmental laws and regulations	See Sustainability Performances	4.6	Environment	73-80	○

Topic-specific Standards																																	
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance																										
GRI 400: Social Disclosures																																	
Employment																																	
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	Creation of jobs is becoming the government's important issue and we are establishing a strategy for sustainable jobs and implementing it for quality job creation			36-45	○																										
Employment	401-1	New employee hires and employee turnover	2018 number of new recruitment and rate of turnover (Unit: persons, %)		6.4.3	 Labor Job	-	○																									
			<table border="1"> <tr> <td rowspan="7">New recruitment</td> <td>Male</td> <td>308.5</td> </tr> <tr> <td>Female</td> <td>61</td> </tr> <tr> <td>Disabled people</td> <td>6</td> </tr> <tr> <td>High school graduates</td> <td>42</td> </tr> <tr> <td>Patriots and Veterans</td> <td>19</td> </tr> <tr> <td>Local talents</td> <td>290</td> </tr> <tr> <td>Total</td> <td>369.5</td> </tr> <tr> <td rowspan="5">Number of employee turnover*</td> <td>Male</td> <td>17</td> </tr> <tr> <td>Female</td> <td>1</td> </tr> <tr> <td rowspan="3">Ages</td> <td>Under 30</td> <td>5</td> </tr> <tr> <td>30-50</td> <td>8</td> </tr> <tr> <td>Over 50</td> <td>5</td> </tr> <tr> <td rowspan="2">Rate of employee turnover</td> <td>Total rate of turnover</td> <td>0.9</td> </tr> <tr> <td>Rate of voluntary turnover</td> <td>0.4</td> </tr> </table>	New recruitment					Male	308.5	Female	61	Disabled people	6	High school graduates	42	Patriots and Veterans	19	Local talents	290	Total	369.5	Number of employee turnover*	Male	17	Female	1	Ages	Under 30	5	30-50	8	Over 50
New recruitment	Male	308.5																															
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		Over 50	5																														
Rate of employee turnover	Total rate of turnover	0.9																															
	Rate of voluntary turnover	0.4																															
			2018 current status of Parental leave																														
	401-3	Parental leave	<table border="1"> <tr> <td>Number of male users</td> <td>16</td> </tr> <tr> <td>Number of female users</td> <td>55</td> </tr> <tr> <td>Returning persons after use of parental leave</td> <td>29</td> </tr> <tr> <td>Number of employees working for more than one year after returning from parental leave</td> <td>15</td> </tr> <tr> <td>Return Rate (%)</td> <td>100</td> </tr> <tr> <td>Percentage of working for more than 12 months (%)</td> <td>100</td> </tr> </table>	Number of male users	16	Number of female users	55	Returning persons after use of parental leave	29	Number of employees working for more than one year after returning from parental leave	15	Return Rate (%)	100	Percentage of working for more than 12 months (%)	100	6.4.4		-	○														
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Labor/Management Relations																																	
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are fostering cooperative and rational labor relation by activating communication between labor and management			58-71	○																										
Labor/Management Relations	402-1	Minimum notice periods regarding operational changes	KOGAS notifies administrative changes such as a change in articles and organization, open and closure of regulation regarding labor condition, general meeting of stockholders relating to rights and interests of union members, boarder's meeting, submitted items and consequence of Committee of Management with documentation and specifies those contents in a collective agreement.	6.4.3/6.4.5	 Labor	-																											

Topic-specific Standards																							
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance																
GRI 400: Society Disclosures																							
Occupational Health and Safety																							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are preventing accidents in the process of production of LNG, construction of supply facility and maintenance and we are reinforcing activities for employees' safe environment			46-57	○																
Occupational Health and Safety	403-1	Workers representation in formal joint management-worker health and safety committees	End of 2018, 73.73%	6.4.6		-	○																
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	See Sustainability Performances	6.4.6/6.8.8	 Labor Safety Health welfare	-	○																
	403-3	Workers with high incidence or high risk of diseases related to their occupation	We conduct special management for prevention of disease of outdoor workers and shift workers in Summer	6.4.6/6.8.8		46-57	○																
	403-4	Health and safety topics covered in formal agreements with trade unions	Preparation for industrial plan, establishment of prevention of industrial accidents, harm/danger or safety/health followed by introduction of equipment or machine as agreement	6.4.6		46-57																	
Training and Education																							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We conduct education to enhance capability of employee's task professionalism			58-71	○																
Training and Education	404-1	Average hours of training per year per employee	<p>Education hours of employees (Unit: hours)</p> <table border="1"> <thead> <tr> <th>Classification</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Education hour per person(Full-time)</td> <td>102</td> <td>114</td> <td>104</td> </tr> <tr> <td>Male</td> <td>100</td> <td>116</td> <td>102</td> </tr> <tr> <td>Female</td> <td>106</td> <td>112</td> <td>112</td> </tr> </tbody> </table> <p>*Temporary position does not have training</p>	Classification	2016	2017	2018	Education hour per person(Full-time)	102	114	104	Male	100	116	102	Female	106	112	112	6.4.7	 Labor	-	○
	Classification	2016	2017	2018																			
Education hour per person(Full-time)	102	114	104																				
Male	100	116	102																				
Female	106	112	112																				
404-3	Percentage of employees receiving regular performance and career development reviews	<p>Except for exceptional cases of dispatched workers or long-term trainees, all the employees undergo regular performance evaluations in terms of job performance and career development.</p> <p>Rate of application of employee's performance evaluation (Unit: %)</p> <table border="1"> <thead> <tr> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>96.5</td> <td>96.0</td> <td>96.8</td> </tr> </tbody> </table>	2016	2017	2018	96.5	96.0	96.8	6.4.7		-	○											
2016	2017	2018																					
96.5	96.0	96.8																					
Diversity and Equal Opportunity																							
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We offer community members diverse opportunities and create quality jobs through socially balanced recruitment		 Labor Human rights	36-45	○																
Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	See Governance and Sustainability Performances	6.2.3/6.3.7/6.3.10/6.4.3	Job Supporting socially weak group	14, 73-80	○																

Topic-specific Standards																																
Topic	No.	Disclosure	Description	ISO 26000	UN SDGs & Social value	Page	Assurance																									
GRI 400: Society Disclosures																																
Non-discrimination																																
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We strive to create a workplace that is free of discrimination based on position, employment type, etc. and to improve the quality of employment.			58-71	○																									
Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	The same remuneration and annual salary system are applied to personnel, education, etc. in order to solve unreasonable discrimination against the term system, the contract position, etc.	6.3.6/6.3.7/ 6.3.10/ 6.4.3	Labor Human rights Supporting socially weak group																											
Human Rights Assessment																																
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We established human rights management system for invigoration of a culture of respect for human rights and implemented related education, and we are now preparing for aiding process for difficulty treatment			58-71	○																									
Human Rights Assessment	412-2	Employee training on human rights policies or procedures	<div style="text-align: right;">(Unit: persons)</div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Classification</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Completion of ethics education</td> <td>3,144</td> <td>3,422</td> <td>3,324</td> </tr> <tr> <td>Completion of online training on code of conduct</td> <td>5,980</td> <td>6,877</td> <td>7,242</td> </tr> <tr> <td>Completion of training on human rights</td> <td>-</td> <td>-</td> <td>2,104</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Classification</th> <th>Unit</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Hours of training for workers on human rights policies and procedures related to business</td> <td>Hours</td> <td>1</td> </tr> <tr> <td>Rate of training for workers on human rights policies and procedures related to business</td> <td>%</td> <td>95</td> </tr> </tbody> </table>	Classification	2016	2017	2018	Completion of ethics education	3,144	3,422	3,324	Completion of online training on code of conduct	5,980	6,877	7,242	Completion of training on human rights	-	-	2,104	Classification	Unit	2018	Hours of training for workers on human rights policies and procedures related to business	Hours	1	Rate of training for workers on human rights policies and procedures related to business	%	95	6.3.5	 Human rights Labor Responsibility and ethics Supporting socially weak group	-	○
Classification	2016	2017	2018																													
Completion of ethics education	3,144	3,422	3,324																													
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Hours of training for workers on human rights policies and procedures related to business	Hours	1																														
Rate of training for workers on human rights policies and procedures related to business	%	95																														
Local Communities																																
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We are trying to realize social responsibility of organization through social contribution by utilizing business capability and spread a culture of voluntary sharing by running Onnuri Corps			36-45	○																									
Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	<p>We are enhancing the effectiveness of social contribution projects by conducting stakeholder - customized contribution projects considering the needs of the local community</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Classification</th> <th>Unit</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Total hours of service</td> <td>Hours</td> <td>34,711</td> <td>45,093</td> <td>29,659</td> </tr> <tr> <td>Hours of service per person</td> <td>Hours</td> <td>9.4</td> <td>14.4</td> <td>3.5</td> </tr> <tr> <td>Reduction of gas bill</td> <td>KRW 100 million</td> <td>768</td> <td>835</td> <td>873</td> </tr> </tbody> </table>	Classification	Unit	2016	2017	2018	Total hours of service	Hours	34,711	45,093	29,659	Hours of service per person	Hours	9.4	14.4	3.5	Reduction of gas bill	KRW 100 million	768	835	873	6.3.9/ 6.5.1/ 6.5.2/ 6.5.3/ 6.8	 Restoration of community Local economy Participation	-	○					
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Reduction of gas bill	KRW 100 million	768	835	873																												
Customer Privacy																																
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its Boundary	We possess capability against security accident and establish security system of information in order to protect client's information			46-57	○																									
Customer Privacy	418-1	Substantiated complaints regarding concerning breaches of customer privacy and losses of customer data	<p>Case of violation of information security (Unit: cases)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Classification</th> <th>2016</th> <th>2017</th> <th>2018</th> </tr> </thead> <tbody> <tr> <td>Violation of client information security</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>IT infrastructure breach</td> <td>0</td> <td>0</td> <td>0</td> </tr> </tbody> </table>	Classification	2016	2017	2018	Violation of client information security	0	0	0	IT infrastructure breach	0	0	0	6.7.1/ 6.7.2/ 6.7.7	 Human rights	-	○													
Classification	2016	2017	2018																													
Violation of client information security	0	0	0																													
IT infrastructure breach	0	0	0																													

Third-party Assurance Statement

Dear Korea Gas Corporation Management and Stakeholders

▣ Introduction

The Korean Standards Association (“KSA”) was commissioned by Korea Gas Corporation (“KOGAS”) to perform a third-party Assurance Engagement of ‘KOGAS sustainability Report 2019’ (the “Report”). KSA presents independent opinions as follows as a result of feasibility of the data contained in this Report. KOGAS has sole responsibility for content and performance contained in this Report.

▣ Independence

As an independent assurance agency, KSA does not have any kinds of commercial interest in businesses of KOGAS apart from undertaking a third-party assurance on the Report. We have no other contract with KOGAS that may undermine credibility and integrity as an independent assurance agency.

▣ Assurance Standards and Level

This Assurance Engagement followed the AA1000AS (2008 with 2018 addendum) assurance standards to provide Moderate Level assurance. We checked the four principles of inclusivity, materiality, responsiveness and impact in combination with information credibility of the Report. We also reviewed whether the Report content was created in accordance with the GRI Standards.

▣ Assurance Type and Scope

This Assurance Engagement followed the AA1000AS (2008) assurance standards to provide Type 2 assurance, which means that the assurance assessed the accuracy and reliability of the company’s statements and performance data provided in the Report. The assurance scope is from January 1, 2018, to December 31, 2018 and the assurance focused on systems and activities including policies and goals, businesses and programs, standards, and achievements of the Company’s sustainability management. While the company’s environmental and social data as well as financial data was verified, the scope of review concerning stakeholder engagement was limited to the materiality test process.

▣ Assurance Methodology

We used the following methods to gather information, documents and evidence with respect to the assurance scope.

- Analyses of articles related to KOGAS’s sustainability management published by domestic media outlets
- Review of management system and process used in improving the performance of sustainability management and preparing the Report
- Review of the consistency between the financial performance data and the company’s audit report/publicly announced data
- Examination of internal documents and basic materials

▣ Assurance Results and Opinions [On an assurance principle/process level]

KSA reviewed the draft version of this Report to present our opinions as an assurance provider. Modifications were made of the Report content if deemed necessary. We were not aware of any significant errors or inappropriate descriptions in this Report as a result of our Assurance Engagement. As such, we present our opinions of the KOGAS Sustainability Report 2019 as follows.

■ Inclusivity

○ Has KOGAS engaged its stakeholders in strategically responding to sustainability?

KSA believe KOGAS is aware of the importance of stakeholder participation and is making an all-out effort to establish a process that will increase their participation. KOGAS has selected stakeholders including government and related organization, employees, corporate customers, individuals, partner companies, local communities and local government body to receive diverse feedbacks and opinions.

■ Materiality

○ Has KOGAS included material information in the Report to help stakeholders make informed decisions?

We are not aware of any significant omissions or exclusions of data that is material to stakeholders. We verified that KOGAS conducted materiality test with issues identified from analyses of internal and external environments and reported according to the result.

■ Responsiveness

○ Has KOGAS appropriately responded to stakeholder requirements and interest in this Report?

We verified that KOGAS responded stakeholders’ needs and interests through reflecting stakeholders’ opinions in the Report. We are not aware of any evidence that KOGAS’s response to significant issues of stakeholders was reported inappropriately.

■ Impact

○ Has KOGAS appropriately monitored its impact on the stakeholders?

We verified that the Company is monitoring and assessing its impact on the stakeholders by conducting an enhanced verification of its standard business activities. Furthermore, it has been verified that the Company appropriately publishes its findings in the Report.

▣ GRI Standards Application

We confirmed that this Report was prepared in accordance with GRI Standards Core Option. Based on data KOGAS provided, we also confirmed a validity of the contents related to General Standard Disclosure and Specific Standard Disclosure.

■ Universal Standards

We have verified that the Report complied(s) with the requirements of the Universal Standards of Core Option, and (have) reviewed the following disclosures:

102-1 to 102-13(Organizational profile), 102-14(Strategy), 102-16 (Ethics and Integrity), 102-18(Governance), 102-40 to 102-44(Stakeholder Engagement), 102-45 to 102-56(Reporting Practice), 103(Management Approach)

■ Topic-specific Standards

We have checked the material topics identified from a materiality test process in which content to be disclosed. We examined disclosures below:

- Economy: 201-1, 203-1, 204-1, 205-2, 206-1
- Environment: 302-1, 302-4, 303-1, 305-1, 305-2, 305-7, 306-1, 306-2
- Social: 401-1, 401-3, 403-1, 403-2, 403-3, 404-1, 404-3, 405-1, 412-2, 413-1, 418-1

▣ Opinions and Recommendations [Performance /Issues]

We present the following recommendations to help KOGAS establish a company-wide sustainability management strategy and respond to continuous issues of sustainability.

■ Economic

Under the management philosophy of “Better Energy, Better World”, expert of clean energy provider, KOGAS is implementing sustainable management activities to achieve improved convenience, benefit and well-being of the people through providing natural gas, known for clean energy. To successfully pursue these goals and sustainable management, it is vital to achieve performance-based responsible management for transparency in accounting and upper-level transparent management. Thus, we recommend enhancing proactive comprehensive response to financial and non-financial risk management as well as the external fluctuation in management environment beyond the short-term response.

■ Environment

The importance of the awareness on the environmental safety is growing globally as well as for the stakeholders. To reflect on the global and domestic trend, we have found that KOGAS has put its effort on analyzing the opportunities and risks in relation to the climate change, along with the continuous effort to reduce GHG emission. In the future, we expect to implement proactive environmental management system through performance check system that is organically connected to the increased internal and external trust and goal- achievements by index through structural installment to reflect environmental achievement within the core value, management philosophy, and transparently managed data.

■ Social

Since the new administration took place, the demand for realizing social value of the public sector has grown. KOGAS has put effort to meet the demand by strengthening social responsibility management and to create social value. Especially, the activities in relation to social value creation and sustainable development goals are highly regarded as well as the implementing human rights management system through improved awareness within the company. We look forward to see the internalization of the human rights management and spread human rights management through the supply chain, to minimize potential human rights risk.

June 2019

Sang-Jin Lee, KSA Chairman & CEO


















이 상진



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The Korean Standards Association (KSA), established as a special corporation in accordance with the Law for Industrial Standardization in 1962, serves as a knowledge service provider that distributes and disseminates such services as industrial standardization, quality management, sustainability management, KS certification and ISO certification. The KSA is committed to the sustainable development of Korean society as an ISO 26000 national secretary, certified GRI training partner, AA1000 assurance provider, KSI (Korea Sustainability Index) operator, and UN CDM DOE (development operational entity), and as an assurance provider of the Korean government's greenhouse gas energy target management system.

Dedication to Achievement of UN SDGs through Creation of Social Value

UN Sustainable objectives		KOGAS's strategy for the creation of social value(Omnuri)			
		Creation of Job and training social company	Energy welfare	Training future generation	Voluntary sharing culture
1	 End poverty in all its forms everywhere	○	○	○	○
2	 End hunger, achieve food security and improved nutrition and promote sustainable agriculture			○	○
3	 Ensure healthy lives and promote well-being for all at all ages	○	○	○	○
4	 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	○		○	
5	 Achieve gender equality and empower all women and girls			○	
6	 Ensure availability and sustainable management of water and sanitation for all		○		○
7	 Ensure access to affordable, reliable, sustainable and modern energy for all		○		
8	 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	○			
9	 Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation		○		
10	 Reduce inequality within and among countries	○	○	○	○
11	 Make cities and human settlements inclusive, safe, resilient and sustainable	○	○	○	○
12	 Ensure sustainable consumption and production patterns		○		○
13	 Take urgent action to combat climate change and its impacts		○		
14	 Conserve and sustainably use the oceans, seas and marine resources for sustainable development				○
15	 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		○		○
16	 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss				○
17	 Strengthen the means of implementation and revitalize the global partnership for sustainable development	○		○	○

Alignment

- Domestic: Dedication to reduction in economic poverty and starvation by conducting a variety of social contribution activities such as support of gas bills and medical expenses for vulnerable groups, business to establish independence foundation of the homeless, support of scholarship for youth and so forth.
- Overseas: Dedication to improvement of skills in developing countries through operation of technical institution in Mozambique

Effort to eliminate starvation within and outside of country through constant support like the Republic of Korea National Red Cross

Implementation of comprehensive and systematic welfare business by conducting business of creating social value by life cycle stages

- Children: Toy library, invitation and operation of Uzbek patients, support of serious patients and so forth
- Teenagers: Scholarship for high school/university students, Operation of technical institutions in Mozambique(Business cost: KRW 70 million) and R-Bank(Business cost: KRW 70 million)
- Young and older adults: Business for improvement of energy efficiency and construction academy
- The elderly: Supply of silver cart

Support of quality educational environment through scholarship project for children and teenagers of low income families inside and outside of the country, business for improvement in educational environment and toy library. Constant support of quality comprehensive education such as operation of construction education for independence and rehabilitation of fundamental life escaping from economic support and permanent opportunity for education for the homeless and those living in dosshouses through

Help single moms' independence through support of education and career and implementation of business to support medical expenses for single moms' serious patients. Dedication to increase in rights and interests of women and girls through invitation and operation of Uzbek patients and support medical expenses.

We are carrying out sustainable environmental preservation activities like river purification and supporting residential environment improvement for improvement of hygiene of vulnerable groups.

Support for reduction in energy consumption like fuel cells to reduce heating and cooling, installing gas chillers and heaters. Implementation of business for sustainable and steady supply of clean natural gas through policy of reduction in gas bills for vulnerable groups

Constant implementation of business to create supply such as installment of fuel cells to increase use of natural gas, clean and economical energy resources. Job creation through construction academy(obtaining construction skill and job program) to prepare for foundation of independence of the homeless and those living in dosshouses.

Sustainable development of industry through social investment through spread of dispersal types of strategy such as support of installing incoming pipes of city gas and fuel cells is possible.

- Between countries: Continuous implementation of business for advancement of developing countries through medical support business for children in developing countries, building Korean-style playgrounds and business for enhancing capability of jobs for middle and high school students in developing countries through operation of vocational training class.
- Within country: Constant effort for eradication of inequality through scholarships for high school students of low income families, environmental improvement for guarantee of residence and energy usage through business for improvement of energy efficiency

Under generation and implementation of diverse business for improvement of the settlement of Daegu

- Development of region: Holding Global Innovative Festa (GIF) and Creative Business Cup(CBC) and support of local innovate forum and Ansim factory
- Improvement of condition of settlement: Opening of football pitch, tennis court and foot volleyball pitch for local residents, heat efficiency improvement project, toy library etc.

Dedication to the stability of supply and demand of natural gas and structure of virtuous circle of domestic demand by devoting to the expansion of safe and stable storage equipment of natural gas through conflict management within the region from heat efficiency improvement project and volunteering activities around business sites.

Business for creation of social value for creation of supply and demand of clean fossil fuel, natural gas is part of combatting effect against climate change and first aid.

Assisting support fund for recovery of damage by minimizing damage of marine environment around the base of natural gas is available from internal rules.

Environmental improvement through business projects to increase supply and demand of clean fossil fuel, natural gas with activities of purification of environment such as Blue Sky Project and Cultural Assets Preservation Project

Preparing for foundation enabling citizens to participate in the business by suggesting ideas regarding social contribution business through the contest of social contribution business. Constant implementation of business, Onnuri Fund Matching Grant that selects and implements supportive business for the vulnerable class by reflecting the preference of employees with collection of employee.

Preparation for driving force through creation and operation of the Committee of Social Value for creation of social value and mutual cooperation. Continue of cooperation with local government for support of the surrounding area of the producing region of natural gas and constant promotion of cooperative business with Daegu, transferred area. Continuous effort to enhance partnership with domestic and overseas institutions and the government such as improvement in the educational environment in developing countries connected with foreign business and support of medical expenses.

Prizes and Awards/Memberships

Prizes and Awards

Name of award	Host	Year
Best institute in disaster management evaluation and won the presidential commendation	Ministry of the Interior and Safety	2018
Grand prize of Trust Management among Korea Management	Korea Management Association	2018
Grand prize of Retirement Pension among joined companies	Maeil Business News Korea	2018
Grand Prize in the Social Innovation of the Korea Innovation Frontier Award	The Dong-A Ilbo	2018
Prime Minister's Award for Early Supply of Natural Gas in Saemangeum District – Jeonbuk Regional Headquarters	Office for Government Policy Coordination	2017
Prime Minister's Award in Korea Energy Efficiency Award – Pyeongtaek Terminal Division	Korea Energy Agency	2017
Grand Prize in Social Contribution Sector	Daegu Metropolitan City	2017
Korea CSR Film Festival – Minister's Prize	Ministry of Trade, Industry and Energy	2016
Selection as the best contractor for construction disaster prevention	Korea Occupational Safety and Health Agency	2016
Ranked top in national infrastructure disaster management evaluation	Ministry of Public Safety and Security	2016
1st Place in Best Companies to Work	GWP KOREA	2016
Certification as an excellent company in Standard Service Quality	Ministry of Trade, Industry and Energy	2016
Industry Minister Award of Energy Voucher Business	Ministry of Trade, Industry and Energy	2016
Prime Ministerial Commendation commemorating 2016 World Standards Day	-	2016
Prime Minister Award of Korea Safety	Ministry of Government Administration and Home Affairs	2016
ISO Integrated Certification (ISO 8001, ISO 14001, ISO 29001, OHSAS 18001)	Korea Gas Safety Corporation, British Standard Institution (BSI)	2016

Memberships

Name of Association	Joining Year
Korea Gas Union	1985
WEC Korean Committee	1985
GIGNL (International Group of Liquefied Natural Gas Importers)	1985
SIGTTO (the Society of International Gas Tanker and Terminal Operators)	1990
Environment Preservation Association (KOGAS Pyeongtaek Terminal Division)	1997
UN Global Compact	2007
Energy and Mineral Resources Development Association of Korea	2008
Korea-Japan Economic Association	2013
Green Company Association (KOGAS Incheon Terminal Division)	2013
Korean-American Association	2014
Korea-Indonesia Partnership Council	2014
IGU (International Gas Union)	2014

Better Energy Better World

KOGAS Sustainability Report 2019

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