

# 2019 DAEWOO E&C SUSTAINABILITY REPORT

**Build Together**

# ABOUT THIS REPORT

Since 2012, Daewoo E&C has published a yearly sustainability report to disclose the financial, social and environmental progress we made over the year. As our eighth sustainability report, we use it as a channel to communicate our major sustainability policies, activities and performance with our stakeholders. This report is available to download from our website at [www.daewooenc.com](http://www.daewooenc.com).

## Reporting Standard

GRI (Global Reporting Initiative) Standards, Guidelines and Construction & Real-Estate Sector Supplement.

"In Accordance – Core" option is met in accordance with the GRI Standards Guidelines.

## Reporting Period

This Report covers key sustainability activities and achievements from January to December 2018 (Some important qualitative performance data covers up to March 2019). In terms of quantitative performance, data for the past three years is presented for time series analysis.

## Reporting Boundaries

The information provided in this report covers all sites and buildings undergoing actual business operation (quantitative performance data for the environmental aspects are limited to, consolidated and disclosed on 143 work sites and 4 buildings in Korea). The financial performance is based on the K-IFRS Consolidation Standards.

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2018 HIGHLIGHT

## FORWARD TO GLOBAL TOP 20

Daewoo E&C has made every effort based on challenge, passion, autonomy and accountability for the past 45 years.

We are now catching our breath at the starting point of a new launch.

Before taking a powerful step forward, a phrase is engraved deep in our heart: "Build Together". It is a new vision for our future as a guide.

In the vision, we put our willingness to make partnerships with customers and all other stakeholders for the future.

## CEO MESSAGE

**Dear respected  
stakeholders,**  
  
**I sincerely appreciate  
your continued  
encouragement  
and support for  
Daewoo E&C.**



Dear respected stakeholders, I sincerely appreciate your continued encouragement and support for Daewoo E&C.

Despite internal and external environmental changes, Daewoo E&C has constantly been growing as Korea's best construction company. In the midst of continuously low oil price since 2016 and increased uncertainty in the construction market the company exceeded annual sales of KRW 10 trillion for the first time since establishment. As we have fulfilled our roles as a top-tier construction company in the stagnant economic growth and unfavorable management conditions such as reduction of investment and increased production costs, and we successfully exceeded the planned management indexes in 2018.

However, Daewoo E&C did not settle for creating financial performance, but aimed at realizing the best value for customers. To mark our 45<sup>th</sup> anniversary, we proclaimed a new vision which all employees are engaged in and will strive to establish the basis for sustainable growth to become one of the global top 20 companies as follows:

**First, we will enhance trust among stakeholders with stable growth.**

In 2018, Daewoo E&C won bids on large-scale projects at home and abroad despite shrinking contract business and rapidly emerging follower countries such as China.

In Korea, we won contracts such as a new construction project for joint housing in Incheon Handeul Area and the GTX-A project. In overseas countries, the company was selected as a preferred bidder for nuclear power plants in the Czech Republic and Poland and participated in the LNG FEED Project in Nigeria as a main contractor. With these projects, we have laid a bridge for sustainable growth. However, Daewoo E&C will not settle for these achievements, but endeavor to develop our strength to grow continuously, not being affected by external environmental changes, through four core strategies—Maximize performance capacity, Amplify marketing strength, Secure new growth engine and Innovate Management infrastructure.

**Second, we will contemplate, strive and act for the future.**

In the 4<sup>th</sup> Industrial Revolution, construction business is facing a golden time with the need to change proactively. For this goal, Daewoo E&C not only creates a new opportunity through systematic risk management, but also develops a new business platform such as equity investment, operational engagement and pioneering into a new market to expand the entire value chain. We also proactively prepare for the digitization of the construction industry with the implementation of smart construction such as measurement using drones.

To brace for the uncertainty of the future, the company will focus on securing a future engine by sharing developmental collective intelligence through communicating with all employees based on their experience and knowledge and intensively cultivating flexible and creative human resources.

**Third, we will become a global leading transparent company by advanced righteous management.**

In October 2018, Daewoo E&C received the certification for ISO 37001 Anti-Bribery Management System (ABMS) from the British Standards Institution (BSI) for the first time in the domestic construction industry. This stands for the international recognition for Daewoo E&C's anti-bribery activities and is attributable to the efforts of all employees, including Daewoo New-way proclamation in 2013 and Compliance System adoption in 2015.

However, it is just another beginning. Daewoo E&C will conduct business by principle, cooperate with local communities by leveraging the characteristics of a construction company, and build win-win relationships with its partners, therefore proceeding toward a global company with remarkable transparency.

Dear respected stakeholders.

All employees of Daewoo E&C are moving forward in harmony with one mind: to serve a role as a company that fulfills its social responsibility.

Thank you.

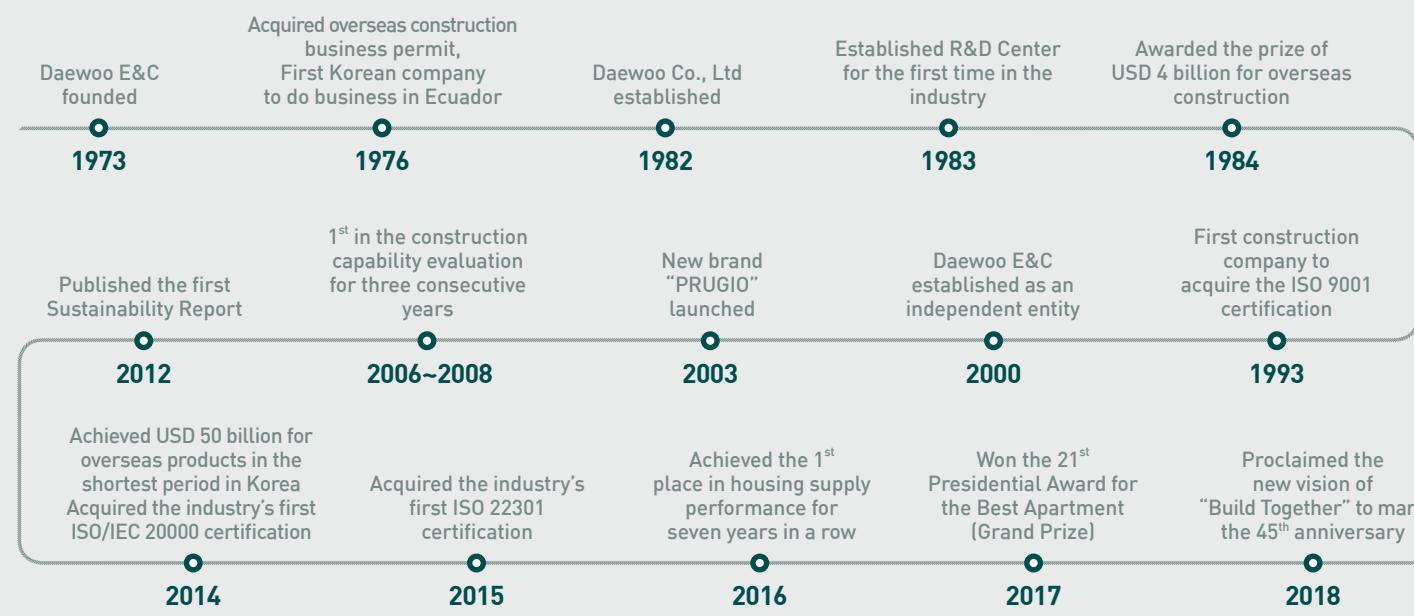
June 2019

Daewoo E&C Co., Ltd.  
CEO Hyung Kim

Hyung Kim

## COMPANY OVERVIEW

Since its establishment with 12 employees in 1973, Daewoo E&C has built new roads and railways to the world and comfortable homes and houses for people. Our challenges have set a new record, while crises at times served as a foothold to leap forward into the future. Now, we are dreaming of a further growing future by 2025. Our challenges to realize the best value with customers will continue.



### Company Profile

As of March 2019

<b>Company Name</b>	DAEWOO Engineering & Construction Co., Ltd.	<b>Branches and Affiliates</b>	2 domestic branches, 4 overseas branches, 6 overseas subsidiaries, and 6 domestic subsidiaries
<b>Date of Establishment</b>	November 1, 1973	<b>Major Shareholder</b>	Korea Development Bank (KDB Value 6 Ltd.)
<b>Location of Headquarters</b>	170, Eulji-ro, Jung-gu, Seoul, Republic of Korea	<b>Number of Employees</b>	5,357 people
<b>CEO</b>	Hyung Kim	<b>Website</b>	<a href="http://www.daewoenc.com">www.daewoenc.com</a> (Korean), <a href="http://www.daewoenc.com/eng">www.daewoenc.com/eng</a> (English)

\* Excluding special purpose company (SPC) subsidiaries established for the purpose of liquidating account receivable, but over which Daewoo E&C has de facto control



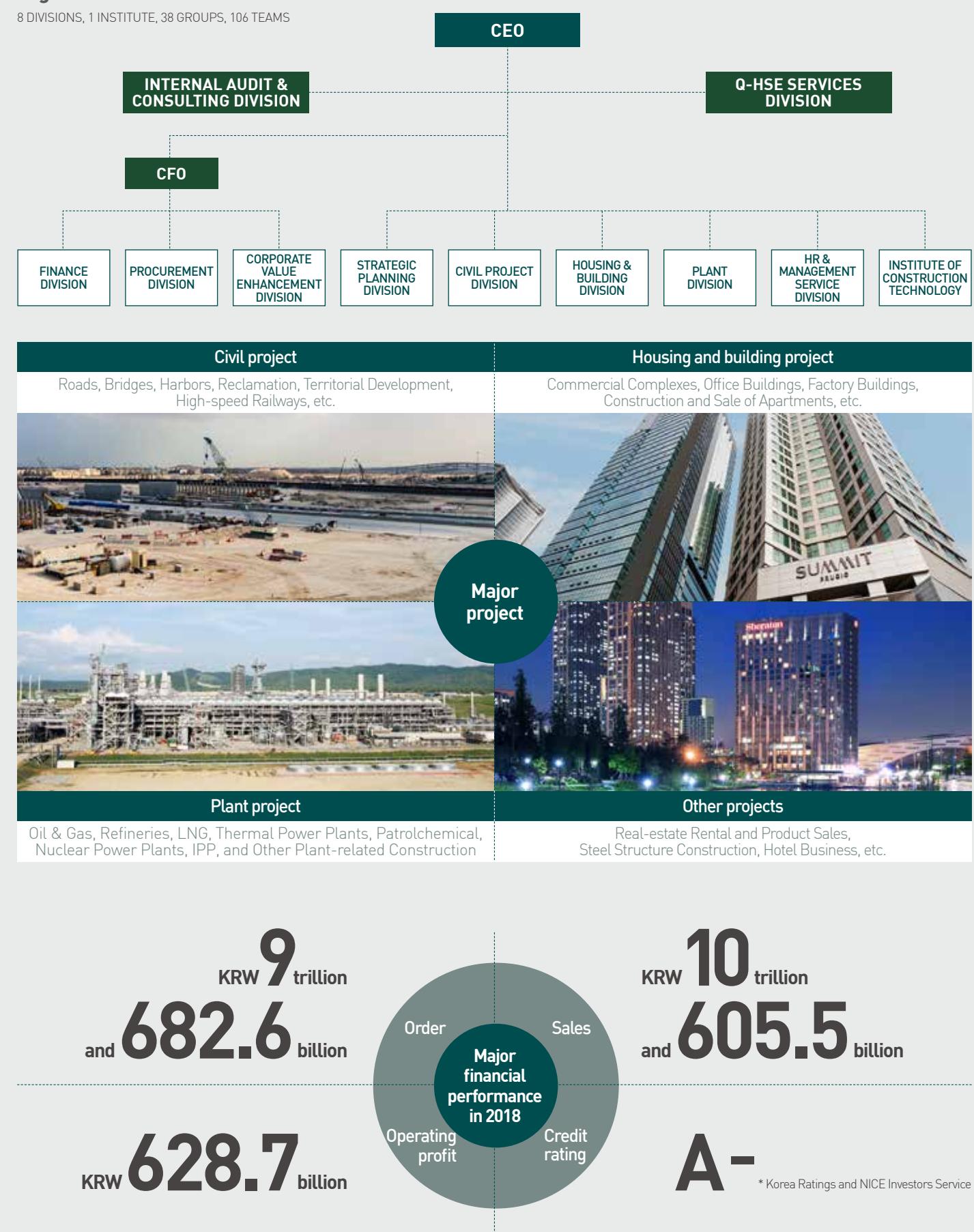
● Overseas branches | North Africa, Middle East, Southeast Asia, Nigeria

● Overseas subsidiaries | New York (U.S.), Tripoli (Libya), Port Harcourt (Nigeria), Saipan, Hanoi (2 subsidiaries)

● Domestic subsidiaries | Daewoo Songdo Hotel, Pruwel (Incheon), Daewoo Power (Pocheon, Gyeonggi-do), PRUGIO Service (Seoul), Daewoo ST (Jincheon-gun, Chungcheongbuk-do), Korea Infra Management (Busan)

### Organizational Structure

8 DIVISIONS, 1 INSTITUTE, 38 GROUPS, 106 TEAMS



\* Korea Ratings and NICE Investors Service

## NEW VISION BUILD TOGETHER

The vision of Daewoo E&C is to become a company achieving the best value with customers. With the driving forces of "challenge and passion" and "autonomy and accountability", all of our employees implement four implementation strategies and eight strategic tasks in harmony with one mind. We firmly believe that Daewoo E&C will become one of the global top 20 companies in the near future by solidifying partnerships with stakeholders and establishing the basis for sustainable growth by enhancing corporate value.

### Vision system

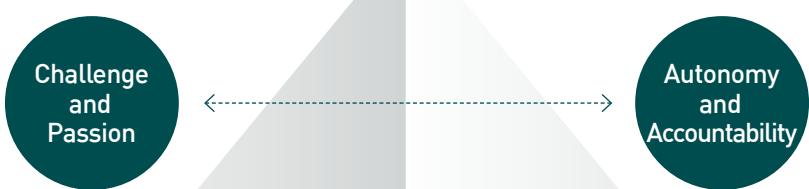
Proclamation of Daewoo E&C's new vision for a new leap (2018.10.31)

### Vision proclamation->>

## Build Together

Realizing Best Value Together with the Customer

### Core value->>



### Strategic goal->>

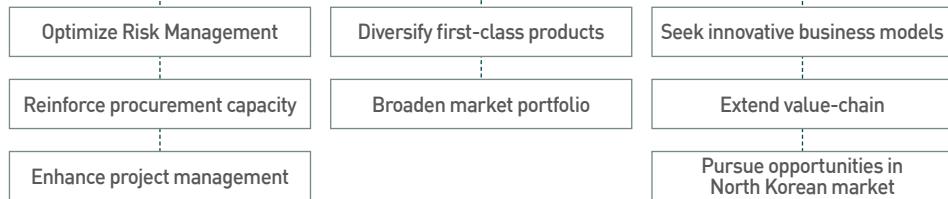
## Global Top 20

Sales of KRW 17 trillion and operating profit of KRW 1.5 trillion by 2025

### Core strategy->>



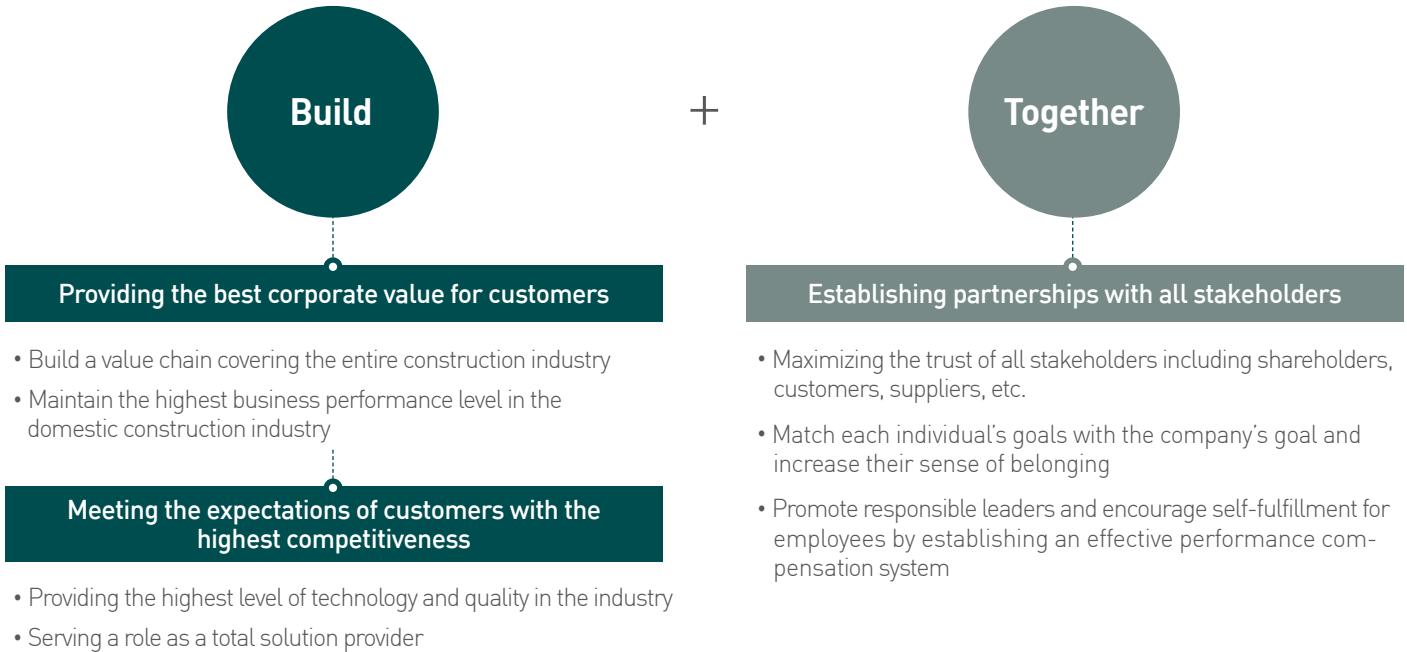
### Strategic task->>



### Vision Statement

## Build Together

Realizing Best Value Together with the Customer



### Event for Attaching Name Cards to Mark the Proclamation of New Vision

On November 5, 2018, Daewoo E&C employees attached their own name cards to a large-scale board upon which the phrase "BUILD TOGETHER" was written to mark the proclamation of our new vision and remind ourselves that we are the people who lead the new vision. Daewoo E&C will grow into the best company with customers. BUILD TOGETHER !



## 2018 HIGHLIGHT



### Proclamation New Vision “Build Together”

In October 2018, Daewoo E&C proclaimed its new vision “Build Together” as a company to realize best value together with the customer to mark its 45<sup>th</sup> anniversary.

Based on the core values of “challenge and passion” and “autonomy and accountability”, we selected four core strategies and eight strategic tasks: Maximize Performance Capacity, Amplify Marketing Strength, Secure New Growth Engine, and Innovate Management Infrastructure. Under these strategies, the company aims to achieve the sales of KRW 17 trillion and operating profit of KRW 1.5 trillion by 2025. We will also solidify the status of a global company based on the management policies of financially stable, future, and righteous management.



### Certification of ISO 37001 Anti-Bribery Management System

On October 29, 2018, Daewoo E&C received the certification of ISO 37001 Anti-Bribery Management System (ABMS) from the British Standards Institution (BSI) for the first time in the domestic construction industry.

As an international standard for anti-bribery management system, ISO 37001 signifies that corporate anti-bribery activities are effectively planned and executed. This certification indicates that leadership for anti-corruption, risk assessment and plan, operation, inspection and improvement activities by Daewoo E&C are recognized to be at the global level. We will become a global company with remarkable transparency trusted by internal and external stakeholders by improving the system continuously and reinforcing ethical and compliance management.



### “Inje-Yangyang Tunnel” Receives Awards from Domestic and Overseas Major Institutions (Winning Three Prizes)

On November 7, 2018, the “Inje-Yangyang Tunnel”, which was completed in June 2017, awarded the grand prize in environmental management section at the IRF GRAA (Global Road Achievement Awards) 2018 by International Road Federation (IRF).

The Inje-Yangyang Tunnel on the Seoul-Yangyang Expressway is Korea’s longest road tunnel of approximately 11km in length and has the highest-quality technologies to minimize environmental damage in the Baekdudaegan Mountain Range and secure the safety of drivers. In addition, the Inje-Yangyang Tunnel received the grand prize for this year’s civil structure on Civil Engineers Day in 2018 by the Korean Society of Civil Engineers and Tunneling Awards by Korean Tunneling and Underground Space Association; only in 2018, we were honored to receive three major prizes from domestic and overseas major institutions.



### Expansion of Overseas Market by Pioneering the LNG FEED Business

In 2018, Daewoo E&C entered the LNG FEED business by performing the NLNG Train 7 FEED Project.

We are making efforts to perform the FEED project via JV-cooperation with Saipem and Chiyoda, and connect it to EPC contracts. With these efforts, we expect the company to establish its position as a LNG EPC player, and endeavor to enter LNG EPC project. Through the Atimonan Power Generation Project, we entered the Philippines market and expanded the market. By pioneering a new market through the consortium with MHPS, the company laid a bridge for entering the Philippines market and broadening the Asian market such as Vietnam, Indonesia, etc.



### Grand Prize of Hankyung Residential Culture Brand in the First Half of 2018

The Cheongju Hills Park PRUGIO built by Daewoo E&C received the grand prize in “2018 Well-Being Apartment Awards” by Hankyung Business to develop residential service and reinforce competitiveness in the construction industry.

The apartment was acclaimed as leading the domestic residential culture with a sincere housing service focusing on quality and practicality and having a security system to save maintenance costs and consider the safety of residents by providing the Green Premium Service. The Cheongju Hills Park PRUGIO has also upgraded the brand residential culture by creating the environment to enhance satisfaction and strengthening customer convenience facilities. Daewoo E&C will constantly strive to boost customer satisfaction.



### Excellence in the ESG Evaluation Results by Korea Corporate Governance Service (KCGS)

With the implementation of advanced sustainability management system as a global leader representing the domestic construction industry, Daewoo E&C has been recognized for its outstanding performance with evaluation by various institutions assessing the level of corporate sustainability management.

In the ESG evaluation by the Korea Corporate Governance Service (KCGS) under the Korea Exchange for domestic listed companies, Daewoo E&C acquired Rating A for two consecutive years. We also earned Rating A for the first time in the ESG evaluation by Sustainvest. With the expansion of socially responsible investment, needs for disclosing ESG transparently are getting higher. Daewoo E&C will work even harder to become a socially responsible company.



## OUR BUSINESS AND NEW VISION

As we are moving into the 4<sup>th</sup> Industrial Revolution, characterized by the convergence of information and communications technologies, the construction industry is pushing to find new opportunities.

Daewoo E&C, a leading company in civil projects, housing and building and plants, is improving construction technology even more through innovative technology development.

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CIVIL PROJECT  
BUSINESS

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HOUSING &  
BUILDING  
BUSINESS

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PLANT  
BUSINESS



Orders

Amount of final orders in 2018: KRW **1 trillion, 276.2 billion**

Amount of target orders in 2019: KRW **1 trillion, 380 billion**

Sales

Amount of final sales in 2018: KRW **1 trillion, 731.3 billion**

Amount of target sales in 2019: KRW **1 trillion, 410 billion**

## CIVIL PROJECT BUSINESS

Achieving the top record in domestic and overseas civil projects sector by leading the construction history

### Current Business and Future Goals

In 2018, the Civil Project Division won orders worth KRW 1 trillion, 276.2 billion and recorded sales of KRW 1 trillion 731.3 billion on domestic and overseas business sites. In 2019, we will strive to exceed our order goal of KRW 1 trillion, 380 billion as well as make a performance turnaround. When it comes to the domestic market, this year's budget for the SOC sector slightly increased to KRW 19.8 trillion compared to the previous year, but due to the overall slowdown of the construction economy, we expect intensified competition between domestic construction companies. In terms of the overseas market, it is likely to show continuous growth based on the emerging countries such as India, Asia and Africa and the resulting growth in the infrastructure market. Under these circumstances, the Civil Project Division has established six major strategies based on the newly proclaimed company-wide vision: maximization of order capability, reinforcement of PM capability, diversification of pivotal markets, cultivation of core products, expansion of the value chain, and taking the dominance of North Korea business in advance. By performing these six strategies, we will improve the system of the division and create continuous and stable profits. We will enhance operating profits by managing existing projects (77 domestic, 13 overseas) more tightly and increase quality in overseas orders by expanding our overseas bidding organization and reinforcing capabilities for estimation and design. In addition, the company will solidify the foundation for mid- and long-term business growth by cultivating renewable energy and new growth business such as Yeongwol Eco Wind Project with the beginning of ongoing Jeju Solar Power Plant Project. We will advance our smart construction capability by the application of new technologies such as drone, BIM, construction automation, etc. The division served as a strong foundation during Asian Financial Crisis and Global Financial Crisis by creating profits and managing the company's financial liquidity and again it will be the solid base for the achievement of Daewoo E&C's 2025 strategic goals.

### Achievement of NEW VISION “Build Together”



\*On-site director's meeting - Delivering the vision, long-term strategy and goals of individual organizations to realize the vision

## CIVIL PROJECT DIVISION

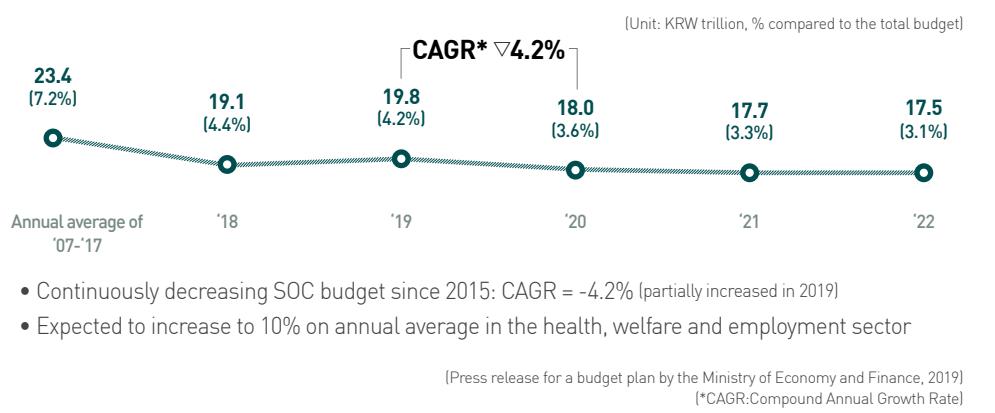
### Market perspective

Daewoo E&C has established detailed strategies for its new vision based on reinforcement of capabilities in each business division and domestic and overseas market environmental analyses. Through these activities, we will diversify and expand business sectors and solidify our position. These detailed strategies serve as the foundation to strengthen growth and cope with external environmental changes such as foreign exchange fluctuations, policy changes, and oil price drops. We will strategically deal with these situations and grow further by thorough analyses of domestic and overseas markets.

#### Domestic Market Outlook

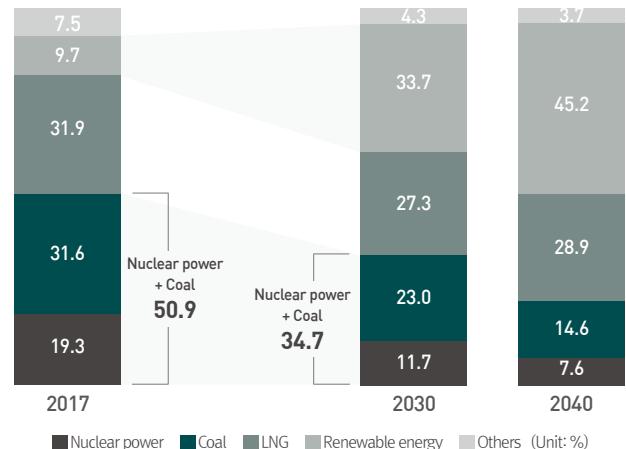
Daewoo E&C implements various types of new business such as renewable energy projects to cope with the recent sluggish growth in the construction industry, decreased SOC budget and construction paradigm change. To deal with the shrinking domestic market due to intensified competition and the insecurity of financial market, we aim to overcome challenges by establishing our new vision and setting practical tasks. In September 2017, we won an order for a new project, Jeju Tangerine Solar Power Plant Construction Project, and will expand the market based on this project. The size of the domestic renewable energy market including wind power and solar power is expected to be KRW 2.3 trillion in 2018 and expand by five times as much and reach KRW 9.5 trillion by 2030. Daewoo E&C will reinforce our capabilities and dominate/expand business by regarding renewable energy business as a core business for the domestic market.

#### Domestic SOC Budget Outlook



#### Outlook for Domestic Renewable Energy Market

##### Proportion of capacity by energy source



##### Domestic Market Size

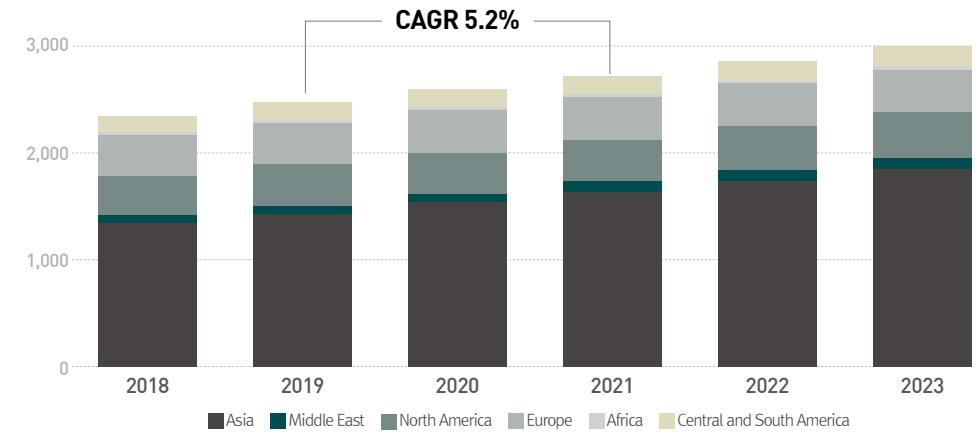
Category	Wind power	Solar power	Total
'18	KRW 0.3 trillion	KRW 2.0 trillion	<b>KRW 2.3 trillion</b>
'20	KRW 1.8 trillion	KRW 2.3 trillion	<b>KRW 4.1 trillion</b>
'22	KRW 2.3 trillion	KRW 2.7 trillion	<b>KRW 5.0 trillion</b>
'24	KRW 3.3 trillion	KRW 3.0 trillion	<b>KRW 6.3 trillion</b>
'26	KRW 4.0 trillion	KRW 3.6 trillion	<b>KRW 7.6 trillion</b>
'28	KRW 4.5 trillion	KRW 4.2 trillion	<b>KRW 8.7 trillion</b>
'30	<b>KRW 5.0 trillion</b>	<b>KRW 4.5 trillion</b>	<b>KRW 9.5 trillion</b>
Aggregate ('18-'30)	Approx. KRW 41 trillion	Approx. KRW 43 trillion	Approx. KRW 84 trillion

#### Overseas Market Outlook

The civil project sector in the overseas construction market accounts for approximately 21% (USD 2 trillion, 459.6 billion, as of 2019) and is expected to show faster growth than other sectors (construction, industrial facility, etc.). The construction market (civil project) in Asia has a worth of USD 1 trillion, 420.6 billion (as of 2019), which accounts for about 58% of the entire construction market (civil project). It is likely to enjoy rapid growth (6.3-6.8%) in the construction market (civil project) as the target market of Daewoo E&C's Civil Project Division, including Southwest Asia such as India, Bangladesh and Sri Lanka and Southeast Asia such as Vietnam and Thailand. Based on the company-wide vision and six major strategies, the Civil Project Division will maximize the award-winning capability for the target market and reinforce PM capability for performing PJ.

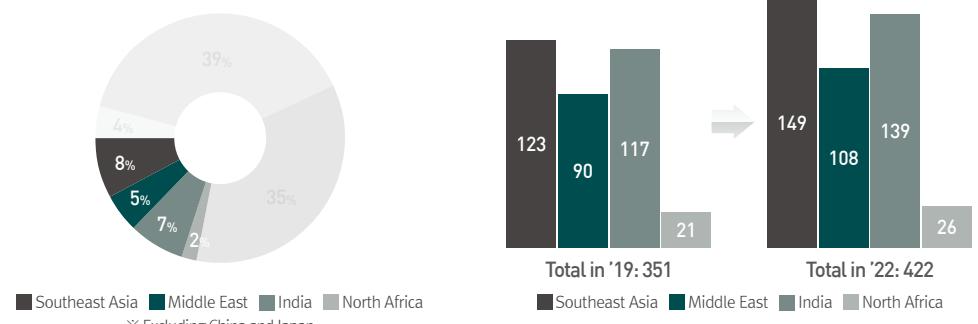
#### Overlook for World's Civil Project Market

(Source: IHS Markit, Oct. '18, Unit: Billion)



#### Outlook for Target Markets

(Source: Global Data 2018, Unit: Billion)



##### 1. Southeast Asia

- Continuing growth rate of 5-7% at an annual average(expected to account for 13% of the world's market by 2025)
- Expanding the share of EPC as joint investment with China
- Basis for expanding ODA by advanced countries and support for South Korea's new policy for North Korea

##### 2. India

- Construction market in '19 worth KRW 117 trillion (grown by 7% year-on-year)
- Expanding the opportunity for Korean companies to participate in a project such as special bridge due to limited participation of bidding by Chinese companies
- Expected to win an order worth KRW 17 trillion for metro PJ in '19-'22

##### 3. Middle East

- Qatar: Continuously winning an order for mid- and large-scale LRDP project (KRW 2-300 billion for each PJ)
- Iraq: Expected to win multiple orders for post-war recovery project
- Kuwait: Winning an order for large-scale LNG floating terminal

##### 4. North Africa

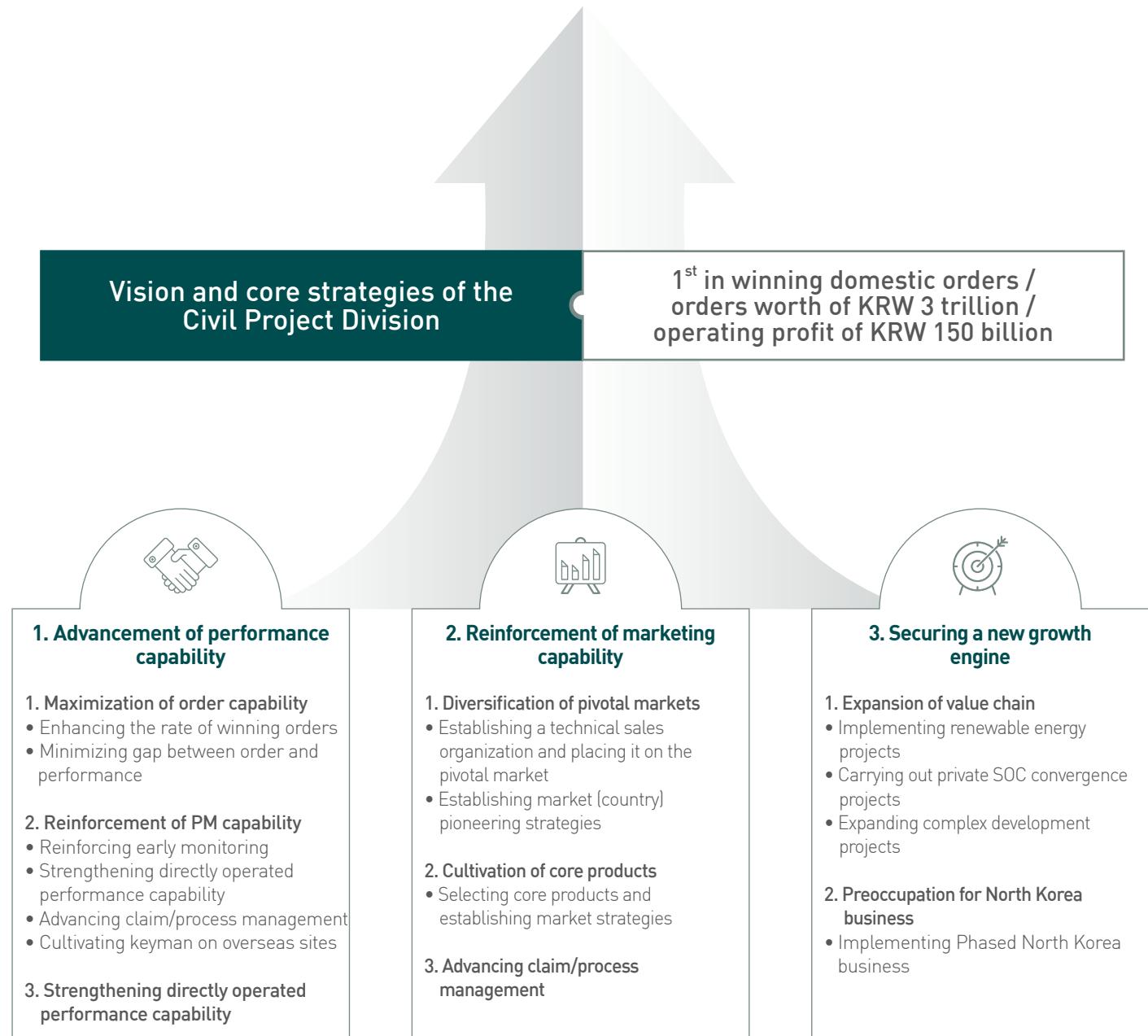
- Annual average growth rate: 3% or over (reduced orders due to low oil price)
- Economic growth, increasing population » Expanding the development of industrial complex and electricity demand
- Financial shortage » Increased interest in private investment (aggressive business activity by China)

## Civil Project Division New Vision

To achieve "Build Together", the Civil Project Division has established strategic goals and detailed strategies. With these we will create social value and contribute to achieving sustainable construction business.

# Build Together

Realizing best value together with the customer



## Key performances for Civil Project Division in 2018



### Philippine Jalaur Dam

The dam construction ordered from the National Irrigation Administration is USD 193,494,091, construction period is 46 months. Major construction works include three dams (height 109m), waterway [80.74km], and irrigation facilities [9,500ha / renovation: 21,624ha].



### Unmun Dam Safety Reinforcement Project

The project ordered from Korea Water Resources Corporation (K-water) through competitive bidding on turnkey basis. Emergency release facilities (tunnel L754.5m, D4.2m), and existing water intake towers 2 seismic reinforcement contents. The construction cost is 116.3 billion won (including VAT, total) and construction period is 48 months.



### SUDOKWON The 3<sup>rd</sup> Landfill - Stage 1

Landfill site (total 20 million m<sup>3</sup>) and environmental treatment facilities (landfill gas, leachate) are the main contents. The construction cost is 152.2 billion won (including VAT, total) and the construction period is 98 months.



### Seoul Metropolitan Area Express Railway A Line

As a privately-funded private railway company, we will construct a 43.6-km-long Deep underground railway, a car base, and five stops at Paju Unjeong-Samsung station. The amount of construction is 2,499 billion won (zero tax rate, total) 60 months.



### SOSA-WONSI Double-Track Electrification (Completion)

As a privately-funded private railway company, Bucheon Sosa-Ansan won 23.3km and completed 12 stations successfully. The total cost of the project is 1,549.5 billion won (including VAT) and the construction period is 60 months.

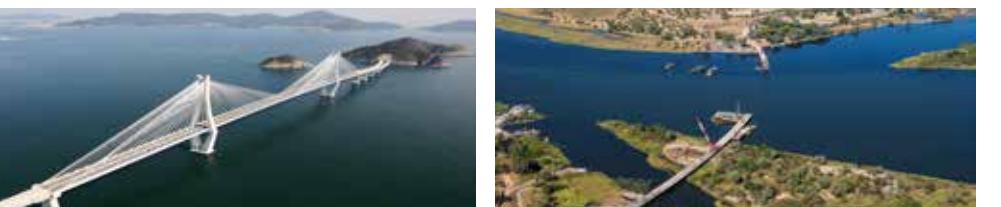
## Key Business Expressway

Since the construction of Busan-Masan Expressway No.3 in 1978, Daewoo E&C has engaged in every major expressway construction project in Korea and promoted communication/development between regions and reduced logistics expenses. We built privately funded expressways such as Cheonan-Non-san, Daegu-Busan, and Yongin-Seoul Expressway as well as Pyeongtaek-Siheung and Guri-Pocheon Expressway. In particular, for the Inje Tunnel, which is the longest domestic tunnel in the Donghong-cheon-Yangyang Expressway, we succeeded in linking the metropolitan area with the East Coast in the shortest distance while minimizing its environmental impact. In 2018, with the Inje Tunnel, the company received the grand prize for civil structure from the Korean Society of Civil Engineers and main prize in the environmental sector by the International Road Federation. We have also established our company as a world-renowned company in the expressway sector by successfully performing large-scale overseas projects such as expressway in Pakistan, and the world's largest single expressway construction project, and expressway in Qatar.



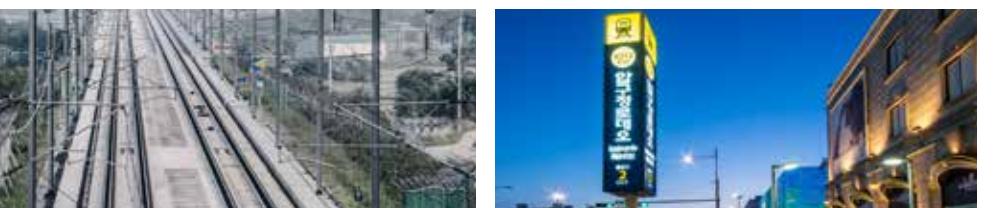
## Road & Bridge

In 1984, Daewoo E&C built the Dongjak Bridge, Korea's first railway and road composite bridge, and Gwangan Bridge, which has beautiful features in a total length of 7,420m and eight lanes across the shores of the Gwangalli Beach in Busan. In particular, the Geoga Bridge from Busan to Geoje Island attracted the world's attention by applying Korea's first immersed tunnel process at the world's record depth with a 2-pylon and 3-pylon cable-stayed bridge. While we successfully completed various roads such as Songdo Coastal Road, Gimhae Detour Road and Jeonju Detour Road, we also showed differentiated technology skills by constructing the Bihar-Mumbai Coastal Bridge in India and a composite bridge between Botswana and Zambia, Africa.



## Railroad & Subway

Daewoo E&C is the best construction company in the railroad sector, having carried out the maximum number of railroad projects revolutionizing public transportation in the 21st century. With the construction of Seoul Subway Line No. 2, we joined the subway construction business and have constantly engaged in other large-scale subway construction projects, including Seoul, Incheon, Daegu, Busan and Gwangju. In particular, for the Bundang Line, we completed a tunnel that passed under the Han River by using the SHIELD process with Korea's largest aperture; this verifies our technology skills in a highly difficult construction project. We also carried out other projects such as GTX-A wide area railway for the metropolitan area, Sosa-Wonsi Railway and Daegok-Sosa Railway, so we have enhanced competitiveness at the highest level in the private railway project sector.



## Harbor & Water Resources

In terms of building harbor facilities such as revetment, seawall, dock and breakwater, Daewoo E&C boasts the highest competitiveness; when it comes to container berths, we boast the best performance in Korea. With the construction of Busan Port, Korea's top port and East Asia's hub port, we contributed to changing Busan Port into a logistics hub with world-level competitiveness. The company successfully completed a shipyard in Oman and Qatar and implemented an overseas river restoration project in Algeria, another first for a Korean company. After successful completion of Pakistan Hydroelectric Power Plant, we extended our business sectors by launching construction of the Jalaur Dam in the Philippines and constructed a 16km large-scale breakwater in Iraq.



## Environment

Daewoo E&C has the most experience in building water treatment facilities, sewage treatment facilities and sewer pipes. We have developed eco-friendly designs and DNR (Daewoo Nutrient Removal) sewer treatment technologies for building complete underground facilities and developing the upper part as a park and public facilities. We also have new technologies and business expertise in renewable energy fields such as biogas power generation.



## Renewable Energy

With a focus on solar and wind power energy sectors, Daewoo E&C is expanding our ability to develop new business opportunities and create new business models through our own development projects. Starting with Jeju Solar Power Plant Project, we are implementing various renewable energy projects such as Yeongwol Eco Wind Power Project.



## Leisure

Since our first leisure facility construction, the Suyeongman Yachting Center in Busan in 1986, Daewoo E&C has led the construction of golf courses. In addition to Adonis Country Club in Pocheon leading the high-class golf course, we have opened up a new concept of leisure culture through Ocean Hills Yeongcheon C.C., Paganica C.C. in Chuncheon, and Gangwon Land C.C., which was built 1,150m above sea level. We also constructed the best-quality golf course and resort facilities in Lao Lao Bay in Saipan, which is known to provide one of the best tourist experiences and scenic views, to give customers various opportunities for entertainment and relaxation.



## Future Plan

**Domestic:** Selection of PJ based on selection and concentration, implementation of renewable energy projects, and taking the dominance of North Korea business in advance  
**Overseas:** Enhancement of success rate of winning an order, reinforcement of PM capability on the site, and diversification of pivotal markets (market expansion)

**Orders**

Amount of final orders in 2018: KRW **6 trillion, 863.5 billion**

Amount of target orders in 2019: KRW **6 trillion, 450 billion**

**Sales**

Amount of final sales in 2018: KRW **6 trillion, 515.6 billion**

Amount of target sales in 2019: KRW **5 trillion, 280 billion**

**Our Business and New Vision****HOUSING & BUILDING BUSINESS**

**Leading future-oriented housing building with exclusive construction technology skills and know-how**

**Current Business and Future Goals**

In 2018, despite fierce competition from real-estate financial policies and increased supply, the Housing & Building Division secured quality projects in the metropolitan area and local large cities with high profitability and distribution rate and won reconstruction and redevelopment projects with our all capabilities to take the lead in the new apartment sales market. Housing building business is sensitive to economic change and project owners' demands for facility investment and much influenced by government financial policies and regulations. In 2019, the real-estate market is likely to experience hardship due to continued low growth and shrinking investment in real-estate property. However, it is also expected to expand the reconstruction and rebuilding market and increase preference for new construction due to the increasing deterioration of buildings and have opportunities such as creating demand based on changes in social trends. Accordingly, the Housing & Building Division will establish itself as a main player in the domestic housing building business by advancing business risk management and construction technology to cope with market change and expand market share with innovation in products and brands. To secure a new growth engine, we will also secure the capability as a developer by implementing a project for planning, proposal and contest beyond simply securing the construction right and lay the foundation for sustainable growth by expanding the value chain. In terms of overseas sector, with the launch of "Star Lake City" new town development project from development planning and finance to construction and sales based on independent know-how and technology, we will continue to secure new growth engines in the global market by seeking opportunities for pioneering overseas markets.

**Achievement of NEW VISION  
“Build Together”**

- Domestic and overseas business management
- Advancement of construction
- Cost reduction
- Customized construction method/technology development

- Advancement of market analysis
- Innovation of products/brands
- Establishment of type-based portfolio

- Expansion of overseas market
- Development of total real estate



\*On-site director's meeting & workshop - Delivering the vision, long-term strategy and goals of individual organizations to realize the vision

## Housing & Building Division

### Market perspective

The Housing&Building Division, which integrates the existing housing and building division, strives to maximize synergy in the housing and construction sectors and advance into the global market. Continued improvement of cost ratio, profit business based on differentiated technology, We will solidify our status as a leader in the domestic and overseas housing construction business by expanding target countries and new overseas business sectors.

#### Domestic Market Outlook



Category	Apartment	Total housing
Less than 5 years	1,298(13.2%)	2,073(12.7%)
5-10 years	1,583(13.2%)	1,981(12.1%)
10-15 years	1,758(17.9%)	2,588(15.8%)
15-20 years	1,901(19.4%)	2,562(15.7%)
20-30 years	2,766(28.2%)	4,494(27.5%)
Over 30 years	500(5.1%)	2,669(16.3%)
<b>Total</b>	<b>9,806</b>	<b>16,367</b>

Based on the Population and Housing Census in 2015

#### Estimation of Domestic New Housing Demand

Category	Whole country	Metropolitan area	Metropolitan city	Provincial area	Sejong City	(Unit: Household)
'18	283,504	147,006	58,214	76,854	1,429	
'20	296,371	152,324	59,420	82,749	1,848	
'22	309,199	159,354	61,932	85,702	2,180	
'24	320,785	162,570	61,544	94,156	2,516	
'26	327,962	163,368	61,471	100,288	2,836	
'28	326,791	160,804	60,940	101,954	3,094	
<b>'30</b>	<b>327,956</b>	<b>159,988</b>	<b>61,506</b>	<b>103,091</b>	<b>3,371</b>	
Aggregate ('18-'30)	2,192,568	1,105,414	425,027	644,794	17,274	

#### Outlook for Domestic Interior/Remodeling Market

Category	Market size	Category	Market size
'18	32	'21	40.8
'19	35.1	'22	48.7
'20	37.8	'23	49.3

Source: IHS

#### Total Real-Estate Service D.answer



**D.Answer**

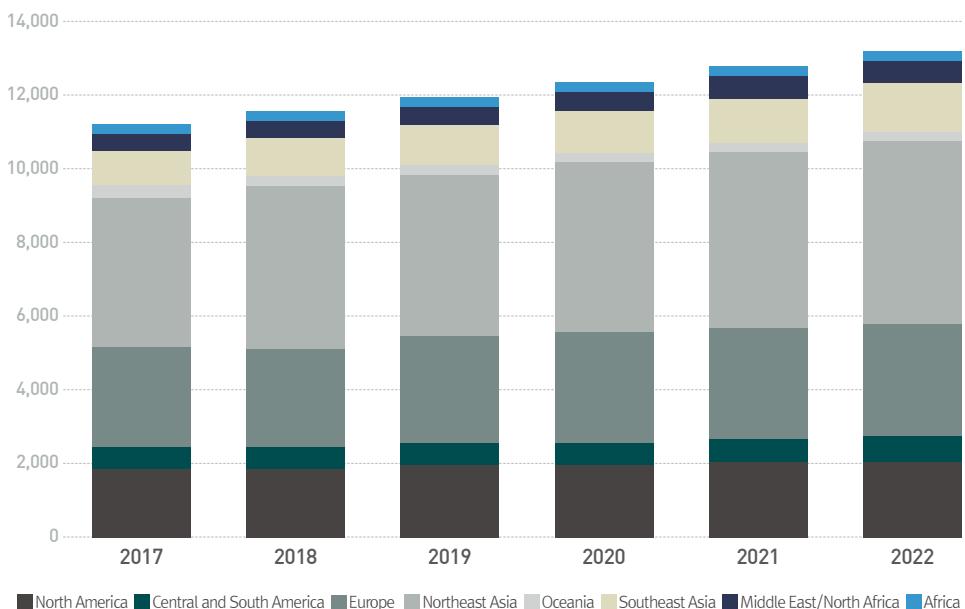
Daewoo E&C has comprehensive real estate service provider that includes 'lease-transaction-distribution-management' in addition to the existing housing supply called 'development-distribution' construction. Also we has currently applied the D.Answer open platform service to "Dongtan Haengbok Maeul PRUGIO" as a public support private rental service (New Stay) and provided rental management, daily convenience service and community service. We will expand existing housing and non-housing products provided by Daewoo E&C to customer-oriented total real-estate service.

#### Overseas Market Outlook

In the midst of external environmental changes such as oversupply in domestic housing business and government regulations, Daewoo E&C has continued to pioneer the overseas market. For this goal, we focused on constructing a new town and diversifying business by analyzing overseas markets. As a result, we have contributed to entering a new market with the first Korean-style and private-led new town development project in a foreign country. We will grow into a construction company whose world-level technology skills can be recognized by promptly identifying outlooks for overseas market and leading the business.

#### Global Market Outlook for Housing Building Sector

[Source: IHS Markit '18.10, Unit: Billion]



Aim to pioneer new markets in pivotal countries in Southeast Asia such as Singapore / Malaysia / Indonesia / Myanmar

#### Target Market Outlook in Housing Building Sector



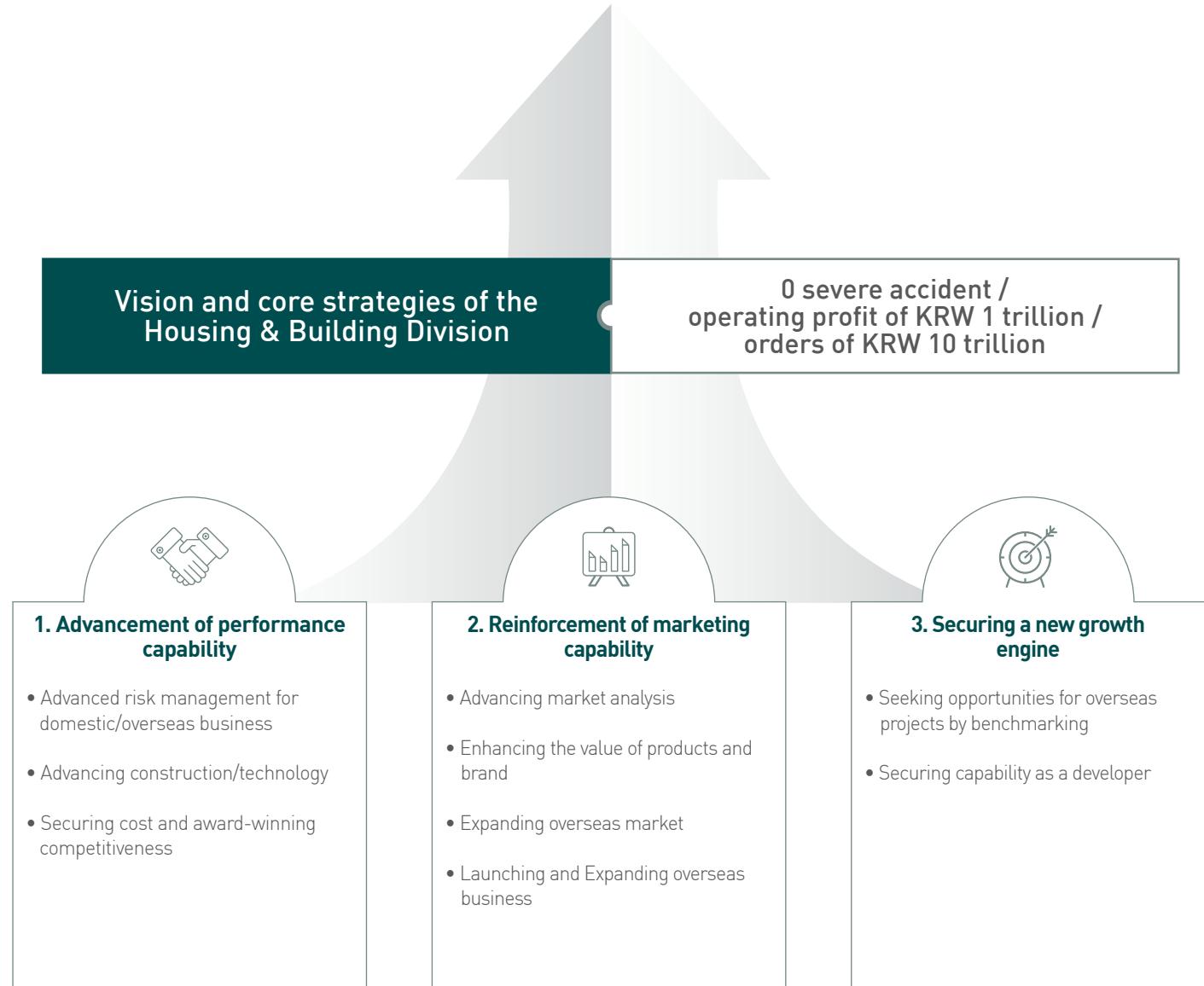
In 2017, the Vietnamese construction market was recorded as worth approximately USD 12.7 billion, increased by 8.7% compared to the previous year, and accounted for 5.73% compared to the total GDP. In 2018, the Vietnamese construction market is expected to grow continuously with increasing construction-related demands in various sectors such as transportation, energy, communication and housing as well as the amount of foreign direct investment (FDI) along with economic growth in Vietnam. Daewoo E&C has implemented independent/joint development projects in the THT site in reinforced cooperation with THT and DECV. Based on a successful project in Vietnam, we will constantly strive to diversify business operating countries based on Southeast Asia by strengthening networks with major target countries such as Malaysia and Singapore and establishing strategies for pioneering new pivotal countries.

## Housing & Building Division New Vision

The Civil Project Division has listed detailed tasks by establishing strategies for sustainable growth of the division and made strategic goals and detailed tasks for management to achieve "Build Together".

# Build Together

Realizing best value together with the customer



## Key performances for Housing & Building Division in 2018



### Apartment

We have adopted an environmental concept to apartment units for the first time in Korea and led the improvement of quality of life and the housing culture.

- Gwangju Central PRUGIO: 18 units, 20 floors, a total of 1,425 household units
- Unjeong New Town Central PRUGIO: 21 units, 25 floors, a total of 1,956 household units
- Ilsan Edu Fore PRUGIO: 16 units, 25 floors, a total of 1,690 household units



### Urban residential complex

We analyze needs and trends and contribute to a high-level residential culture to provide customers with special spaces..

- Songdo Landmark PRUGIO City: 36 floors, 2 units, 1,990 O/T rooms
- Yeoksam Station Central PRUGIO City: 18 floors, 1 unit, 736 O/T rooms
- Wirye Unam Station First PRUGIO City: 19 floors, 1 unit, 434 rooms



### Redevelopment/Reconstruction/Remodeling

Daewoo E&C leads the redevelopment, reconstruction and remodeling market based on continuous product development and accumulated technology skills.

- Banpo Central PRUGIO Summit: 35 floors, 8 units, 764 household units
- Gwacheon Central Park PRUGIO Summit: 32 floors, 15 units, 1,317 household units
- 15<sup>th</sup> Sinbanpo Reconstruction: 35 floors, 6 units, 646 household units



### Work facility

Daewoo E&C has earned a reputation in the domestic and overseas office market through the construction of Korea's first intelligent building and our independent technology-based BMC building

- Gyeongbuk Provincial Government: 30% of the ratio of renewable energy for eco-friendliness Green building at the highest level for construction Advanced building
- New building of KEPCO: Received the Grand Prize at the Korea Green Construction Awards in 2015 as an eco-friendly building
- Summit Tower: Total floor area of 146,654m<sup>2</sup>, 2 units



### Leisure hotel, condominium, education, research, medical and sports facilities, etc.

Daewoo E&C has expanded a scope of relevant markets by constructing luxurious facilities meeting the needs for architectural use and aesthetic value.

- Sheraton Incheon Hotel: Received "World's Eco-friendly Hotel" prize at the World Travel Awards
- Yongsan Dragon City Hotel: Largest lifestyle hotel-plex with 1,700 rooms, Korea's largest scale
- Daegu Baseball Stadium: Korea's first octagonal baseball stadium

## Major Projects Apartment

Daewoo E&C has contributed to improving the level of residential culture by introducing an environmental concept to apartment units for the first time in Korea. Launched in 2003, PRUGIO provides "PRUGIO SUMMIT" by combining Korea's representative residential brand named "PRUGIO" based on eco-friendly premium apartment with our residential philosophy and "SUMMIT" with the meaning of best, peak and top. Daewoo E&C will continue to provide healthy and pleasant residential cultural space with the nature to lead Korea's residential culture and contribute to improving the quality of customers' life.



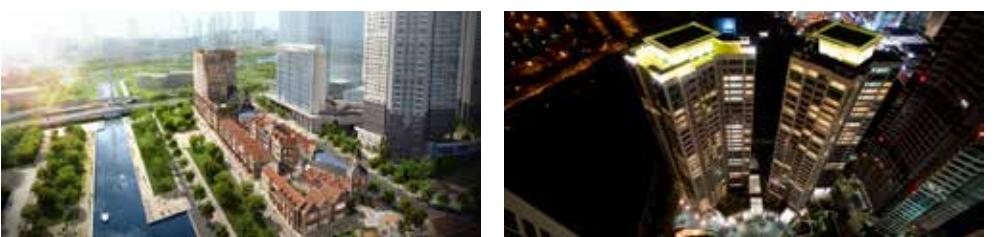
## Studio apartment Urban residential housing

With the "THE O-ville, I Ville" series from the early 2000s, Daewoo E&C met the needs of customers who want to design a life in a practical manner. In 2008, we launched "PRUGIO CITY," a small-scale residential product integrating a studio apartment and urban residential housing. Through these efforts, the company is taking the lead in the studio apartment and urban residential housing market.



## Urban residential complex

As the taste for residential space is getting more diverse and luxurious, customers want to have more special space. Daewoo E&C has shown a distinguished and sophisticated residential culture by launching Daewoo Trump World in Yeouido, City Park in Yongsan and Trump World Centum in Busan. In particular, the Trump World Centum in Haeundae, Busan is acclaimed as a model of the best high-rise apartment building and gained much attention. Daewoo E&C will continue to create residential culture at a higher level by analyzing customer needs and trends.



## Town house/Villa

Daewoo E&C creates residential space with a new concept meeting consumers' needs and leading the market trend. Increasing the level of high-quality villa such as Green County and Royal County, we achieve the philosophy of "Refresh Life" with people and nature through the countryside villa applying "Green Premium", a renewable energy product, and town house brand "PRUGIO HEIM".



## Our Business and New Vision

### Redevelopment/ Reconstruction/ Remodeling

Daewoo E&C is taking the lead in the redevelopment, reconstruction and remodeling market based on continuous product development and accumulated technology skills. The Seocho PRUGIO SUMMIT received the Presidential Prize in the 21<sup>st</sup> Best Living Apartment Awards. As it is expected to expand the renovation and reconstruction market and have more preference for new construction due to increasing deteriorated buildings, we will proactively participate in various urban renovation projects such as remodeling, redevelopment and reconstruction and lead the creation of pleasant and beautiful urban space.



### Work facility

Daewoo E&C, which became a powerhouse in the office market by constructing an intelligent building, Yonsei Severance Foundation Building, has earned a reputation with the establishment of Headquarters of KDB Industrial Bank and Seocho Kyobo Tower, a landmark of Gangnam Station. We also recreated Seoul Square, a remodeled Daewoo Center Building as the largest office building in Korea, into an intelligent building with cutting-edge facilities. In overseas countries, the company focuses on establishing skyscrapers. The KLCC Power, established in Kuala Lumpur, Malaysia, applies our independent technology BMC to enhance structural stability and has established itself as a landmark of the country along with the Telecom Building.



### Commercial facility

Daewoo E&C has constructed commercial facilities, which provide building owners with added value and customers with convenience. With the beginning of Migliore (Dongdaemun, Myeongdong, Busan, Daegu, Sinchon), which serves as a landmark in each region as a complex shopping mall, we have constructed other commercial facilities such as Techno Mart, Sindorim, a complex electronics distribution center. The company has also contributed to improving the economic and cultural levels in areas by establishing a complex town with residential, work and commercial functions combined.



### Leisure hotel, condominium, education, research, medical and sports facilities, etc.

Daewoo E&C has constructed distinguished hotels at home and abroad, including Seoul Hilton Hotel, Gyeongju Hilton Hotel, Lotte Hotel, Gangwon Land Hotel, Morocco Hilton Hotel (Algeria), Hanoi Daewoo Hotel (Vietnam), etc. We also provide education facilities to cultivate remarkable human resources for leading the future and advanced medical facilities to allow medical workers to provide the best service. We established Bundang Seoul National University Hospital, large-scale hospital with 1,300 wards, Pusan National University Hospital/Children Hospital, Ajou University Hospital, Benghazi Central Hospital (Libya), Tripoli Central Hospital, etc. The company also established various cultural facilities such as Korea International Exhibition Center (KINTEX), Korea's representative exhibition convention center, National Museum of Modern and Contemporary Art, Busan Museum of Art, National Museum of Korea, and Some Sevit, which is the world's largest artificial island and complex cultural space where unique waterside cultural activities can be experienced on the Hangang River.



### Future plan

The Housing & Building Division will solidify its status as a powerhouse in the domestic development business by diversifying business models continuously and expanding business opportunities with the proposal of user-customized development projects on privately owned land and various sectors such as office, hotel, cultural and sports facilities and knowledge industrial center. In the residential sector, we will provide luxurious residential cultural space based on the brand renewal of PRUGIO where people and nature coexist.

**Orders**

Amount of final orders in 2018: KRW **1 trillion, 542.9 billion**

Amount of target orders in 2019: KRW **2 trillion, 630 billion**

**Sales**

Amount of final sales in 2018: KRW **1 trillion, 944.5 billion**

Amount of target sales in 2019: KRW **1 trillion, 560 billion**



## PLANT BUSINESS

**Expansion of value chain and diversification of business to secure a new growth engine**

### Current Business and Future Goals

Starting with the turnkey project for Ulsan Thermal Power Plant in 1977, we have made significant contributions to our national economy and driven growth as we led the construction of oil & gas upstream and downstream as well as nuclear power plant, thermal power plant, cogeneration plant, tidal power plant and LNG storage facility. Based on our industry-leading performance and technological expertise, we are making substantial progress in the construction of high value-added plants in overseas markets.

Despite an unfavorable market environment, we have focused all our business capabilities and newly won orders for Indorama Fertilizer II. With these new projects, we achieved sales of KRW 1 trillion, 898.6 billion. In the Middle East and North Africa, which are major overseas markets, we are implementing various projects such as Duqm Refinery Project (Oman), Clean Fuel Project, Al-Zour Refinery Project (Kuwait), SAIFI Coal Power Plant Project (Morocco), Ras Power Plant (Algeria), and many other projects in Nigeria. In Korea, we are conducting projects such as Ulsan S-Oil SPM II, Wolseong radioactive waste facility construction project, and construction for exchanging steam generators at Hanbit Nuclear Power Plants No. 3 and 4. The Plant Division will increase our market share by strengthening business capabilities.

### Achievement of NEW VISION “Build Together”



- Operating Lessons Learned TFT
- Analyzing causes for delayed PJ construction period and identifying measures for preventing recurrence (plans)
- Enhancing the accuracy of construction expected cost rate/cost reduction with score card system

- Ensuring a marketing priority in advance by introducing and implementing CRM
- Advancing the product

- Expanding the entire value chain
- Pioneering FEED business to connect with EPC business
- Launching business in the modular plant market
- Establishing strategies to enter the nuclear decommissioning business



\*Town Hall Meeting - Workshop for sympathetic formation, renovation about NEW VISION

## Plant Division

### Market perspective

The Plant Division is leading the market based on the company's own performance and capability in the overall generation plant sector along with oil and gas. We will ensure market share and contribute to creating economic value by expanding and diversifying our business to secure a new growth engine.

### Domestic Market Outlook

The domestic LNG market is likely to increase demand based on the government's policy to expand LNG-based Power Generation. Accordingly, it is expected to have continuous orders in the LNG terminal, storage tank and pipeline PJ, which are one of our company's strengths. In the domestic petrochemical market, The investment for new facilities are expected to prepare for International Maritime Organization (IMO) 2020 and secure oil-refining margin. Daewoo E&C is expanding the business sector based on our experience of completing the Ulsan S-Oil RUC PJ, Korea's largest plant.

In the domestic power market, according to National Basic Plan for Long-Term Electricity Supply and Demand, and recent fine dust issue, it is expected to phase out the nuclear / coal fired power plant and expand the renewable power and LNG-based power plant.

In response to these changes in the power generation market, Daewoo E&C is preparing for the LNG group energy business, while promoting the Pocheon IPP Phase II project and the hydrogen energy complex project. In addition, with the expansion of the business of decommissioning the nuclear power plant, which reached the end of its life, we are trying to dominate the market in advance based on our experience in commercial Large-scaled nuclear power plant.

#### Domestic Power Generation (MW)

Category	Nuclear power	Coal	LNG	Renewable energy
'18	24,650	37,351	37,593	13,011
'20	26,050	37,281	42,050	17,761
'22	27,450	42,041	42,050	23,341
'24	27,250	40,921	43,310	30,696
'26	23,700	39,921	44,310	38,826
'28	21,100	39,921	47,460	48,226
'30	20,400	39,921	47,460	58,461
Total for '18-'30	170,600	277,357	304,233	230,322

Source: Notification of Eighth National Basic Plan for Electricity Supply and Demand  
(Ministry of Trade, Industry and Energy, December 29, 2017)

#### Amount of Petrochemical Project

Category	Petrochemical
'18	2.5 trillion
'20	4.3 trillion
'22	5.5 trillion
'24	1.9 trillion
'26	1.9 trillion
'28	2 trillion
'30	2 trillion
Total for '18-'30	20.1 trillion

(Source: Global Data industry forecast 2019)

### Past

- EPC building construction
- Coal and combined cycle power generation
- Focus on projects with mid- and large-scale power generation of 500MW or over



### Plan

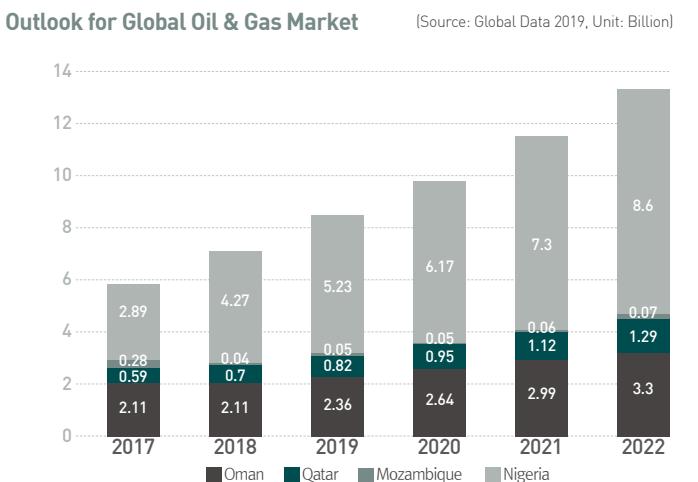
- Past + Project proposal power generation construction (IPP)
- Past + Renewable energy (biomass and hydrogen) generation
- Past + Small-scale power generation project



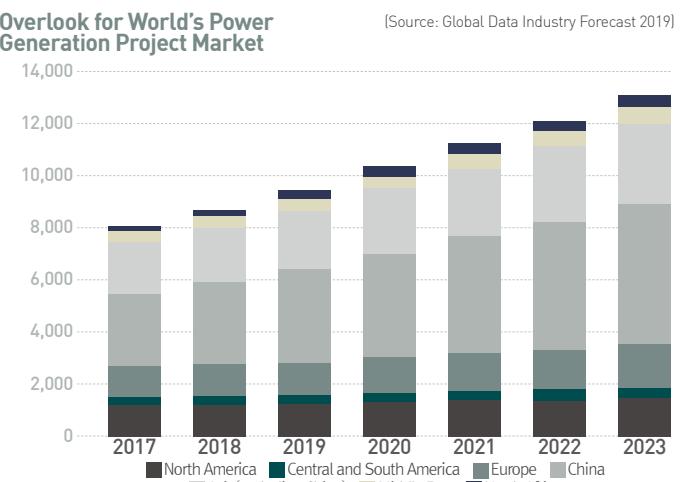
### Overseas Market Outlook

Daewoo E&C is actively responding to the expansion of LNG projects and has been operating LNG TFT since 2018 with the expectation of revitalization of the LNG business as global demand for LNG grows. Especially, we plan to expand our business area from construction oriented business to EPC sector in Nigeria, Qatar and Mozambique. In the petrochemical sector, oil prices are expected to rise due to rising demand for crude oil and sanctions on Iranian oil imports. In order to expand our business scope, we are striving to secure new growth engines, such as entering FEED design and maintenance and retrofit business. In the power generation business, we will expand our business centering on major countries in Southeast Asia in line with the economic growth in Southeast Asia and the increase in electric power demand. At the same time, we plan to expand our business area to renewable energy sector in line with the spread of environmentally friendly energy globally. In addition, in line with the national policies of many European and Middle East nations seeking to replace old nuclear power plants and introduce new nuclear power plants, we are preparing to re-enter the nuclear power export sector through business cooperation or joint business development with KEPCO and KHNP. To this end, we are securing new business opportunities by establishing a marketing roadmap for new key countries. Despite intensifying competition from latecomers such as China, India and Turkey, Daewoo E&C will continue to make efforts to advance into the global top 20 with its own technological advances and differentiated competitiveness.

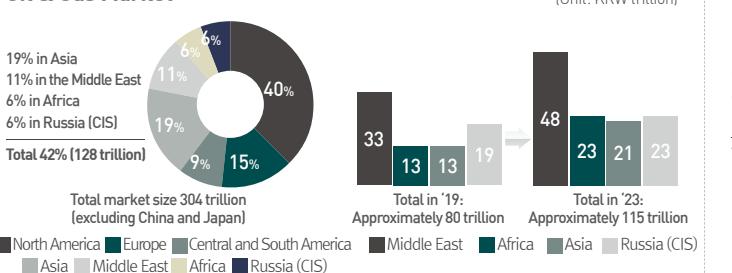
#### Outlook for Global Oil & Gas Market



#### Outlook for World's Power Generation Project Market



#### Outlook for Each Sector in Oil & Gas Market



#### 1. Southeast Asia

- Annual average growth rate in the power generation market: approximately 9%
- Continued to win many orders for coal power plant and combined cycle power plant projects
- Expected to win an order for a new nuclear power plant in Vietnam and Philippines

#### 2. Middle East

- Continued to win orders for large-scale combined cycle power plant
- Won an order for large-scale desalination plant project
- Expanding the percentage of nuclear power to 15% by 2040 (expected to win an order for 10 nuclear power plant units)
- Implemented 2 small- and mid-scale nuclear reactors (SMART) (signed an MOU between Korea and Saudi Arabia)
- Qatar: Expected to win a large-scale PJ based on the LNG expansion plan

#### 3. Africa

- Economic growth, increasing population » Developing an industrial complex and increasing electricity demands
- Lack of finance » Increasing interest in private investment
- Algeria: KRW 4.8 trillion of orders for oil & gas in 2019 (Growth of 9% compared to the previous year)  
Expected to increase to KRW 5.2 trillion by 2020

#### 4. Europe

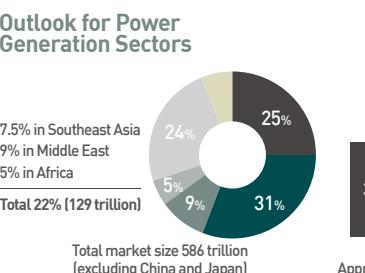
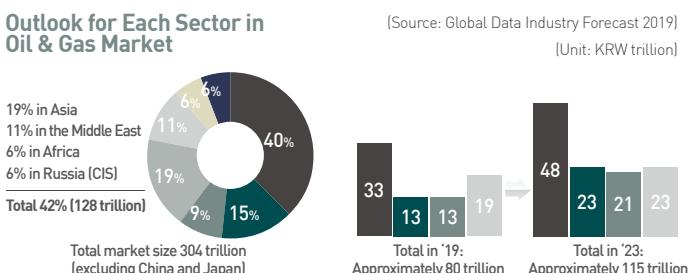
- Expanded policies on GHG emissions reduction » Expected to decrease productivity in fossil fuel and expand the percentage of nuclear power
- Planned to win an order for new nuclear power plants in the Czech Republic (1-2 units) and Poland (2-3 units)[20]
- Expected to construct 13 units for a new nuclear power plant in the U.K. (~'30)

#### 5. Southwest Asia

- Approved a plan to construct 10 new nuclear power plant units in India (7,000MW)
- India's fourth largest LNG importing country, up 27% year-on-year
- Planned to introduce a nuclear reactor for research in Bangladesh

#### 6. Russia (CIS)

- Proactively increasing production after the U.S withdrew from the JCPOA (May 2018)
- Low level of technology and deteriorated oil field » Expected to expand the site and orders for PJ

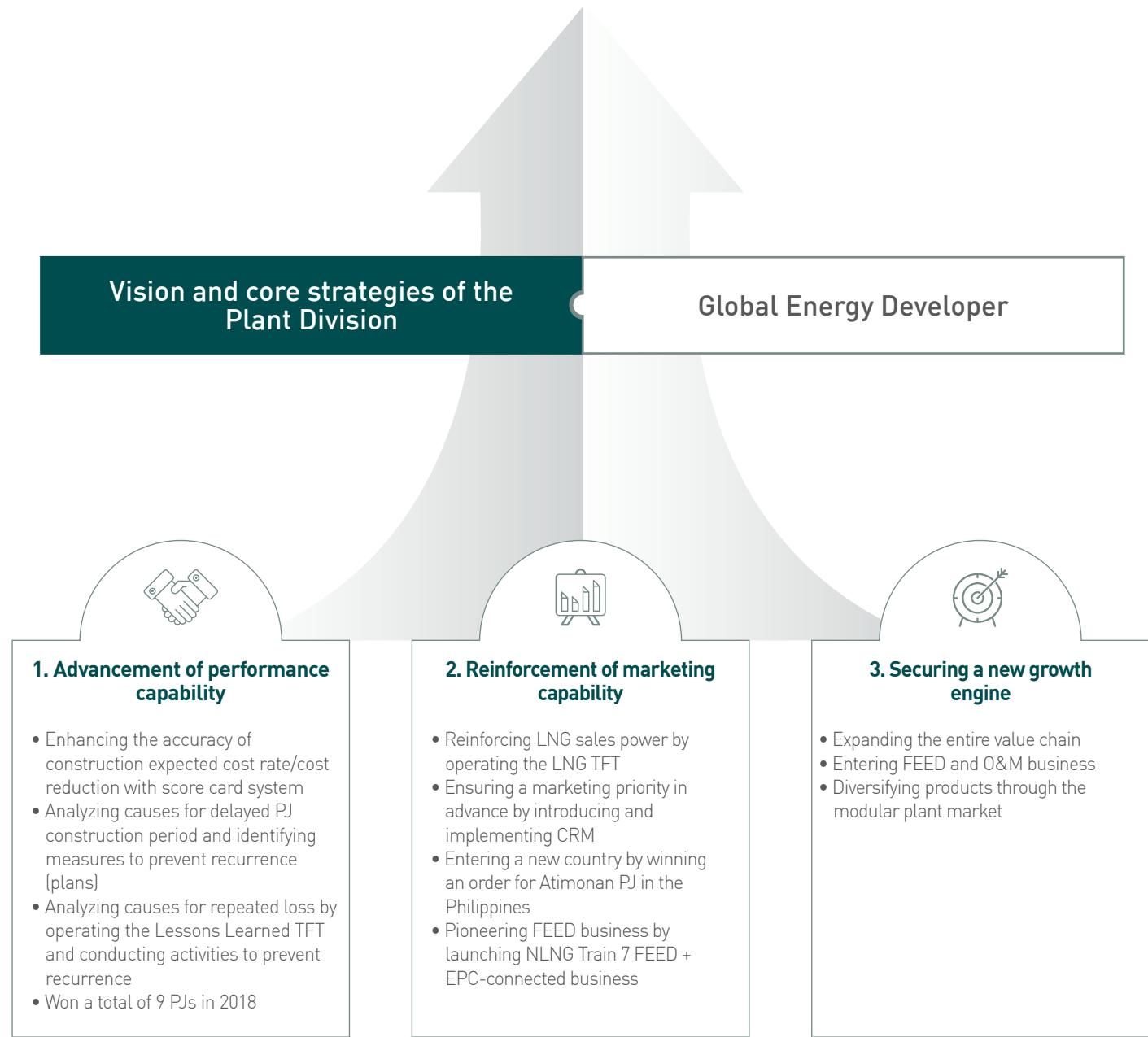


## Plant Division New Vision

The Plant Division has listed detailed tasks by establishing strategies for sustainable growth of the division and made systematic tasks for management to achieve "Build Together".

# Build Together

Realizing best value together with the customer



## Key performances for Plant Division in 2018



### Ulsan S-Oil RUC Project

- As a petroleum residue advancement facility, RUC (Residue Upgrading Complex) is a facility to generate high value-added products such as gasoline or propylene by inputting petroleum residues again, which remain after gas, gasoline or diesel is extracted through the crude oil refining process.
- In the Ulsan S-Oil RUC Project, Daewoo E&C completed Korea's largest plant (76,000 BPSD based on residue processing), which used 110,000 tons of steel equivalent to the amount of building 11 Eiffel Towers and cement equivalent to build 3,000 apartment units in a total area of 1.1 million m<sup>2</sup> within 35 months (June 1, 2015 – May 11, 2018). The completion of the project has verified the technology skills of Daewoo E&C.
- Daewoo E&C will continue to focus our capability on the petrochemical plant sector, which is technology-intensive and high value-added industry.



### Morocco Safi Power Plant

- In December 2018, Daewoo E&C successfully completed Morocco Safi Power Plant, which is the company's and Africa's first ultra-super critical (USC) coal-fired EPC project.
- Morocco Safi Power Plant is composed of two generators of 693MW and an ultra-large power plant of 1,386MW, which accounts for about 20% of annual electricity production in Morocco.
- As the large project in Morocco was successfully completed, Daewoo E&C has solidified its status in the North African market and will continue to enhance our influence in the market.

[USC power plant: It refers to a power plant with a vapor pressure of 246kg/cm<sup>2</sup> or over, which is higher than existing super critical plants, and vapor temperature of 593°C or over. The USC power plant has high-generation efficiency and lower GHG emissions than existing coal-fired power plants.]



### Jordan Research Nuclear Reactor Project

- Daewoo E&C organized a consortium with Korea Atomic Energy Research Institute (KAERI) and served as an EPC contractor to design/construct/conduct a pilot test for a research nuclear reactor of 5MW in the Jordan University of Science and Technology. The initial defect inspection was done after completion in June 2017, and the company received the completion certificate from the owner in October 2018.
- Medical radioisotope produced in the Jordan Research Nuclear Reactor launched the supply to the King Abdullah University Hospital in October 2017 and has been recognized for its excellent quality and amount of radioactivity.
- The Jordan Research Nuclear Reactor Project intends to construct a nuclear reactor for research and education, which was prepared by Jordan ahead of the introduction of nuclear power generation to establish infrastructure. For the first time in 50 years of nuclear power in Korea, Daewoo E&C achieved nuclear power export in bulk and has been evaluated as a dominant role in enhancing technology and awareness of Korea's nuclear power brand.

## Key Business

### Petrochemical

In the petrochemical sector, Daewoo E&C has expanded its market share by its own technology skills and accumulated know-how. In 2018, we succeeded in winning an order for Nigeria Indorama Fertilizer Train 2 Project. In particular, we possess high-level technology in the basic oil production facility sector for olefin such as ethylene, propylene and BTX and other aromatic products. Such efforts have been recognized through our construction performance. We will continue to contribute to developing core technologies and create high added-value in the petrochemical sector.



### Thermal power generation

Daewoo E&C started the turnkey construction of Ulsan Combined Cycle Power Plant in 1977 and successfully implemented power plant projects in Nigeria, Oman, Libya, Morocco, Algeria and UAE. Also we have accumulated experience and technology to power plants. Based on our competitiveness, Daewoo E&C is expanding business into the world market. From Pocheon LNG power plant plant operation we have led the construction performance and ability developing our ability as a global energy developer.



### Nuclear power generation

Daewoo E&C has pioneered the global market with technologies utilizing nuclear power, which is the most economic and efficient energy in modern society with rapidly increasing energy consumption. Our business performance capabilities have been recognized with successful projects such as Shin Wolseong Nuclear Power Plants No. 1 and 2 and Jordan Research Nuclear Reactor, which is Korea's first nuclear power EPC export project; Wolseong Nuclear Power Plants No. 3 and 4 achieved the record for the world's shortest construction period. We also acquired qualification of supplier for nuclear power plant operating technical service (Level Q) for the first time of the domestic construction companies. While nuclear power plant constructors focus on overseas nuclear power business due to the sluggish domestic market with changed policies for nuclear power plant, Daewoo E&C is currently engaged in the nuclear power plant project in the Czech Republic and Poland as a part of Team Korea. We are also participating in the small- and mid-scale nuclear power plant project [SMART] in Saudi Arabia as an SPC company and endeavor to participate in a large-scale nuclear power plant project (LNPP) as a construction company.



### Oil refining

The oil refining plant business covers not only plants, but also related oil, gas, pipelines for transportation and general oil refining facilities. Daewoo E&C has know-how for oil refining facilities and storage facilities to separate crude oil based on boiling point. In 2018, we successfully won orders for Ulsan S-OIL SPM Project. We will continuously develop by focusing on differentiated know-how for the oil refining business.



### LNG

With the rapidly increasing supply and demand of natural gas in North America and Asia, it is expected to increase the demand for LNG for a long term. Daewoo E&C has achieved performance in liquefaction and gasification plant and maintained a continuous competitive edge in the construction of LNG liquefaction plant and capacity to perform LNG gasification plant EPC independently. We succeeded in winning the NLNG FEED Project in 2018 and entered the LNG liquefaction plant FEED business for the first in Korea. Based on our efforts and capabilities, we will expand the market share in Nigeria and Algeria and strive to win orders proactively, securing EPC performance.



### Renewable energy

With the global eco-friendly trend and the declining price of renewable energy generation, the proportion of renewable energy generation is expected to increase in the future. Accordingly, Daewoo E&C intends to strengthen its profitability by selecting and implementing target PJs based on its abundant business experience and capabilities. In addition, we will strive to achieve new results by securing preferential negotiating rights for renewable energy project in Pocheon IPP Phase 1.

### Future plan

In order to seek a new business market and secure new growth engines, we will actively promote our business such as FEED business, the decommissioning of the old nuclear power plant, and the modular plant through expansion of the value chain.



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## SUSTAINABILITY MANAGEMENT SYSTEM

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## CORPORATE GOVERNANCE

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## MATERIALITY ASSESSMENT

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## RISK MANAGEMENT

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## STAKEHOLDER ENGAGEMENT

## OUR SUSTAINABILITY FOUNDATION

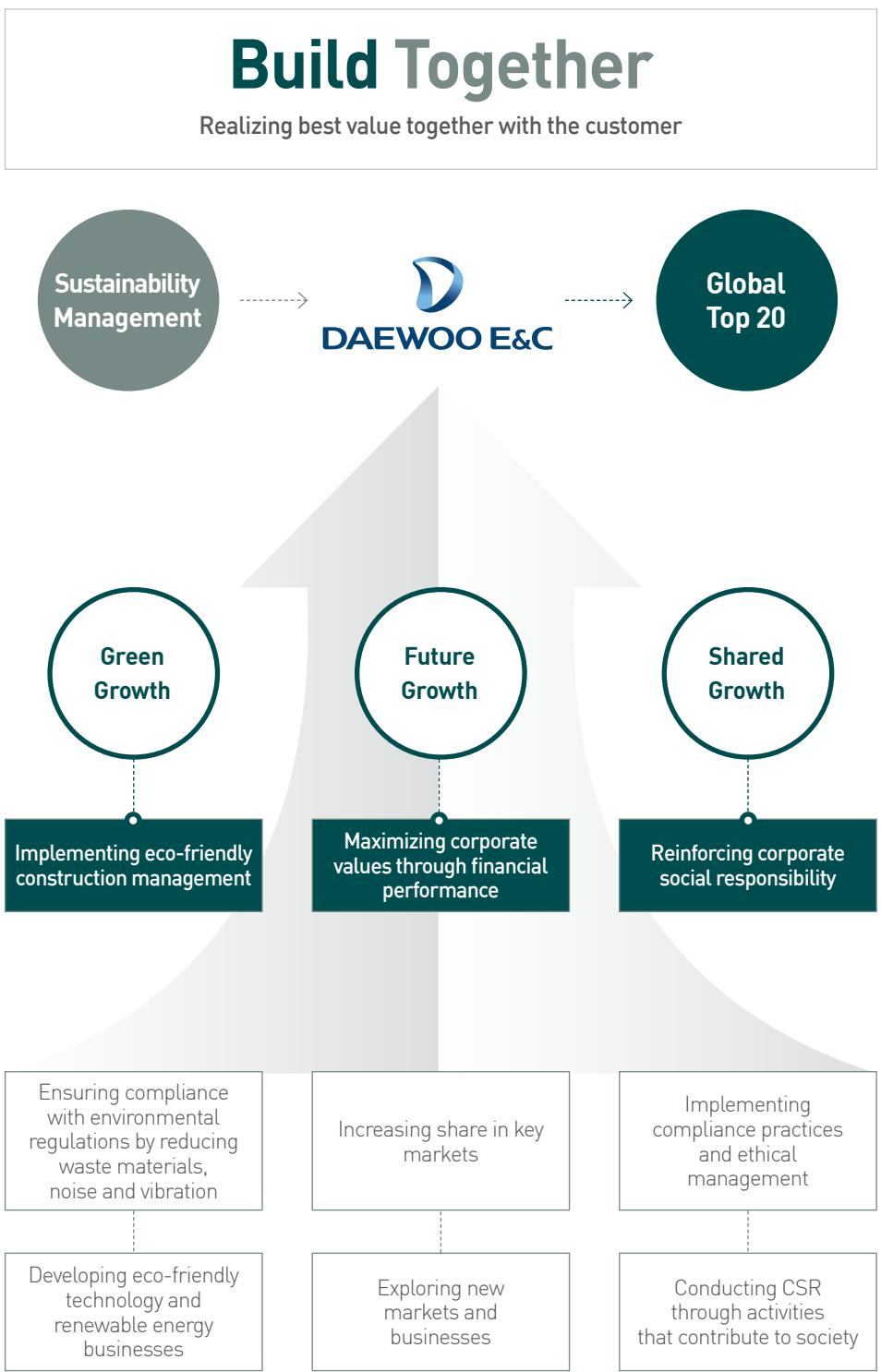
Daewoo E&C inspects and improves the current status of sustainability management each year with the aim of enhancing environmental soundness, social responsibility and economic profitability.

By developing environmental, social and economic capability, we will become a future-oriented company with continuous change and innovation.

## Sustainability Management System

### Daewoo E&C's Sustainability Management System

Daewoo E&C has established the vision of "Building Together, realizing best value together with the customer". to meet economic, social and environmental needs for current and future generations. The company aims to become global top 20 that work for humanity and the world on the basis of the its core values of "challenge and passion" and "autonomy and accountability," while continuously developing its capabilities through change and innovation.



## Compliance Committee

Established in 2015, the Compliance Committee (formerly the Sustainable Management Committee) reviews and decides on compliance issues and the performance of sustainability management annually. In 2018 the Compliance Committee reviewed the major ESG-related policies such as ethics management, anti-bribery management performance, and compliance program inspection, and additionally approved 2019 compliance system and anti-bribery management plan and awarded employees for their contributions for upholding corporate compliance objectives.



2018 Compliance Committee



Employee Award



### Commissioners (Executive Members)

CFO, Director of the Civil Project Division, Director of the Housing & Building Division, Director of the Plant Division, Director of the Finance Division, Director of the Procurement Division, Director of the Value-Up & Innovation Division, Director of the Strategic Planning Division, Director of the HR Corporate Management & Service Division, Director of the Institute of Construction Technology, Manager of the Q-HSE Services Division

## 2018 Sustainability Management Assessment

Daewoo E&C as a global leader representing the Korean construction industry, has implemented an advanced sustainability management system and received outstanding evaluation results from various external institutions that evaluated the level of corporate sustainability management.

### Receives "A" Rating from KCGS ESG Assessment for Two Consecutive Years

Daewoo E&C received an "A" rating in 2018 after receiving the same rating in 2017. This signifies that the company has a proper sustainability management system and its non-financial risks pose little threat to shareholder value. Daewoo E&C will improve sustainability by managing corporate governance and taking care of the company's employees, suppliers, the environment and other non-financial areas of our business.

\*Korea Corporate Governance Service (KCGS)  
An institution specializing in surveys, assessments and research on corporate governance and corporate social responsibility (CSR).  
(Provides information for institutional investors)

\*\*Sustainvest  
Founded in 2006, Sustainvest is a specialist research institute that conducts socially responsible investment and consultations, research, sustainability assurance/analysis and ESG assessments.  
(Conducts investment consulting for the National Pension Fund)

### First to Receive an "A" Rating in Sustainvest's 2018 ESG Assessment

In 2018, Daewoo E&C received an "A" rating with a total score of 91.05, and was ranked 11<sup>th</sup> in the capital goods sector and 62<sup>nd</sup> among 971 companies. The company received a "BB" rating last year, which means its rating increased one rating level. Daewoo E&C's increased its ranking by 17 places in its sector and 129 places among all companies that participated in the assessment. Daewoo E&C will continuously strive to increase its ESG rating by improving its ESG-related infrastructure.

## Corporate Governance

Daewoo E&C has established a transparent corporate governance system to ensure reasonable decision-making practices and to maintain a successful business environment. The company ensures the transparency of its management structure through the principle of checks and balances and adherence to international standards. Daewoo E&C has reinforced expertise and transparency in its management through the creation of an independent Board of Directors (BOD). The BOD aims to ensure professionalism of employees and their decision-making process, establish business environment and internal monitoring for successful business operation, and to establish a reliable and efficient corporate governance system.

## BOD Functions and Roles

The BOD is the key decision maker, which decides on major issues related to legislation and the Articles of Incorporation, along with business execution issues, and supervises business carried out by the executive management. Through the BOD, Daewoo E&C aims to establish trust with its stakeholders by maximizing its corporate values and ensuring transparency and reliability.

## BOD Organization

As of March 2019, Daewoo E&C's BOD is composed of two internal directors and four external directors. The CEO, who has a thorough understanding of the company's internal situation, serves as the chairperson of the BOD. All members of the BOD create a mutual system of checks and balances based on their expertise and work experience, and act as the key decision maker of the company.

### BOD Organization

(As of March 2019)

Category	Name	Gender	Date of Birth	Key Past Experience	Reason for Appointment
Internal Directors (2)	Hyung Kim	Male	Dec. 1956	- Current CEO of Daewoo E&C - Former Director of Global Infra Division of POSCO E&C (Vice President)	Daewoo E&C CEO
	Chang-Hwan Kim	Male	Nov. 1961	- Current CFO of Daewoo E&C - Former Director of Housing & Building Division of Daewoo E&C	CFO
External Directors (4)	Joo-Ha Woo	Male	Nov. 1956	- Former CEO of KOSCOM	Policy expert
	Kwang-Lim Yoon	Male	Jul. 1950	- Former President of Jeju Bank	Financial expert
	Hyuk Lee	Male	Jul. 1963	- Former Partner of Law Firm Lee & Lee	Legal expert
	Kyu-Yoon Choi	Male	Apr. 1954	- Former Director of Financial Supervisory Service Disclosure Supervision Bureau	Financial expert

## BOD Committees

Daewoo E&C operates the External Director Nomination Committee and Audit Committee within the BOD: 1) to ensure that an efficient decision-making process takes place; 2) to ensure relevant expertise is utilized within the company; and, 3) to reinforce the execution of sustainable management activities. The External Director Nomination Committee was established to ensure that transparency, reliability and independence is maintained during the process of recommending external director candidates. The committee has four external directors to ensure these values are put into place during the recommendation process. The Audit Committee conducts pre- and post-audits on the entire decision-making and work process to prevent corruption and other conflicts of interest.

### BOD Committees Organization

Committee	Function	Members
External Director Nomination Committee	Provides recommendations for external director candidates during shareholder meetings	Two internal directors, four external directors
Audit Committee	Audits the accounting practices and other relevant work in the company	Three external directors

## Our Sustainability Foundation

### BOD Independence and Expertise

Daewoo E&C directors are appointed based on the proposals submitted to the General Meeting of Shareholders after candidates are selected by the BOD and the External Director Nomination Committee. The External Director Nomination Committee selects 6 directors through a majority vote of all BOD members including the current four external directors. External directors are independent from executives in accordance with the Commercial Act and other applicable laws. They monitor how the company manages its business and serve as arbitrators between directors. Daewoo E&C has strived to appoint external directors with extensive expertise and work experience in various sectors to ensure that the BOD has a comprehensive level of professionalism. As a result, the company's external directors include two financial experts, one legal expert and one policy expert. The directors contribute to maintaining corporate management stability by performing checks and monitoring activities in their fields of specialty.

### How the BOD Operates and its Activities

The operation of the Daewoo E&C's BOD is based on the "Regulations of the Board of Directors," and the board holds regular meetings along with Ad Hoc meetings when required. The minutes for each meeting are made public, and decisions for each agenda item are finalized through a majority vote by the directors in attendance. Board meetings were convened 16 times 55 agenda items were decided upon in 2018.

### The Current Composition of the BOD

Category	Specific Category	Unit of Measure	2016	2017	2018
	Meeting	Meeting	16	15	16
BOD	Issues resolved	Issues resolved	65	49	55
	Attendance rate	Attendance rate	94.8	98.3	95.5

### The Evaluation and Remuneration of BOD Members

Remuneration for Daewoo E&C's director is determined based on evaluation of the economic, social and environmental management performance of the company and personal performance such as annual operation of the committee and activities. Remuneration, including severance pay, is given within the limitation of the directors' remuneration approved by a general shareholders' meeting each year. The current status of total remuneration for directors and auditors is made public in the business report and on the website.

### Remuneration for Directors and Auditors

Notes	Number of Members	Total Amount of Remuneration	Average Amount of Remuneration per Person	Notes
Internal Directors (excluding external directors and members of the Audit Committee)	3	828	276	Includes remuneration for retired directors
External Directors (excluding members of the Audit Committee)	1	61	61	
Audit Committee members	3	192	64	

### Shareholder Status

Daewoo E&C issued a total of 415,622,638 shares as of December 2018. The company's largest shareholder is KDB Value Private Equity Fund VI, which holds 50.8% of the company's shares. Daewoo E&C's business information, including its Annual Report, is disclosed through the Financial Supervisory Service and the Korea Exchange on a regular basis in accordance with regulatory requirements, and is transparently shared with its shareholders and stakeholders.

(As of December 2018)

KDB Value Private Equity Fund VI	50.8%	Kumho Petrochemical, Co., Ltd.	3.4%
National Pension Fund	6.5%	Others	39.3%

## Risk Management

Daewoo E&C is strengthening its capacity to identify potential risk factors and prevent crises through preemptive risk management. In 2018, the company's Risk Management Division was expanded and reorganized to become the Value-Up & Innovation Division with a view to reinforce the company's risk management and better meet its corporate values. Through these changes, and on the basis of improvements in business safety and long-term strategic risk analysis, Daewoo E&C has uncovered new business opportunities and boosted its competitiveness.

### Risk Management System

#### Preemptive Risk Management

Daewoo E&C conducts risk management in connection with mid- to long-term business strategies to better respond to risk in a preemptive manner. The company has created and continues to improve upon its company-wide risk management system by establishing a risk management culture and ensuring the company's employees are committed to business stability. In 2017, Daewoo E&C improved its bidding and contract review system for its overseas businesses and, in 2018, further developed and heightened its expertise in the review system to cope with changes in the global contract environment. In 2019, the company plans to link its New Vision with the goals of the Value-Up & Innovation Division through the implementation of Project Lifecycle Risk Management. In terms of innovation in the company's business infrastructure and development of its performance capacities, Daewoo E&C will further enhance its early-warning system, reinforce the review function aimed at securing marketing capacity and new-growth engines, and establish and strengthen the operation of a project rating system.

#### Enterprise Risk Management (ERM)

The concept of enterprise risk concerns any risks that can impact corporate business targets and strategic directions yet are not directly related to specific projects. Enterprise risks are generally divided into national risks and corporate/market risks. National risks are political, social, cultural and environmental risks due to domestic and global environmental changes and are managed on a company-wide level. Corporate and market risks refer to the risks involving the same industry as the company, along with market and financial risks. Daewoo E&C establishes company-wide risk management measures each year to ensure the successful operation of its business, and conducts on-site risk management through continuous refinements in its enterprise risk management system.

#### Project Risk Management

Project risks involve major risks that impact the achievement of a project target for winning a contract and/or implementing a project. Daewoo E&C preemptively deals with project risks by establishing and operating an efficient management system through project lifecycle analysis. For all overseas projects that are involved in the bidding process, the company makes an effort to quantify the qualitative factors of a risk assessment from the bidding stage to the post-contract award stage through a procedures-based management system.

#### Overseas Risk Management Process



## Benchmarking & Case Studies

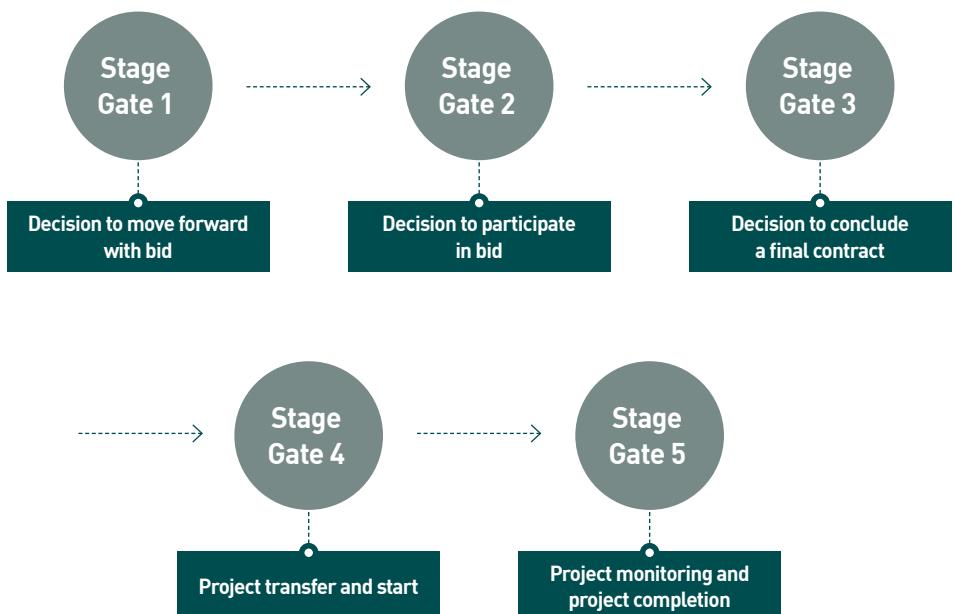
Daewoo E&C reviews lessons learned from past projects and assesses risks for each phase and activity of a project to detect and solve potential risks that may arise in the project bidding or execution stage. The company also examines and analyzes foreign risk management case or case studies from companies in the same industry to systematically establish a risk management model applicable to the company. Daewoo E&C is continuously communicating with project divisions and departments relevant to the bidding process and is improving the preemptive project risk management measures drawn from this process.

## Analyzing Problematic Clauses in Contracts and Establishing a Country Information DB

To prevent and respond to potential risks from overseas project contracts and to share ways to respond, Daewoo E&C continues to compile examples of problematic or unfavorable contract clauses and response measures into a comprehensive project management system. This system can be used in a wide variety of ways depending on the country, activity type, and contracting party, and there are plans to conduct future overseas projects by expanding and systemizing the system's data. Following its entry and expansion into the global market, Daewoo E&C established the Country Basic Information Management System, which includes information about approximately 50 countries across some 70 areas, including finance, taxes, politics and culture. The database is accessible through the company's Intranet and allows all employees to effectively identify and respond to risks in a specific country.

## Establishing Risk Analysis and Evaluation System

Daewoo E&C has strengthened the functionality provided by Stage Gate and is providing support aimed at efficient project management from the stage information about the contract award received to the completion of a project. The company has reinforced the contract award stage (the capacity to verify the Stage Gate) and the execution stage (the strengthening of monitoring activities) to ensure the implementation of profitability-focused project risk management. Daewoo E&C established a new, improved and reinforced process across the stage of deciding to move forward with a bid to the monitoring and completion stages, and plans to reinforce the risk analysis system aimed at stable project management.



## Stakeholder Engagement

Daewoo E&C has strengthened communication channels to understand stakeholders and to maximize communication and value. Major stakeholders recognized by the company include: governments and their related institutions, which have mid- to long-term effects on corporate governance, shareholders, investors, customers, academia, associations, organizations, employees, local communities and suppliers. Daewoo E&C has established optimal communication channels with these stakeholders and proactively collects their views. The company also puts in practice shared values by fairly distributing the economic outcomes created through its business activities to stakeholders.

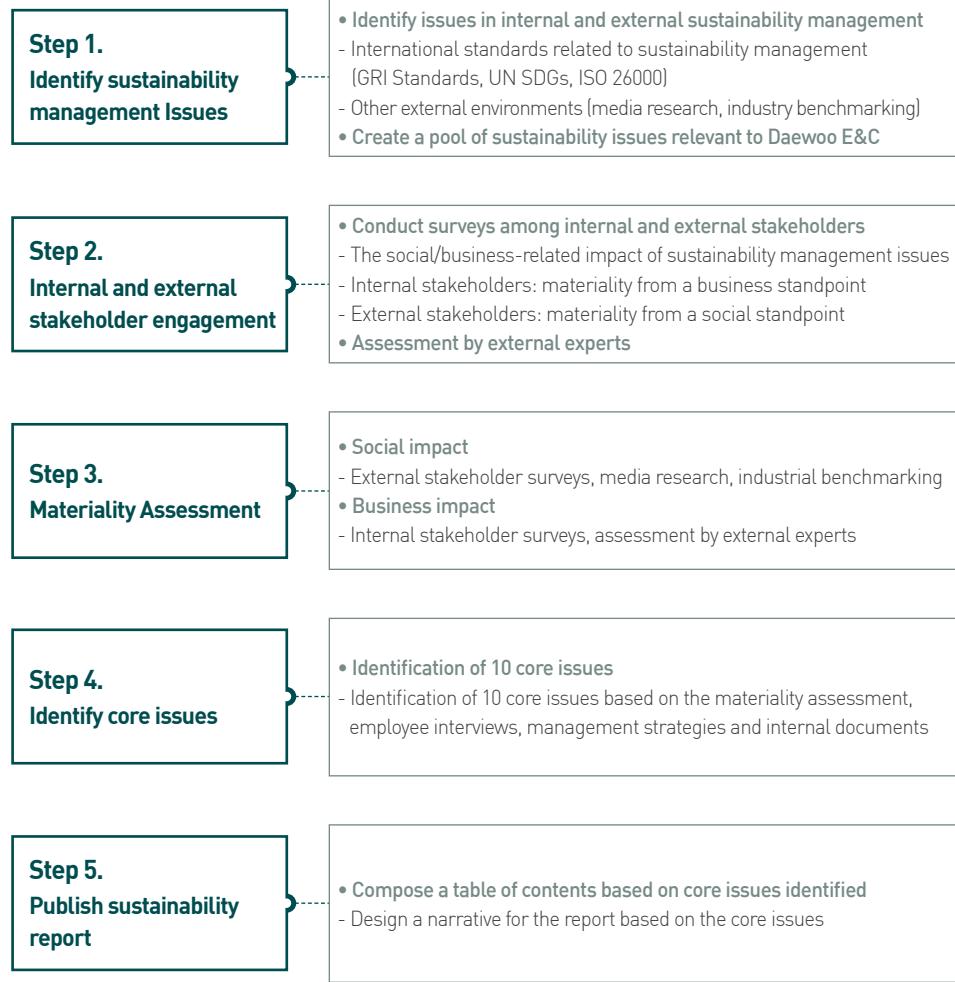
### Types of Major Stakeholders and Communication Channels



## Materiality Assessment

Daewoo E&C conducts a materiality assessment of its sustainable practices and identifies core issues based on relevant international standards, the media and benchmarking activities. In terms of stakeholder engagement, the company solicited views from experts through internal and external surveys in accordance with the international standard "AA1000SES." This process led to the selection of 10 core issues for sustainability management that Daewoo E&C needs to focus on, and these core issues are reflected importantly throughout this report.

### The Materiality Assessment Process



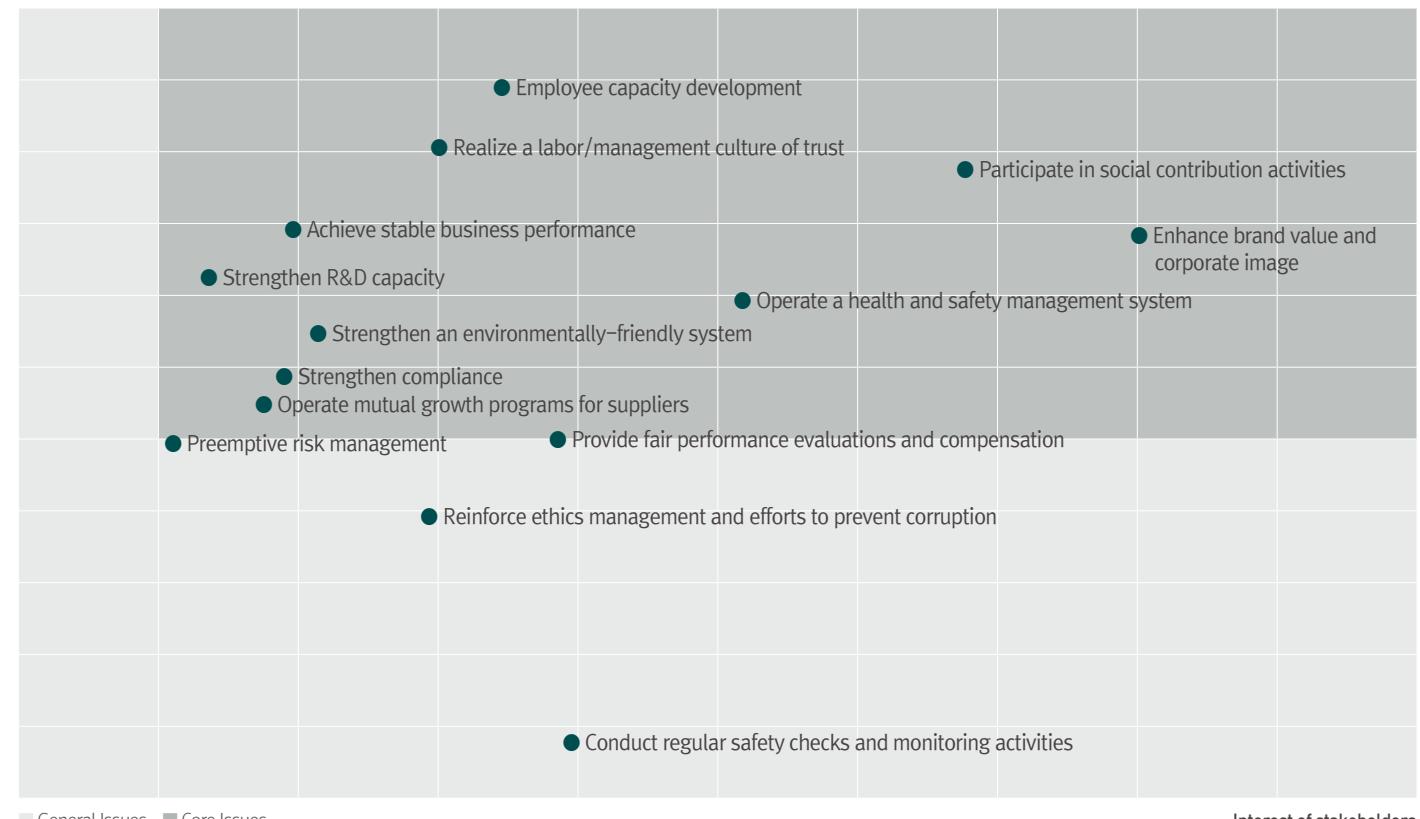
### Core Principles of the Materiality Assessment

Daewoo E&C constructed an issue pool regarding Universal Standards and Topic specific Standards of GRI Standards, the international sustainability reporting standard, and identified material issues reflecting industrial characteristics considering stakeholders' interests and the company's related achievements.

Category	Content
Inclusiveness	Identify sustainability issues by analyzing the internal and external environment (including benchmarking activities, media analysis, internal data review, and interviews)
Materiality	Identify issues through a materiality assessment (including stakeholder surveys)
Responsiveness	Verify the validity of significant issues (classifying them into core issues, general issues, and other issues)

## Materiality Assessment Results

### Business Impact



Issues	Topic-specific Core GRI Standards	Page
Core Issues	Employee capacity development	Training and Education
	Realize a labor/management culture of trust	-
	Participate in social contribution activities	Indirect Economic Impacts
	Enhance brand value and the corporate image	Indirect Economic Impacts
	Achieve stable business performance	Economic Performance
	Strengthen R&D capacity	Indirect Economic Impacts
	Operate a health and safety management system	Occupational Health and Safety
	Strengthen an environmentally-friendly system	Non-compliance with environmental laws and regulations
	Strengthen compliance	Compliance
	Operate mutual growth programs for suppliers	Indirect Economic Impacts
General Issues	Provide fair performance evaluations and compensation	Indirect Economic Impacts
	Preemptive risk management	Governance
	Reinforce ethics management and efforts to prevent corruption	Compliance
	Regular safety checks and monitoring	Occupational Health and Safety
		94~99

## OUR SUSTAINABILITY MANAGEMENT

Daewoo E&C firmly believe that the most important source for continuous growth is to secure excellent and remarkable human resources.

We recruit and cultivate human resources with global capabilities and strive to make them feel a sense of belonging and devotion to the company.

By implementing righteous management as an industrial leader, we also commit ourselves to establishing trust between all internal and external stakeholders.



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### FINANCIALLY STABLE MANAGEMENT

- The Efforts Required to Achieve Stable Management Performance
- Enhancement of Brand Value and Corporate Reputation
- Strengthen R&D capacity

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### FUTURE-ORIENTED MANAGEMENT

- Participate in social contribution activities
- Strengthen an environmentally-friendly system
- Employee capacity development
- Realize a labor/management culture of trust

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### RIGHTEOUS MANAGEMENT

- Operate mutual growth programs for suppliers
- Operate a health and safety management system
- Strengthen compliance



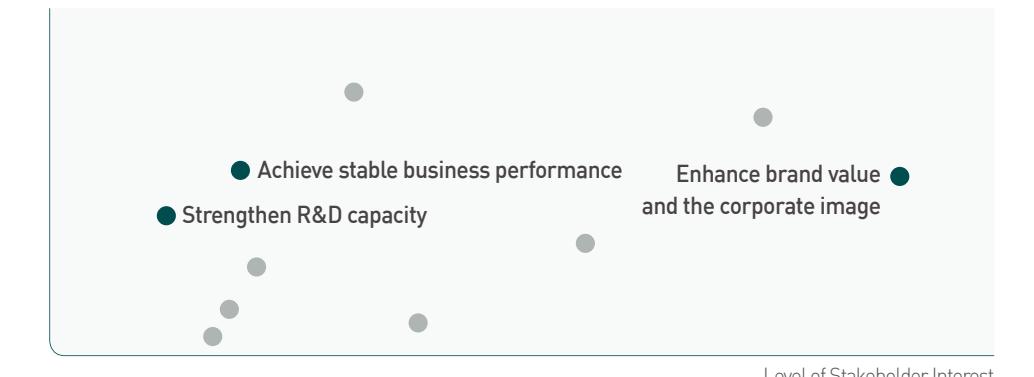
## Our Sustainability Topics

## FINANCIALLY STABLE MANAGEMENT

Financially Stable Management means achieving stable management performance, strengthening R&D capabilities, and strengthening the Daewoo E&C's practical operations capabilities to enhance the trust of Stakeholders. Furthermore, through risk management for Brand value and Enhancing the Corporate image, we are actively responding to the rapidly changing external environment and customer demand.

## Major Issues

Business Impact



## Opportunities

Achieving stable management performance, strengthening competitiveness and enhancing brand value and corporate image play an important role in responding to rapidly changing external environment. R&D can also lead to high-value-added business creation. Daewoo E&C will do its best to contribute to society by creating sustainable value.

## Risks

Despite the concern about profitability deterioration due to changes in the domestic and overseas economic environment, investment reduction, and cost increase, we will continue to make efforts to consolidate sound management through enhancing cost competitiveness, new business development and R&D capabilities.

## SDGs and Major Issues of Daewoo E&amp;C

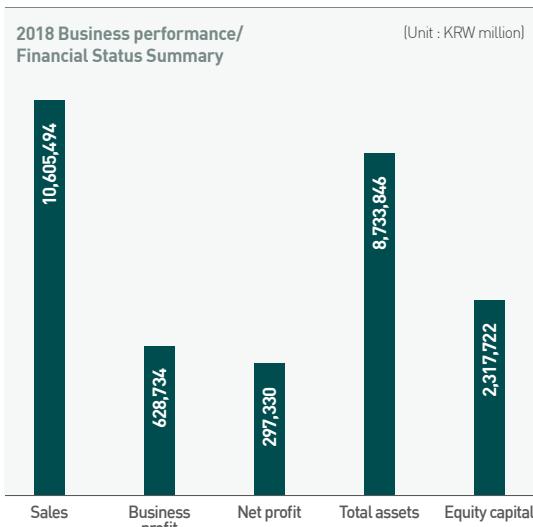
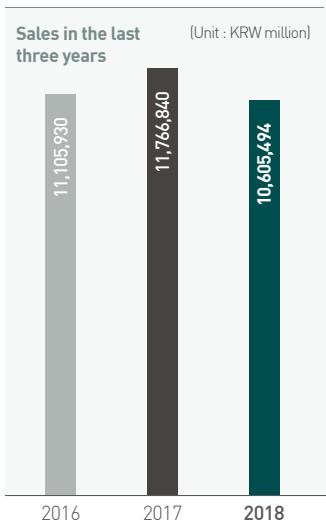


## Issue1. Achieve Stable Management Performance

Daewoo E&C has committed itself to achieve stable management performance not only in short-term performance, but also through macro-level, long-term performance. The company will work to create profits, the basic objective of the company, while also create win-win value and maximizing the added value of all stakeholders in the company, from governments, and related institutions, shareholders, and investors, to customers, employees, local communities and suppliers. Daewoo E&C will boost its profitability by enhancing its technical and cost competitiveness, and secure high-quality contracts through improvements in the company's financial structure and maintaining a balanced business portfolio.

### Accomplishing The Efforts Required to Achieve Stable Management Performance

To achieve stable management performance, Daewoo E&C commits to achieve stable management performance to ensure not only through short-term performance, but also through macro-level, long-term performance with a macroscopic view. The company will work to create profits, the basic objective of the company, while also create win-win value and maximizing the added value of all stakeholders including create shared value for mutual growth and maximize added value for all stakeholders, including the governments, related and related institutions, shareholders, and investors, to customers, employees, local communities and suppliers. Daewoo E&C will boost its profitability by enhancing its technical and cost competitiveness, and securing high-quality contracts through improvements in the company's financial structure and maintaining a balanced business portfolio.



### Identifying New Profit Models: Construction Equipment Rental Business

Daewoo E&C aims to enhance its asset utilization and establish a new profit model through a new equipment rental business utilizing suspended unused equipment in overseas construction sites. As a first step the company has signed an MOU with a leading Vietnamese construction company, CC1, and also with JP Nelson, a specialized construction equipment rental company located in Singapore. This will allow Daewoo E&C to share know-hows in the construction equipment rental business, and ensure stable business operations in its early stage. Vietnam as a high prospect of growth in the construction market, this new business will not only establish a new profit model through the utilization of unused construction equipment as suspended construction equipment rental business, but also create synergistic effects construction projects in Vietnam.



### Investment Development Business that Combines Construction and Finance

Investment development business has dramatically increased in the recent construction market. While the existing construction business focused on simple construction-based subcontracts, the investment development business signifies a chance for Daewoo E&C to expand the business sector into planning and implementation through various financial techniques and utilizing funds. Daewoo E&C takes an advantageous position by building an office and hotel in Starlake New City in Hanoi, Vietnam, through a joint investment project with the financial sector. This project has allowed Daewoo E&C to strengthen its capacity as a developer by expanding its value chain to a front-line industry. Daewoo E&C will continuously strengthen a new business model as of an investment development business combined with the financial sector to diversify its profit structure and contribute to secure high-quality contracts.



## Issue2. Enhance Brand Value and Corporate Reputation

**Daewoo E&C puts its top priority on customers. We continuously improve customer quality satisfaction through proactive communication and customer quality satisfaction, and do our best in creating customer value by recognizing customer value is also our value.**

### Daewoo E&C's efforts to improve brand value and corporate image

Improvement of Brand Value and Corporate reputation by Brand Renewal

#### Brand identity Summary

Brand Essence      The Natural Nobility

Brand Identity      The Faith of Basic  
Balance through Harmony  
Consideration and Respect

Branded Product	Be Unique	► Design Premium
	Be Right	► Green Premium
	Be Gentle	► Life Premium
	Be Smart	► Smart Premium



### Our Sustainability Topics

#### PRUGIO Renewal

The newly renovated PRUGIO focuses on 'being natural' and 'natural comfort' that pursues the natural way of life. We do not simply provide facilities, but we aim to take customers' everyday life into the next level by providing a higher residential service and cultural life, covering day-to-day life of our customers. In line with the new philosophy, Daewoo E&C will continue to make every effort to make sure that customers feel the great changes in every aspect from exterior to landscaping, community, customer service and AS.

#### BI Character



#### The Natural Nobility

The character has an image associated with the reed of a P tree, the existing heritage of PRUGIO, and a circle conjuring up the robustness of the earth and land. With the features of the logo, the character implies the personality of PRUGIO and assists the BI. The character signifies a new PRUGIO in harmony beyond a certain frame.



Prugio offers premium services based on consideration and respect for the nature of life. We will provide differentiated services to customers through delicate landscaping services such as the Greenery Lounge and Studio, Open Field and Blue Library, and cutting-edge services such as IoT wall pad and fine dust barrier system. We will also endeavor to improve customer satisfaction through the "Prugio Service", an AS subsidiary company, which celebrated its 20th anniversary this year.

## Quality Management Organization

Quality Management Team in charge

### Quality Management Organization

Daewoo E&C's quality management organization is composed of a Quality Management Team, Quality Engineering and Inspection Team and Business CM Team. The Quality Management Team supervises the company's quality management system, while the Quality Engineering and Inspection Team performs equipment and specialized work process-related inspections. The Business CM Team is responsible for managing the quality management and services in each business division, and conducts quality management of on-site construction and after-sales services.

Quality Management Team
Conducts certifications on the company's quality control system, provides quality management training, human resources management, reviews quality system and performance, supports the on-site quality management system, supports business divisions (bidding, technology), evaluates the quality of suppliers

Quality Engineering and Inspection Team
Conducts equipment inspections, standardizes work processes, signs contracts and evaluates third-party inspectors, provides technical supports project-related specialized work processes, and supports quality of bid-related purchases

Business Division CM Team
Manages construction quality-related and construction-related defect management on-site for each business division

### Quality Management Strategic Policy

In 2019, Daewoo E&C established a strategic policy "The Best Quality, Guaranteed" to serve as a foundation to the company's qualitative growth in quality. With this as a basis, the company selected the following core strategies and Tasks to focus on: 1) reorganizing the company's quality management system; and 2), strengthening preemptive prevention and quality management Daewoo E&C aims to revamp its quality management system, by improving relevant work processes, expanding the company's inspection management system, and clarifying the responsibility and authority for quality management. The company will also enhance quality management training for quality managers, and conduct quality management-related training for equipment suppliers to improve awareness of quality management among all the company's employees.

Strategies and Tasks for Quality Management

Strategic Policy
Guaranteed best quality

Core Strategies and Tasks		
Reorganizing quality assurance system	Strengthening preemptive preventive quality assurance	Enhancing awareness of quality assurance

## Quality Management System Reorganization

Integrated Inspection Management System



### ISO 9001 : Quality Management System Manuever

Daewoo E&C continuously improves and enhances regulations such as manuals, procedures, Instructions and work manuals to deal with changing demands for quality management. The company continues to make improvements in the Daewoo Process Mapping System (DPMS) a response to changes in the ISO 9001:2015 Quality Management System and to ensure the utilization of the comprehensive process management system. The DPMS is the quality assurance mapping system that reflects Daewoo E&C's critical workflows and is built to serve as a foundation for the effective operation and management of process requests stipulated by ISO 9001:2015.

### Integrated Inspection Management System

Daewoo E&C has built an optimized collaborative space for equipment inspection and an integrated inspection management system that utilizes IT technology to systematically accumulate the status of inspections. As a result, we share the rapid and accurate status of inspection to maximize the efficiency of work, systematically record the status of our work, and implement smart collaboration between departments through real-time feedback. In 2019, we will expand this system to develop a system for inspection of building/housing and civil construction materials at home and abroad. We will build an integrated inspection management system that can link the current mobile web with BAROCON, our company's management system.

## Our Sustainability Topics

### Reinforcement of Preemptive Preventive Quality

#### Fostering Quality Managers

##### Reinforcing the Specializations of On-site Quality Managers

- Provide training in six major areas of responsibility to ensure quality managers perform their roles properly and enhance their capabilities at each level
- Conduct training on quality management from a legal perspective for on-site quality managers

##### Cultivating Quality Experts in Specialized Areas

- Improve the company's ability to conduct inspections in specialized sectors and support on-site technologies (non-destructive, vibration, painting, and welding inspections, among others)
- Cultivate quality assurance experts systematically and efficiently through human resource development

### Enhancing Quality Management Awareness

#### Curriculum

##### Quality Management Certificate Renewals



### Quality Risk Management

Daewoo E&C continues to manage the risks that affect the quality management system through identification of risks, assessment of quantities, and countermeasures after confirming internal and external issues related to quality and the needs of stakeholders. In the future, Daewoo E&C will respond to changing external needs and environmental changes, and strive to improve its brand image and corporate image through improved quality control.

### Strengthening site Quality Management Activities

Daewoo E&C operates a quality assurance system and Site Quality Performance Indicators (S-QPI) to enhance on-site quality management activities. Beginning with the introduction of Starter and Helper, our on-site quality support system in 2016, we have been able to improve quality consciousness and improve construction quality and contributed to customer satisfaction. In addition, we operate Site Quality Performance Indicator (S-QPI) for quantitative self-assessment.

### Theme-based Quality Inspections

Recently, the construction industry has been strengthening the laws and regulations on quality (Construction Technology Promotion Act). Daewoo E&C conducts quality control in accordance with legal requirements, and continuously review selected vulnerable elements on-site. In 2019, we will focus on large-scale crts, instrumentation management, and construction equipment as the themes of vulnerable factors, and we will closely monitor the quality control status on-site and comply with the strict implementation of laws and regulations.

### Develop core quality manpower and find and maintain outstanding suppliers

Daewoo E&C is nurturing core quality manpower with superior competence and sought to find excellent partners in quality management for customer satisfaction. Internally, we will provide training to train quality managers with excellent competencies, and train specialists to improve their ability to conduct tests in each field by training specialist quality experts. In order to identify and maintain outstanding external suppliers, we will establish separate inspection standards for each material and strengthen the quality evaluation and quality education of our outsourcing suppliers. In addition, we conduct a Corporate Quality Group for quality managers' communication among headquarters and sites on a quarterly basis.

Category	Course Name	Targets
Job	Job Education for Quality Managers	On-site quality assurance managers (Levels 1,2,3)
Improving Awareness	Introductory Course	New employees (new/experienced)
	Quality Management Systems and Penalty Management	Supervisors
	Quality Inspection Results and Theme-based Inspections	On-site directors
	Winter Job Training	Technicians
Enhancing Awareness	Quality Management Training for Suppliers	Employees of suppliers

### The Corporate Quality Group

The Corporate Quality Group is a two-way quality manager communication consultation between headquarter and sites. Headquarter and on-site quality managers attend the quarterly meetings to select and discuss topics related to quality, and share quality management status and internal and external inspection cases on site to prevent quality problems.

- Seoul Gyeongin (Housing) (Jan. 11) Human Resources Training Institute
- Seoul Gyeongin (Building) (Feb. 14) Human Resources Training Institute
- Chungcheong (Feb. 14) West Sea Railway Construction Site 4
- Jeolla (Feb. 21) Gangjin-Gwangju Highway Construction Site 1
- Seoul Gyeongin (Civil and Plant)(Jan. 10) Human Resources Training Institute
- Daegu Gyeongbuk (Mar. 13) Jangseong PRUGIO Construction Site
- Bugeyeong (Mar. 12) Haeundae Central PRUGIO Construction Site

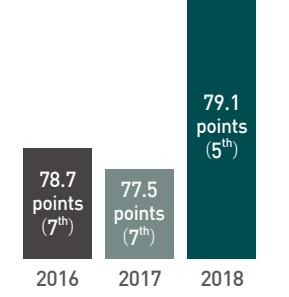
### Quality Management Certifications and Quality Management Procedures

As part of its efforts to implement quality management, Daewoo E&C renewed four quality system certifications in 2018, revised 209 business procedures, and newly established 36 new business procedures, and operating total 1,169. As a result of continuous efforts to strengthen our pride and competence in quality, we continue to strengthen quality management as a leading quality management company in the industry.

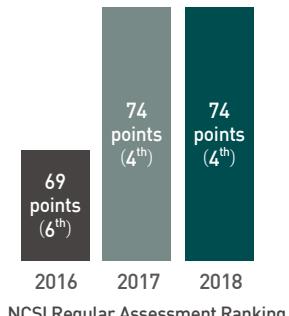
## Customer Satisfaction Improvement

To better enhance customer satisfaction, Daewoo E&C confirms the satisfaction of its customers toward the company's flagship brand, PRUGIO, each year through major and reputable institutes that conduct customer satisfaction evaluations. These surveys are conducted to understand the level of satisfaction felt by customers, identify areas of improvement, and ensure that complaints are received and managed through indicator management. Daewoo E&C also identifies the individual needs of customers and improves products and services on the basis of these needs. Customer satisfaction surveys include both quantitative surveys and qualitative surveys. During the first half of the year, the Korean Standards Association (KSA) KS-SQI survey is conducted, while the Korea Productivity Center (KPC) NCSI survey is conducted in the second half of the year.

The Results of Customer Satisfaction Surveys  
(Based on Annual Regular Assessments)



KSA Regular Assessment Ranking



NCSI Regular Assessment Ranking

## PRUGIO Service

With Korea's best technology skills and network for apartment facility maintenance, PRUGIO Service provides effective and sophisticated services with a "prompt, kind and accurate" mindset. With local centers in eight target cities providing optimal service solutions through the smart network, PRUGIO Service has marked its 20<sup>th</sup> anniversary this year and exceeded 400,000 households units in total for management targets. We are proud of this achievement, and having the most extensive experience and know-how compared to other companies. Daewoo E&C and PRUGIO Service will continue to improve warranty quality and customer satisfaction.

## Integrated Call Center

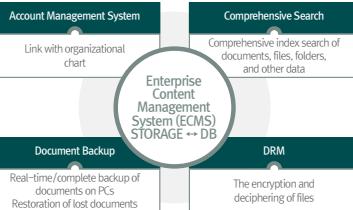
Daewoo E&C integrates its communication channels via the Integrated Call Center established in 2013 and responsible for customer management from sales, contract, moving-in and after-sales services. Through the integrated system, the company operates all processes including sales, contracts, and after service. In 2014, the company integrated the Call Center and the Voice of Customer (VOC) to improve classification and management of customer complaints.

## Information Protection and Management

Daewoo E&C has established a preemptive information security system to prevent the disclosure of personal information relating to customers and other confidential information from the company. The Chief Privacy Officer (CPO), under the leadership of the CEO, along with customer service employees, protect and manage all information pertaining to company stakeholders, including company executives.

### Establishment of Integrated Document Management System

In 2015, Daewoo E&C established the Enterprise Contents Management System for integrated document management. Launched in December 2017, the document centralization system, which is integrated into the company's headquarters, enables the protection of documents from security threats such as ransomware and malicious codes. The system boosts the utilization of information and enhances work productivity by comprehensively managing documents stored on individual PCs.



### Strengthening the Privacy Policy

Daewoo E&C puts its top priority on customers' personal information and complies with regulations on personal information protection in accordance with relevant laws and regulations such as the "Act on Promotion of Information and Communication Network Utilization and Information Protection" and "Personal Information Protection Act". In particular, we stipulate the policy for handling personal information in accordance with relevant laws and protect the rights and interests of customers. For instance, we disclose the purpose for collecting personal information, period of ownership, disposal procedure with ISO 27001 and measures for protecting personal information on the official website.



### Strengthening the Document Security System

Daewoo E&C affirmed the need for document-related security with the launch of the ECMS in 2015. The company operates an independent consultative body at its headquarters to enable thorough document-related security, and conducts regular consultations to analyze, secure and improve vulnerable areas of the system. Daewoo E&C is working to strengthen its document-related security system by reinforcing the digital rights management (DRM) system.

### Simulated Hacking Tests

Daewoo E&C conducts simulated hacking tests on the company's major websites, including the PRUGIO website and the company's homepage, with a view to identify bottlenecks in online services, vulnerable points in the online system environment, and to understand how exposed personal information is online. Simulated hacking tests are held once per year and utilize the latest cyber-attack techniques and scenarios used by actual hackers. The tests present technical countermeasures to be taken to prevent vulnerabilities, potential cyber-attacks, and security threats on the company's homepage and other related websites. These efforts have contributed to the strengthening of stakeholder confidence toward the security of Daewoo E&C's websites.

## Personal Information Protection, Management and Inspection

Daewoo E&C continuously performs its own inspections of the users of relevant systems, including PRUGIO customer service staff members, to ensure the thorough management of the personal information of customers. The company is conducting a wide-range of efforts to strengthen security systems that involve the loss of the personal information and data of customers.

### Personal Information Management Inspection

Online education for information security and personal information protection for all employees - 5,104 employees

Daewoo E&C conducts to respond to increased interest in personal information protection and cyber security and demands for responsible data management. As part of the company's efforts to acknowledge the importance of handling personal information and improve the level of security implemented, Daewoo E&C conducts a three-staged, on-site inspection process of managerial, physical and technical security-related conditions. The company runs inspections on the state of its personal information management by confirming its compliance with the Personal Information Protection Act (PIPA), which contains procedures concerning the collection, use, storage and destruction of personal information that are conducted twice per year and/or on a regular basis.

### Strengthening the Personal Information Security System

Daewoo E&C operates a consultative body at its headquarters to manage customer-related information. Through regular consultations with this body, the company reviews the legal compliance of its personal information management system, security-related policies and internal management standards. Daewoo E&C also conducts training for all its employees - including employees deployed overseas or at worksites, and employees of contractors and suppliers - focused on personal information protection as part of efforts to internalize a security management-related mindset. In terms of the company's sales management system, Daewoo E&C has reduced the potential for leaks of information by limiting authorization into the system to only those who have completed personal information protection training. Moreover, the company has added physical security measures by installing and operating image processing devices in support centers for new apartment residents. Moreover, the Daewoo E&C is working hard to strengthen its information security system by checking the on-site conditions that concern customer information management within all its organizations and subsidiaries on a biannual basis.

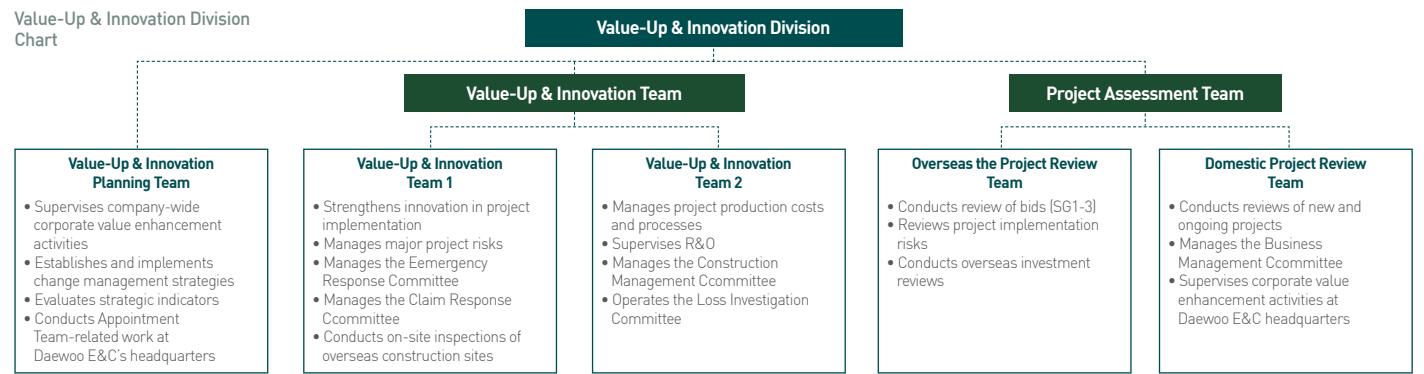
## Activities that Enhance Corporate Value

Daewoo E&C has set the core of its management strategy for 2019 to be "Establishing the foundation for sustainable growth by enhancing corporate value." The company commits has committed itself to achieving mid- and long-term strategic goals to meet the new vision of "Build Together." These goals ", include achieving sales of KRW 17 trillion in 2025 and, operating profits of KRW 1.5 trillion in 2025 to become one of the world's top 20 companies. With these goals in mind, Daewoo E&C has aimed to achieve its core strategic projects through the establishment of the Corporate Value Enhance Division, . This division includes the Value-Up & Innovation Division and the Contract Review Team, which conducts risk management for the company.

### Strengthening Activities Aimed at Enhancing Corporate Value

Before change	After change
Risk Management Division	Value-Up & Innovation Division
Construction Management Team	Value-Up & Innovation Division
Risk Management Team	Project Assessment Team

Value-Up & Innovation Division Chart

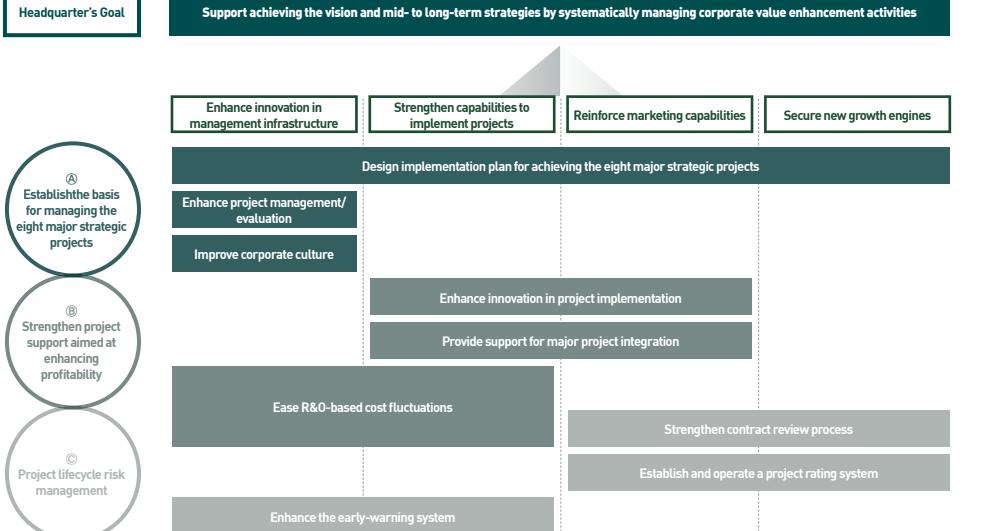


### Improving the Roles Involving Corporate Value Enhancement

The Value-Up & Innovation Division has established the target of "achieving the company's vision and mid- and long-term strategies by systematically managing activities related to corporate value enhancement at Daewoo E&C's headquarters, and has established strategic next steps that are linked with the new company-wide vision. The company established the basis for managing the eight major strategic projects, increased project support aimed at boosting profitability, and heightened the role of lifecycle risk management.

The Value-Up & Innovation Division's Management Policies

Nine major strategic projects
Design implementation plan for achieving the eight major strategic projects
Enhance project management/evaluation
Improve corporate culture
Enhance innovation in project implementation
Provide support for major project integration
Ease R&O-based cost fluctuations
Strengthen contract review process
Establish and operate a project rating system
Enhance the early-warning system



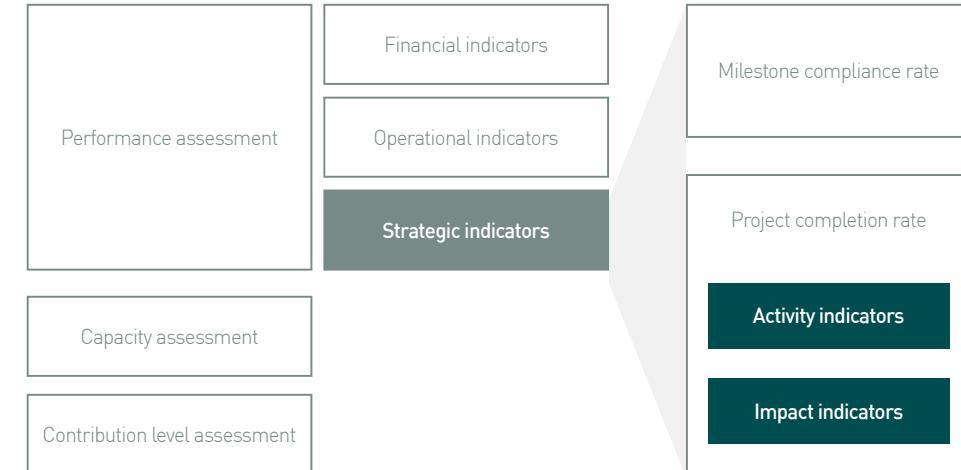
### Systemization of Project Review Procedures

Daewoo E&C has established a management system covering the entire project lifecycle that is aimed at identifying and proactively preventing any elements from impacting the implementation of domestic and overseas projects. The company prepares for and manages project implementation after a bid is decided on and a final contract is signed. Finally, feedback is provided to whether the project was conducted efficiently and after-sales service management is provided. When deciding to participate in a bid, Daewoo E&C ensures the soundness of the contract in question through enhancements in its contract review process and project rating system. The company uses a dispassionate perspective to identify and resolve issues quickly. The company is able to manage any risks that occur after participation in the project has been decided through this flexible response system. Daewoo E&C will make sure that it has the expertise to manage these issues by implementing systematic project review procedures.

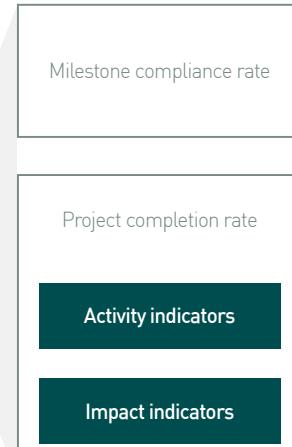
### Corporate Value Enhancement Assessment System

Daewoo E&C has improved procedures to enhance its review processes and improve expertise to cope with changes in the global contract environment. The company has strengthened overseas project contract management, improved the operation of investment reviews, and strengthened its review capacity by cultivating experts that can deal with various kinds of review processes. Daewoo E&C also conducts study groups and shares pertinent information from work sites through knowledge sharing and knowledge transfer activities. In 2018, the company reflected its corporate value enhancement activities in evaluating its evaluation of strategic indicators, and enhanced its evaluation system by establishing an operational policy based on financial impact.

#### Management Assessment Measures



#### Detailed Measures involving the Strategic Index Assessment



#### Assessing the Milestone Schedule

- At the end of each month, confirm whether projects to be completed monthly/ the milestone schedule is delayed
- Conduct evaluations of organizational and human resources-related assessments by the month stipulated (September)

#### Assessing Project Results

- Assessment of activity indicators and impact indicators
  - Projects with impact (financial) indicators
- Prospects reflected in Q4; if the standard is not met, points are deducted in the 2019 assessment

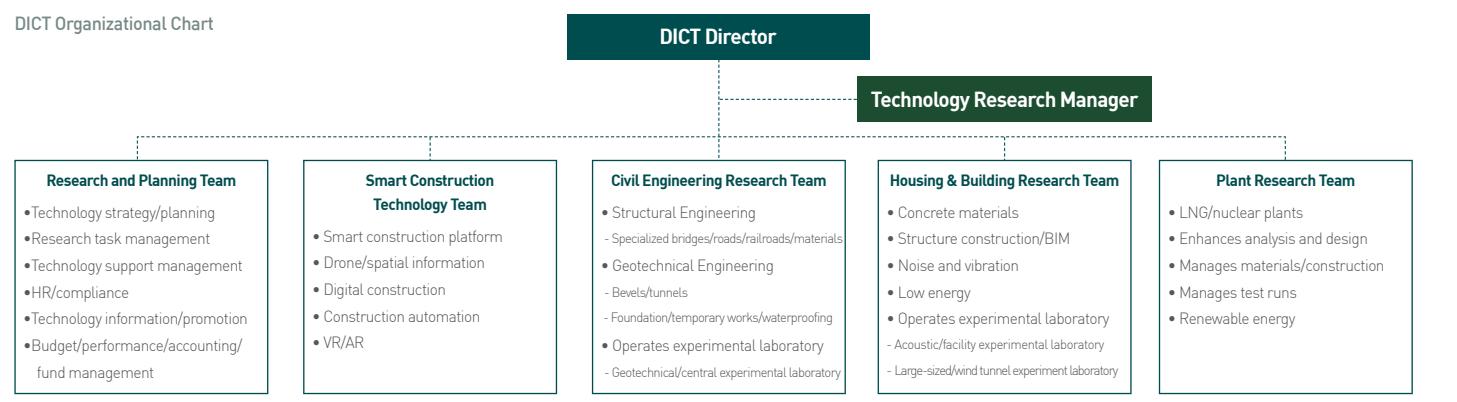
### Issue3. Strengthen R&D capacity

As securing the capability for core technology is the basis for our financially stable management and an engine for developing original technology and new business, Daewoo E&C makes every effort to perform R&D and systemize company-wide strategies to secure the capability for core technology.

#### Strengthening DICT's Capacity

DICT is the symbol of Daewoo E&C's technology prowess and in 2018 the institute made predictions about changes in the market that resulted in solidifying the company's technological competitiveness through development of IoT/ICT convergence technology that will contribute to the company's future growth. Daewoo E&C expects there will be difficulties in conducting future projects due to increased competition in both the Korean and overseas markets. DICT will help the company overcome these challenges. As part of its efforts to secure new growth engines for Daewoo E&C and help it dominate the future market, DICT will focus its energy on the development of revolutionary "smart construction technology" to assist the company in achieving its strategic targets and advance toward new heights in the industry. DICT is the construction industry's leader in developing innovative technologies. From its position at the center of the Fourth Industrial Revolution, the institute will identify innovative ways forward for the company in the construction industry and present a vision for the company's technology in line with the needs of the future market. DICT will be the hub for realizing the technology that provides the foundation for "smart construction."

DICT Organizational Chart



#### Systemization of Strategies for the DICT

With a view to become one of the global top 20 companies, Daewoo E&C is making an effort to achieve its new company-wide mid- and long-term strategies by leading the market and strengthening its technology capacity. The company has established its R&D strategies through an analysis of the trends in each construction-related sector and has used this analysis to effectively obtain its own capacity to research core technologies. Under the new company-wide vision of enhancing its project implementation, marketing capacity and identifying new engines of growth, Daewoo E&C established new detailed strategies aimed at maximizing its business capacity in 2019 that include: 1) revolutionizing the implementation of technology-based construction; 2) expanding contracts and marketing activities that use development technology; and 3) secure technology that serves as a foundation for new-growth businesses.

#### Global Top 20

Strengthen Daewoo E&C's technological competency to achieve the new company-wide vision and mid- and long-term strategies

##### Enhance the company's project implementation competency

Revolutionize the implementation of technology-based construction

##### Strengthen the company's marketing competency

Expand contracts and marketing activities that use development technology

##### Secure new growth engines

Secure technology that serves as a foundation for new-growth businesses

### Smart Construction Technology Development



Technology deployed to the Gangjin-Gwangju railroad construction site



Technology deployed to the Gangjin-Gwangju railroad construction site



Paju-Pocheon Highway Construction Site No. 3

#### Smart Construction Strategies

The world is rapidly transforming into an "intelligent information society" that is often dubbed the "Fourth Industrial Revolution." The Fourth Industrial Revolution is an inevitable process prompted by the advancement of digitalization and informatization and is reorganizing the industrial map. The construction industry needs to proactively reinvent itself to keep up with these changes to improve its productivity and competitiveness. DICT is compiling local and international trends in the construction industry and quickly obtaining necessary technologies to actively respond to the needs of the Fourth Industrial Revolution. A newly established unit within DICT establishes and implements strategies to promote digitalization within the construction industry and aims to create a culture of digital construction and revolutionize the construction industry. As part of its efforts to secure relevant core technologies, DICT is currently developing and applying technologies in various fields, including construction IoT, construction automation, BIM design, PreCon response, AI and deep learning-based design, drone-based surveying and AR/VR technology. With these efforts as a basis, Daewoo E&C is strengthening its competitiveness in the construction industry by enhancing safety on construction sites and improving productivity. Ultimately, securing these core technologies will ensure that improved productivity through "super-connection, super-intelligence and super-convergence" promised by smart construction can be achieved.

#### Smart Construction Roadmap and Site Application

The DICT has established a roadmap for the systematic implementation of smart construction, and in 2016 the company launched the development of DSC (Daewoo Smart Construction) technology. As of 2019, the technology is currently in use at three highway construction sites in Korea. Daewoo E&C aims to enhance the DSC system and efficiently apply the technology to housing, architecture and factory construction sites domestically and to improve productivity and maximize profits. Smart construction is a "construction platform" that comprehensively combines information on all aspects of a construction sites – from its materials, human resources, designs, construction process and operations – through convergence between the construction industry and IT. This convergence allows the quick analysis of situations on construction sites and prompt responses to risks anytime and from anywhere. The platform ensures the highest level of work efficiency through highly advanced analytical processes on compiled data based on 3D models that contain detailed information on the construction site's design and construction and operational processes. Smart construction is also a "Cyber Physical System" (CPS) that can immediately comprehend all situations that occur on a construction site and predict risks in advance through the use of construction simulations, automated construction management and smart safety controls. Armed with a database that contains information on its construction projects, Daewoo E&C will be able to use "big data" to help resolve difficult and challenging issues on construction sites and implement a completely automated construction management system in the near future.

#### Smart Construction Roadmap

Stage 1 (~2018) Real-time monitoring/ alert technology	Stage 2 (~2021) Digital virtual site construction/ analysis technology	Stage 3 (~2025) AI data analysis/prediction technology
IoT device, mobile device (safety/labor data collection/warning) Establish a IoT monitoring system *Deployed to pilot site	Cyber Physical System (Information visualization, risk/process analysis) Expand the use of CPS *Deployed to new construction site	Trend analysis, AI prediction (Risk forecasting/optimization, control information) Optimize CPS-AI utilization process *Automation of quality/procurement management



## Major Technology Development

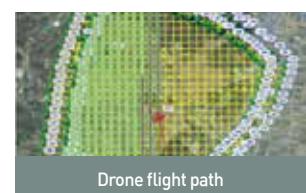
### Utilization on drone technology



Ground control point surveying



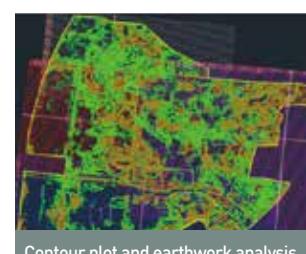
Drone flight



Drone flight path



Orthographical photograph/Generating Digital Surface Maps/3D Models



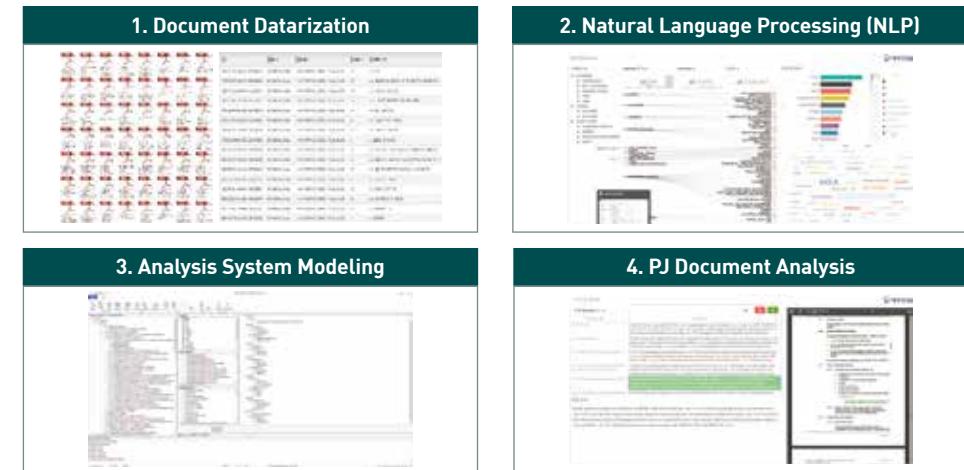
Contour plot and earthwork analysis

As part of the "Daewoo Smart Construction" project, Daewoo E&C is developing technology that uses drones in the construction field. Drones are one of the Fourth Industrial Revolution's major icons. The company has focused on the field of "construction surveying" for drones and is taking the lead in developing drone survey technologies such as displacement measurement methods using drones and patent applications for flat land creation methods. Through the development of drone surveying technology, the Daewoo E&C Institute of Construction Technology (DICT) has achieved more refined survey results through 3D modelling of construction sites that far exceed existing manpower-heavy surveying techniques. Based on these technological developments and achievements, Daewoo E&C has used drones on more than 40 construction sites and on the implementation of designs since 2016, and has used drones in both the construction site surveying and bid design stages since 2017. Since 2018, the company has also employed drone surveying in large-scale overseas bidding projects that have led to high-quality designs. Daewoo E&C actively uses drone surveys on large-scale industrial complexes, which are difficult to measure with existing surveying techniques, to analyze earth-volume, review seawall displacement and to manage the amount of reclamation in dredged reclaimed land. The superiority of drone surveys is even more remarkable when compared to conventional manpower-heavy surveying techniques. The first area drones display superiority over traditional surveying techniques is "accuracy." Drones enable Daewoo E&C to calculate soil volume more accurately by applying the 3D integral method as well as the conventional average sectional area surveying method. The second area drones have superiority in is "efficiency." Drone surveys maximize the efficiency of field surveys by cutting down time and costs by 90% compared to traditional manpower-based surveying techniques. For example, it used to take more than five days to survey a 10-kilometer section on a construction site. Drones, however, can complete this same task within two hours and provide quick and accurate data on the site's geographical features. Daewoo E&C's continued technological development on drone technology will allow the technology to become a critical part of all areas of the construction industry over the long-term. These areas include civil engineering, architecture, housing and factory-related facility maintenance and process management.

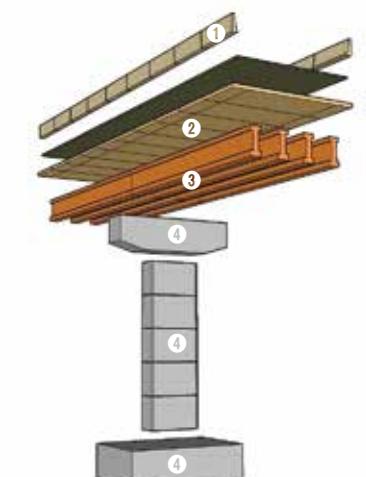


### Big Data-based Overseas Project Contract Management System

Overseas projects have contractual agreements that cover all areas to be followed by contractors. The first step to ensure the success of a project is the prompt and accurate analysis of these contractual agreements. A knowledge delivery system that is based on the experience and knowledge of experts, along with a cognitive document system and, finally experts, accurately analyze contractual agreements compiled in human languages within the database. The system allows humans to create higher added value. The system rapidly and accurately analyzes contractual conditions to ensure the successful implementation of the project and will be deployed across general contracts for overseas projects and major fields of design from the second half of 2019. Daewoo E&C's contract management system will significantly improve the company's competitive advantage in its implementation of overseas projects.



### Fully Prefabricated Bridge Technology



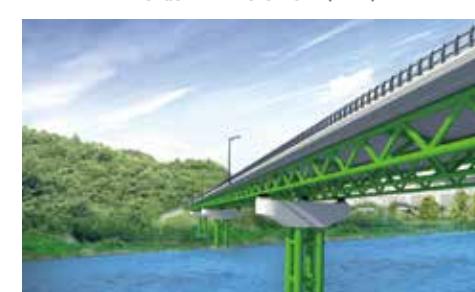
Daewoo E&C's "fully prefabricated bridge" minimizes the time required to construct a bridge on a construction site by using prefabricated bridge piers, girders, deck and barrier. The bridge is an innovative feat of engineering that reduces construction periods and enhances the construction process by allowing quick construction of a high-quality bridge. Daewoo E&C has ensured that the "fully prefabricated bridge" can be used as both highway and railroad bridges by developing precast concrete decks, precast concrete barriers, PnP girders, concrete filled tube girders and modular pier system. These technological developments will contribute to the improvement of the company's technological capacity.



Precast Concrete Deck (DPS)



PnP Girder (DPS+PSC Girder)



Concrete Filled Tube Highway Bridge + Modular Pier System



New-type of concrete Filled Tube Railroad Bridge

## Implementing Modular Construction Technology

The Korean construction industry has experienced increases in construction production costs and delayed construction projects due to an aging workforce, increases in labor costs due to insufficient supply and demand, diminishing construction quality due to the use of more workers from other countries, and a climate change-induced increase in days where construction work is impossible. DICT aims to cope with these changes in the construction industry through the development of modular engineering, which is a technology-intensive method of factory production. Modular engineering is the method of producing 60% - 90% of a construction project's materials into a box-type module in the factory before transporting these modules to the construction site and stacking them to complete the construction project. Daewoo E&C aims to use phased development of modular engineering technology to further innovate the company's construction-related production methods while diversifying its business and generating profits.



## Concrete Crack Reduction Technology for Apartment Projects (Expansion of Smart Concrete Crack Reduction Technology)

Following the strengthening of defect-related standards for apartments in 2015, there has been an increase in complaints about concrete cracks and defects that frequently occur in the process of constructing apartment frames along with an increase in the costs for repair and reinforcement. Daewoo E&C believes it is imperative to secure technologies that reduce concrete cracks with a view to strengthen its marketing capacity through enhancement of its brand image. The company is developing customized smart crack-resistant concrete that meets the demands of any structure and purpose with an aim to reduce cracks by 80% or more and decrease crack repair costs by 50% or more compared to existing concrete. Through this new technology, Daewoo E&C will improve the quality of concrete used in construction and enhance its brand image and maximize its profits.

### Causes of Cracks in Underground Parking Lot Slabs



## Construction Noise Management System (DW-CNMS)



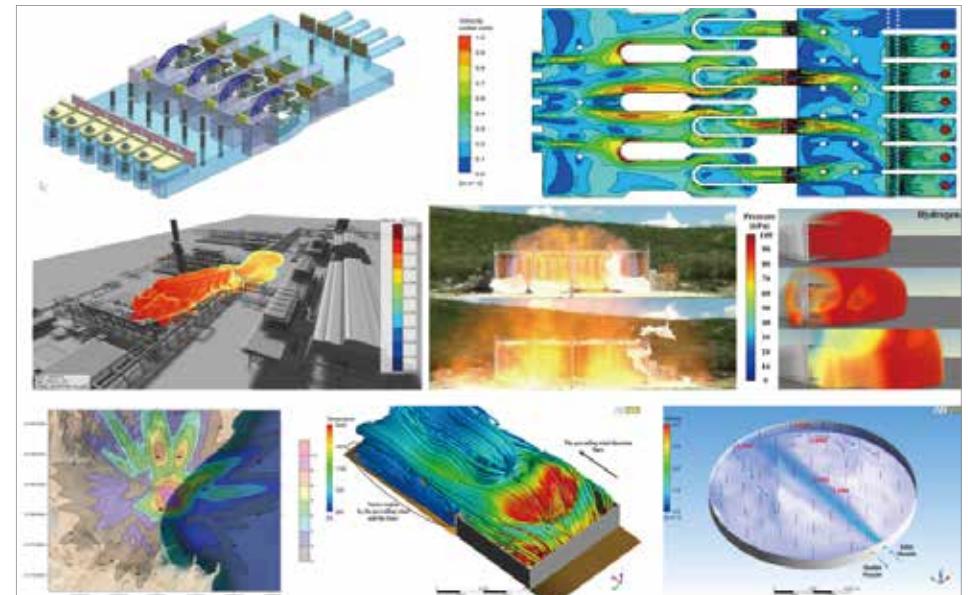
Automatic noise-measuring device and fine dust measuring device

The increasing desire for a better quality of life has led to a rise in interest toward the environment, including environmental noise. Statistical data compiled by the National Dispute Mediation Committee in December 2018, show that environmental noise greatly impacts people's daily life with complaints due to noise and vibration accounting for 85% of environmental disputes. DICT has developed real-time ICT technology that constantly measure the amount of noise from urban construction site. The data collected from this process can be managed systematically through wired/wireless Internet and smartphones. With the use of this technology, Daewoo E&C can systematically manage all kinds of noises and vibration that occur on construction sites. As of 2018, the technology has been deployed to ten construction sites in urban areas. Daewoo E&C aims to add monitoring of fine dust, an issue of growing importance in society, to the system as part of its efforts to create an even more pleasant residential environment.

## Computer Engineering Technology (Computational Fluid Dynamics + Structural Analysis)

The rapid development of computer technology has increased understanding held by engineers by simulating phenomena that had long been the focus of inquiry and bringing light to them in a physical manner. Huge facilities such as power plant that have a comprehensive set of different technologies in place generally have difficulty conducting experiments. These facilities can find suitable answers to the problems they face through computer calculations that review and forecast any potential problems. Computational fluid dynamics allow factories to confirm the movement of fluids such as gas and liquid along with the process of transmitting heat in advance and, through structural analysis, predict changes in solid matter. Computer-based engineering technologies are used across all kinds of factories and facilities onshore or offshore. DICT's newly developed technologies will significantly improve Daewoo E&C's competitive advantage in its implementation of projects.

### Computational Fluid Dynamics Case Study



## Enhancing Factory Offshore Structures



Many factories require offshore structures. Recent growth in the LNG market has led to more LNG exports and an increase in construction orders for terminals that can be imported. DICT has developed an automatic design program for offshore berthing and pier structures that are currently in use. Daewoo E&C plans to develop its own design technology that can be applied to import and export LNG terminal projects in the future. The company has independently designed its own offshore pipeline technology whose effectiveness has been confirmed through use in current projects. Daewoo E&C plans to use this technology in future onshore and offshore pipeline projects.



Training cost per capita in 2018 : KRW **643,135**

Training hours per capita in 2018 : **49** hours

## FUTURE MANAGEMENT

Future management by Daewoo E&C signifies our intention to develop an innovative business model to create growth-led business, contribute to developing HR capability and expand the value chain. For these goals, we establish a method of success suitable for new changes and develop capabilities for the next generation. Also implementing social contribution activities, trust-based labor-management culture by developing capabilities for executives and employees, strengthening the eco-friendly system.

### Major Issues

#### Business Impact

- Development of employee capacity
- Creating a labor-company relationship based on trust
- Reinforcement of eco-friendly system
- Conducting social contribution activities

#### Level of Stakeholder Interest

#### Opportunities

To enable a sustainable future by preemptively understanding the needs of employees, local communities, and the international community, we are striving to provide training programs that meet the needs of individual employees and build trust based labor-management culture. We also strive to contribute to the society from a long-term perspective through social contribution activities in local communities.

#### Risks

Issues related to organizational culture and labor-management relations have become a hot topic and have attracted much attention both inside and outside the company. Therefore, Daewoo E&C operates programs and systems to implement trust based labor-management culture. In addition, the construction industry is under pressure to decrease greenhouse gas emission and waste disposal, so we have systematic measures in place to respond to such changes in advance.

### SDGs and Major Issues of Daewoo E&C



## Issue1. Conducting Social Contribution Activities

Daewoo E&C selects local communities as major stakeholders and conducts social contributions to improve social values and reflect the character of the construction industry. The company moves beyond simple social contribution activities and aims to strengthen Korean society's sustainability by contributing to the resolution of its social and environmental problems while making efforts to meet stakeholders' expectations. Daewoo E&C will use the project management experience and infrastructure the company has accumulated over the past 45 or so years to ceaselessly make contributions to Korean society.

### The Social Contribution Activity System

In 2007, Daewoo E&C formed the "Daewoo E&C Social Service Group" made up of employees of the company headquarters, domestic and overseas sites and social volunteers. The company conducts social contribution activities through Relay-Volunteer-Program and carries out environmental cleanup programs for local communities and sharing programs for the socially disadvantaged on a regular basis. We continue to broaden the scope of the activities, and launched "Family Volunteers" Group which includes not only employees but their families. The group recently took part in mural painting activities for communities.

Social Contribution Organizational Chart



Major Social Contribution Activities

Major Targets	Major Sectors	Social Contribution Activities
People with disabilities Elderly people living alone Single-parent families	Environmental improvement Talent donation Sharing activity	Remodeling dilapidated facilities Donations to the UN Children's Fund Deliver coal briquettes, Making and sharing kimchi

### Social Contribution Activities Domestically and Overseas

As one of the best construction companies in Korea, Daewoo E&C expands the scope of its social contribution programs beyond the country to overseas and aims to deliver long-term value with sincerity by linking the programs to the company's business areas.

Area	Category	Major Activities	Notes
Domestic	Talent donations	"Building Houses with Hope" three times a year Support for field trips	Volunteer work by subsidiary employees Support for career experiences and special lectures
	Environmental improvement activities	Building Houses with Hope three times a year Cleaning Gyeonghuigung Palace Park	Volunteer work by subsidiary employees
	Sharing activities	Sharing coal briquettes, year-end "sharing of the love," group blood donations	Yangji Village in Sanggye 3- and 4-dong Relief work in Indonesia after the tsunami
	Other activities	Making baby shoes for infants up for adoption	Volunteer work with employee families
Overseas	Medical support	Support for free treatment of eye-related diseases	Morocco, India
	Living and environmental support	Providing those located near construction sites with water Other environmental improvement activities	Ethiopia, Singapore
	Educational support	Support for school supplies to kindergartens and orphanages	India

## Our Sustainability Topics



### The Building Houses with Hope Program

Daewoo E&C conducted the Building Houses with Hope program twice in 2018 during the first and second half of the year. Habitat Korea, which deals with residential issues and housing renovation projects in poverty-stricken regions, was the company's partner in planning the program. Employees from Daewoo E&C's Plant Division, Strategic Planning Division, Procurement Division, Q-HSE Services Division and PRUGIO Service Center participated in the program. The volunteers visited households that receive government support to survive and reside in dilapidated houses in Mapo-gu and Yongsan-gu. The volunteers put in new wallpaper, redid floors, and renovated sinks and insulations. The Building Houses with Hope Program reflects the unique character of Daewoo E&C, and the company plans to conduct the program six times in 2019 as its flagship CSR activity.

Date	Event and Participation Department
MAR	The 1 <sup>st</sup> Building Houses with Hope : Plant Division, Audit Committee, PRUGIO Service Center
APR	The 2 <sup>nd</sup> Building Houses with Hope : Housing & Building Division, Value-Up & Innovation Division
JUN	The 3 <sup>rd</sup> Building Houses with Hope : Civil Projects Division, Q-HSE Services Division, PRUGIO Service Center
JUL	The 4 <sup>th</sup> Building Houses with Hope : Daedahong [Daewoo E&C college student ambassador group]
SEP	The 5 <sup>th</sup> Building Houses with Hope : HR Corporate Management & Service Division, Strategic Planning Division
OCT	The 6 <sup>th</sup> Building Houses with Hope : Procurement Division, Finance Division, PRUGIO Service Center

### 2019 Building Houses with Hope Program Plan (Tentative)

Daewoo E&C runs a college student ambassador program each year to build a youthful corporate image and conduct CSR activities. In 2018, the company ran the Building Houses with Hope Program and conducted activities ranging from improving traditional market environments to cleaning up protective care facilities for abandoned pets along with 36 college student ambassadors. The activities related to interior improvement was particularly meaningful because it delivered social value that both put Daewoo E&C's abilities on display and linked up with the areas of interest held by college student ambassadors. Along with its college student ambassadors, Daewoo E&C will continue to spread vitality and passion throughout society as part of its efforts to fulfill its social responsibilities.

## Issue2. Developing Employee Capacity

Daewoo E&C recognizes that developing the competency of its employees is both an asset and the engine for heightening the company's competitiveness. Accordingly, the company strives to create a corporate culture centered on effectively managing its human resources. Daewoo E&C fosters its recruiting and implementing a human resources development system through fair and equal opportunities, and conducting rational performance evaluations, and contributing to addressing social inequalities such as the prohibition of discrimination against the socially disadvantaged, such as women and the disabled.

### Human Rights Policy

Daewoo E&C has enacted the human rights policy to reinforce human rights protection and fulfill its social responsibility by reflecting issues related to the protection of human rights. These include the Labor Standards Act and international standards such as ILO Declaration and OECD Guideline in performing tasks by employees. Details of the policy are based on the Constitution of the Republic of Korea, labor-related laws, prohibition of discrimination against ethnicity and religion and forced labor.

### Transparency-based Recruitment of Talent

Daewoo E&C held the Job Café to provide applicants with the opportunity to acquire sufficient information about the company and desired job positions. Existing job fairs for each university had limitations in providing many students with the opportunity; we have adopted a pre-online application system in the job fair and changed the form into the Job Café. With the changed system, applicants acquire customized information about the desired job and detailed information about the applied company through one-on-one consultation with senior employees working at the actual site, while the company recruits remarkable employees who are the most suitable for the company's organizational culture, not just based on a simple background.

In 2018, the Job Café was operated seven times from September 10 to 18 and attended by a total of 363 job seekers.



#### Job Café Operation

- Held seven days in Seoul/Gyeonggi-do and in four major local regions
- Four people per hour/Reservation system
- One-on-one job consultation with veteran employees in each job, and introduction to the company and the recruitment process

Sep. 10 (Mon)	Sep. 11 (Tue)	Sep. 12 (Wed)	Sep. 13 (Thu)	Sep. 17 (Mon)	Sep. 18 (Tue)	Sep. 19 (Wed)
Busan	Daegu	Gwangju	Daejeon	Headquarters	Summit Gallery (Seoul)	

## Human Resource Development Structure

### I . HRD Action Plan by New Vision

Vision

## Build Together

Realizing best value together with the customer

Strategic goal

HRD Action plan

## Global Top 20

Sales of **KRW 17 trillion** and operating profit of **KRW 1.5 trillion** by 2025

### Support for new vision & core strategies

#### Core strategies

##### Advancement of performance capability

- Organizing domestic/overseas training courses
  - Diversifying and advancing training courses
- Support for cultivating local experts
  - Language and different culture in a new business country

##### Reinforcement of marketing capability

- Support for cultivating local experts
  - Language and different culture in a new business country

##### Securing a new growth engine

- Reestablishing a code of conduct for core values
- Developing a program to internalize core values

- Reestablishing a code of conduct for core values
- Developing a program to internalize core values

### Fulfillment of consultants' roles for organizational changes

- Establishing class-based leadership education system
  - Establishing a communication course for managers

"Performance-Centered HRD to contribute to achieving goals by aligning vision and strategy"

### II . Current Status of HRD System

HR model

People with challenging and passionate spirits, who fulfill their responsibilities with confidence

Strategic task

#### Core value/vision sharing and action-oriented performance

Internalizing core value and spreading communication-based corporate culture

#### Performance-oriented leader cultivation

Establishing leadership pipeline by reforming job/role-based education system

#### Development of job experts and global talents

Early development of junior position and establishing strategic cultivation job education system

#### Establishment of on-site learning support system

Performing the role of control tower by operating system and institution and connecting with HR system

Sub-track

#### Value/introductory track

- Introductory course for new employees
- Mentoring for new employees
- Overseas site trip by new employees
- Together Challenge
- Introductory course for experienced and professional/recruited employees
- Team synergy workshop (OD)
- Employees awareness survey, etc.

#### Leadership/Core HR track

- Newly appointed executives
- Highest executives
- Leadership for new team leaders/on-site directors
- Leadership F/U for team leaders/on-site directors
- Domestic and overseas training
- Course for promoted employees at each position
- Insight seminar/class

#### Global/Job track

- Common job capability education system (negotiation, planning/proposal, PT, accounting, OA, BIM)
- Jobs in the winter
- Improving PM capabilities (every two years)
- Real-estate developer
- Process management
- Contract/Claim management
- Legal education for technicians, etc.

#### Learning support and system operation

- Barobaeum (cyber training center)
- Sharing Class
- HRD committee workshop
- Support for external training (E-HR)
- Operation of education credit system, etc.

Review/Improve each track every year based on internal and external environmental changes and internal demands

## Fair assessment and reward system

### Improvement of Performance Management System

Daewoo E&C improved its employee assessment program as part of its efforts to promote a performance-based corporate culture. The assessment measures for the company's management was redesigned for more fairness and transparency by enhancing quantification and objectification with detailed KPI and adopting assessment verification procedure through Management Evaluation Committee. The company applied global performance management trend that emphasize cooperation and teamwork, and improved its assessment systems to reduce seniority/promotion centered HR practices and promote task/performance centered HR culture.

### Assessment and Reward System

Daewoo E&C has implemented fair and transparent evaluation by adopting the management by objective (MBO) approach and strictly prohibits discrimination based on gender, level of education, nationality and other personal characteristics. For all employees, evaluation reflects individual job performance and contribution to corporate performance, and determines individual performance ratings based on which the company differentiates salary increase rates. In 2018, detailed coaching and feedback is improved. Employees can appeal the results of the evaluation of performance. Daewoo E&C will continue to implement a compensation system based on fair and non-discriminatory performance.

## Overseas HR Management

### Expanding the Pool of Outstanding Foreign Employees

Daewoo E&C has established and managed its global talent pool with a basis on the BAROCON system as part of its efforts to retain outstanding foreign employees. The company continually updates the pool of outstanding foreign employees each year through a detailed work proficiency survey on outstanding foreign workers recommended by overseas construction sites. Daewoo E&C ensures outstanding foreign employees continue to be retained by the company through management of their career history and recent work experience.

### Support for Overseas Labor Management

Daewoo E&C publishes a labor management work manual for overseas sites and headquarters staff members about countries the company has new projects in or countries the company has conducted projects in the past and new projects have begun. The manual presents a comprehensive introduction to labor management issues in each country, from the recruitment of local employees to follow-up management. Through continuous improvement of the BAROCON system, Daewoo E&C monitors and manages a range of data required for labor management including: 1) the return of an employee back home in the middle of an overseas project; 2) re-employment procedures; 3) contract extension procedures; and, 4) statistics on the wages of foreign workers.

## Change management

### Life Vision Plus for Designing Employee futures

Daewoo E&C operates a regular program to help employees design their future based on the growing need to plan out their lives and manage change across their life-long careers with the company. In 2018, the company provided a 16 hour, one night, two day long change management training with a view to provide middle-aged employees with the tools to prepare for the second phase of their lives. The training helped them understand their own personal changes and how to deal with anxiety by examining their own mindsets and designing their future lives. Training participants were given the time to reflect on themselves with the phrase "Knock On Change!" as part of the trainings efforts to help them respond to the changing global environment and think about their lives after retirement. Daewoo E&C's training will continue to provide trainings that are focused on the areas of interest held by future participants.

#### Life Vision Plus Curriculum



Curriculum	Topic
Change Management	Perceived change situation through life history writing
Open mind	Relation through empathy
Balance of Income&Expenditure	Asset management and manage cash flow
Career Design	Find own strengths and establish a systematic plan for ideal life
Health Care	Health management know-how and training methods
Tax-tech of inheritance	Manage your assets through inheritance bestowed by trends
Career Management	Utilizes strengths and experiences to improve performance

Daewoo E&C employees participate in the "Sharing Class" and share their various talents, techniques, experiences, and professional know-how. In April and August 2018, employees took part in an event called the "Trend Insight #AR/VR" to share knowledge and construction market analyses to help them respond to global technological changes such as virtual reality and augmented reality. The event used modeling data of AR/VR technologies that are applicable to construction work and promoted the strengthening of company-wide communication about job competency and R&D.

#### 2018 Sharing Class

**TREND INSIGHT #AR/VR**  
--- 2018 Sharing Class ---

**[건설업무에 활용되는 AR/VR 기술]**

일 : 2018.08.22(금) 11:00 ~ 12:30  
장 : 본사 대홀 헌법기념관 회의실  
감 : 시·군별민 관광 / IT 기획팀  
정 : 50명  
진행기간 : 2018.08.22(금) ~ 08.27(수) 10:00  
신청방법 : 바로가기 → 신청하기 → 교육관련 → 세미나신청  
주제내용

(간접입력 제작자는 AR/VR 기술 전문  
교수 및 청중 분석, 시연 및 세션)

### Issue3. Energizing Organizational Culture

Daewoo E&C strives to strengthen the company's warm-hearted and tolerant corporate culture by enhancing company-wide campaigns and employee communication channels. The company will continue to energize the company's organizational culture through a range of activities such as "Break the Wall Campaign" and by placing an emphasis on communication and collaboration.

#### Trust Based Organizational Culture

Daewoo E&C runs a childcare leave system for all its employees. The company has expanded the system for childcare support by shortening working hours for employees with children, implemented a flexible working system and provided family-care leave. Daewoo E&C further has a system to protect pregnant employees and employees with a pregnant spouse by reducing their working hours, allowing them leave before and after childbirth, and providing paternity leave. In 2016, the company opened the PRUGIO Daycare Center to address childcare-related issues faced by its employees. A total of 37 children attend the daycare center as of 2018.



Lunch with CEO



New year's greetings

#### Corporate Culture Campaigns

Daewoo E&C conducts a range of campaigns to create a healthy corporate culture. The "From Now, From Me" campaign, which began as part of efforts to create a healthy company and corporate culture, originated from the conviction that small, individual-based practices can serve as engines for company growth and future development. This campaign selected a total of 8 practical tasks. These tasks included: a proactive attitude toward work, a clear work commitment, a lateral approach to decision-making, outstanding team-work, smart reporting and strict company security. Daewoo E&C produced and distributed campaign posters throughout the company to encourage the achievement of these tasks. The company will conduct an even greater range of campaigns in the future to establish a proactive and healthy corporate culture. Also Daewoo E&C held a contest to think of slogans and ideas to improve the company's work culture following the implementation of the 52 hour-per-week work policy. The contest was held under the theme of "Do & Don't" to improve work productivity, ensure employee work-life balance, establish a stable working hour adjustment system, and improve work concentration and prevent overtime. The slogan "Valuable Work Time and Leisure Time Together" was selected as the winner. Dos and don'ts selected through the contest included "Short and Brief Meetings that Report Only Major Points" and "No Repetitive Meetings with Many People." with these slogans, the company will promote the 52-hour work week system and continue to enhance employee mindsets toward work.



'From Now From Me' Campaign

### Welfare and Benefits for Employee Happiness through family-friendly system

Daewoo E&C runs a range of welfare and benefit programs aimed at ensuring its employees are happy and achieve a work-life balance. The company's welfare programs include a childcare leave system, adjusted working hours for employees with children, health management, and time off to enjoy culture and leisure activities. The company understands that employee happiness directly impacts their work and the sustainability of the company and will ensure employees continue to receive superior levels of welfare and benefits.

#### The PRUGIO Daycare Center



Daewoo E&C runs a childcare leave system for all its employees. The company has expanded the system for childcare support by shortening working hours for employees with children, implemented a flexible working system and provided family-care leave. Daewoo E&C further has a system to protect pregnant employees and employees with a pregnant spouse by reducing their working hours, allowing them leave before and after childbirth, and providing paternity leave. In 2016, the company opened the PRUGIO Daycare Center to address childcare-related issues faced by its employees. A total of 37 children attend the daycare center as of 2018.

#### Children Drawing Contest with Jung Dae Woo

On June 2, 2018, Daewoo E&C held the "Children Drawing Contest with Jung Dae Woo" and employees and their family members had an excellent time. Held at the Children's Grand Park, the event was attended by employees from all of the company's Korean and overseas construction sites and their elementary school-level children. About 300 employees and their family members participated in the event, which was held under the theme of "My Happy Family and House I Want to Live In." Outstanding pieces of artwork were posted on Daewoo E&C's intranet. The company will continue to energize communication with its employees and their family members in diverse ways.



#### "More Precious than Flowers" Event with Parents

In 2018, Daewoo E&C conducted the fifth "More Precious than Flowers" event. The event was held over one night and two days and the parents of employees were invited to enhance employee pride and a sense of belonging in the company. The company invited 36 employee parents and toured the company's headquarters, Summit Gallery, Songdo Sheraton Hotel, Siheung Central PRUGIO and DICT.



### Implementing the 52-hour Work Week to Reduce Employee Working Hours

In accordance with the partial amendment to the Labor Standards Act on July 1, 2018, Daewoo E&C organized the Working Hours Reduction task force (TF) in April 2018 as part of efforts to actively respond to the changed system before the new legislation took effect. The TF studied and analyzed different work types at each construction site and established a plan for standardizing working hour reductions through the use of Korean and overseas pilot sites and labor-management monitoring and workshops. Upon implementation of this plan, the company also held discussion forums with the CEO and education programs for employees. Daewoo E&C has worked to ensure the changes in the system are put into place early on by improving its e-HR system, which is based on the introduction of a flexible working system. While overseas sites improved their valuation system based on a three-month flexible working system, company headquarters and Korean constructions sites have adopted the PC-OFF system as part of their efforts to take the lead in "Smart Work" into practice.

### Mind-care Counseling Center

Daewoo E&C runs the Mind-care Counseling Center to promote employee emotional health. The program offers consultations for employees by a professional psychiatrist, a consulting program to improve the relationships between parents and children, and career consultations to help children choose career paths. The center also conducts face-to-face counseling to address on-the-job stress and management of emotions. In 2017, a total of 95 employees visited the center, and 135 employees used the center in 2018. Daewoo E&C will continue to commit itself to promoting and managing the mental health of its employees.

### Health Improvement Programs

Daewoo E&C conducts three major health campaigns to help employees effectively manage their health. The program is run in the first and second half of the year and include a metabolic syndrome prevention and anti-smoking campaign, blood donation campaign and CPR simulation education program.

Anti-smoking Campaign



### Our Sustainability Topics

#### Issue4. Improve an Environmental Management System

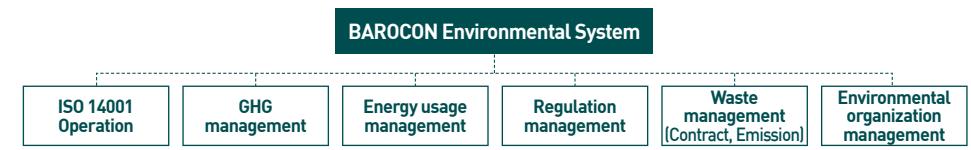
##### Establishing an Environmental Management System

###### Environmental Management System

Daewoo E&C acknowledges the increasing importance of environmental management, and thus our internal systems aim to fulfill our responsibilities as a corporate citizen. We thoroughly respond to stakeholder demands regarding the environment, and have implemented various proactive measures to ensure our operations comply with domestic and overseas regulations.

Environmental Management Policies	Environmental Management Targets
<ul style="list-style-type: none"> <li>Implement EMS in accordance with ISO14001 standards and complying to environmental laws and regulations</li> <li>Minimize environmental impacts of business operations</li> <li>Respond to stakeholder demands regarding the environment and climate change</li> </ul>	<ul style="list-style-type: none"> <li>No violations of environmental laws and regulations</li> <li>Establish and achieve energy and resource-saving targets</li> <li>Establish and achieve targets for waste processing costs compared to sales</li> </ul>
<b>Environmental Management: Mid- and Long-term Plans</b>	
<ul style="list-style-type: none"> <li>Zero violations of environmental laws and regulations</li> <li>Establish energy / resource targets</li> <li>Establish waste emissions targets</li> </ul>	

###### BAROCON Environmental System



##### Environmental Management Organization

###### Environmental Management Chart

To systematically implement environmental management, Daewoo E&C established Corporate HSE Team and an Global HSE Team within the Q-HSE Services Division, which is under the direct leadership of the CEO. The two teams are responsible for supervising the company's environmental management system.



##### Appointing Environmental Managers

###### On-site Environmental Management Organizational Chart

Each construction site is assigned three managers to ensure that the environmental management system is intact. These personnel are in charge of all environmental needs including GHG emissions, documentation, on-site environment (fugitive dust, noise & vibration, etc.) and also responding to any complaints. Roles and responsibilities are evenly spread across administration, project control, and construction teams to ensure a system of checks and balance.

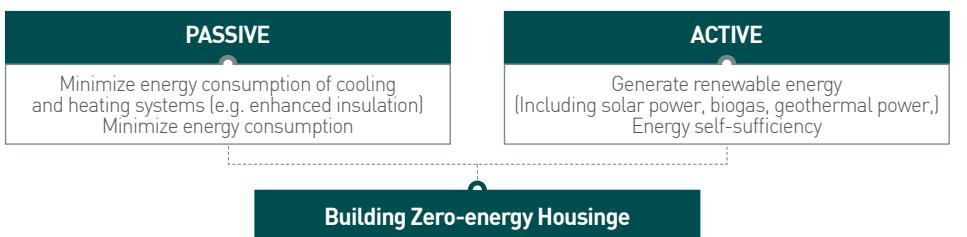


## Eco-friendly Construction

Daewoo E&C has implemented a systematic and eco-friendly construction process as part of its efforts to respond to heightening demands for environmental management due to fine dust, climate change and other environmental issues. The company has also implemented proactive environmental management policies that include the development of eco-friendly products and technologies, and it is making every effort to take the lead in establishing environmentally-friendly infrastructure within the construction industry. Daewoo E&C will continue to maximize its energy efficiency and develop its renewable energy technologies.

## Constructing Eco-friendly, Zero-energy Housing

Daewoo E&C aims to construct completely energy self-sufficient housing through the development of energy-saving technology called the "Green Premium." Apartments with "Green Premium" technology will have real-time energy monitoring systems that will save energy and allow residents to control gas, lighting and security settings, and even call elevators from inside their own homes when needed. The technology will allow apartments to manage energy use through a real-time remote meter-reading and monitoring system that collects and analyzes data related to electricity, gas, water, hot water and heating. These developments will allow Daewoo E&C to construct zero-energy housing through the convergence of passive technology in the field of energy-use reduction and active technology in the field of energy self-sufficiency.



Building Zero-energy Housing

## Implementing a Renewable Energy Business

In response to the Paris Climate Agreement and the Ministry of Trade, Industry and Energy's "Renewable Energy 2030" plan, the company is pursuing a range of renewable energy projects in the fields of solar, wind, and biogas. For example, in the solar photovoltaic sector, Daewoo E&C is taking part in the "Jeju Solar Photovoltaic Energy Project," which is being supported by the Jeju Special Self-Governing Province. Construction on the project began in April 2018 after its contract was signed in September 2017. The company is replacing existing sources of energy on Jeju Island with renewable energy sources through the use of former tangerine gardens and jointly owned village land to generate profits for the local community. Daewoo E&C is strengthening the basis for mid- and long-term business growth through renewable energy projects and facility renovating projects that use eco-friendly technologies.

The Current Status of Renewable Energy Projects

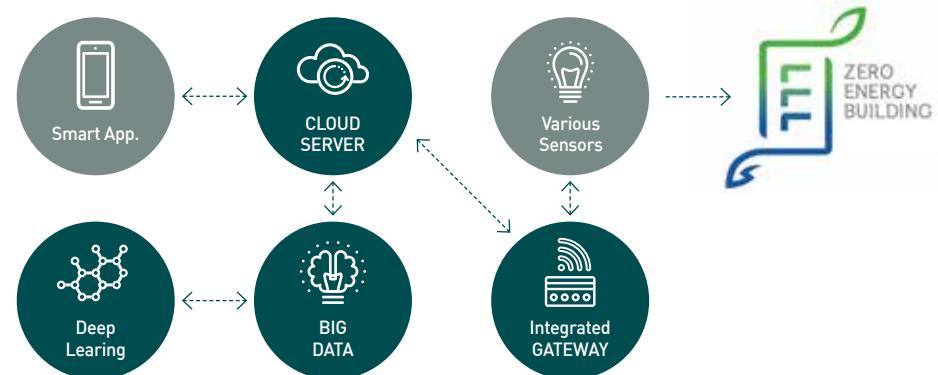
Sector	Project	Period
Solar photovoltaic energy	Jeju Solar Photovoltaic Energy Project	September 2017~
Onshore wind energy	Haenam Wind Power Energy Project	
	Yeongwol Wind Power Energy Project	
	Ulijin Wind Power Energy Project	
Offshore wind energy	Seonamhae Offshore Wind Energy Project	
	Jeollanam-do Offshore Wind Energy Project	

## Major Eco-friendly Technology Development

### Energy Management System Integrated into Smart Homes and Apartment Complexes

To more proactively cope with the expansion of the Fourth Industrial Revolution and rapidly changing global construction trends, Daewoo E&C is building an energy management system integrated into smart homes and apartment complexes. The company recognizes that the efficient use of energy and the reduction of GHG emissions are a national and global mission. For more efficient energy use over the mid-and long-term, technologies, such as energy pattern recognition using Big Data and IoT(Internet of Things), efficiency enhancement with the real-time and predicted data, are recently receiving attention. DICT aims to improve Daewoo E&C's level of customer service through efforts to establish a standard communication system and data collection protocol that can effectively identify indicators related to energy use, the residential environment and facility operations, along with technology that can both analyze and utilize the compiled data.

Smart Homes and Apartment Complexes System



### Suction-type Foundation for Offshore Wind Power

Daewoo E&C's suction-type foundation for offshore wind power was designed and developed through research funded by the Ministry of Oceans and Fisheries (Project Name: Development of design basis and concrete technologies for offshore wind turbine support structures/20120093). This foundation was developed using the advantages of a suction-type foundation, which is inexpensive and for easy and swift installation. The suction-type foundation is made out of concrete material, which, compared to steel, is better at resisting changes in shape and is less susceptible to fatigue and corrosion. Three cells are installed inside the mono-pod suction-type foundation and this allows operators to control its vertical position during the construction and operational process. Compared to existing jacket foundations made out of steel, this suction-type foundation reduces construction costs and shortens installation periods. This suction-type foundation ensures that Daewoo E&C complies with both the "Paris Climate Agreement" and the Korean government's "Renewable Energy 2030" plan.



## Strengthening Environmental Education

Daewoo E&C recognizes that its employees have a duty to preserve the environment. The company has expanded environmental education from only being held for environmental managers to an educational program focused on the need-to-know information for all construction site employees as part of its efforts to improve company-wide environmental awareness.

Environmental education Chart

Title	Program Title	Date	attendees
Main program	Environmental Manager Capacity Building Program	1 <sup>st</sup> : 04.05 / 2 <sup>nd</sup> : 05.18 / 3 <sup>rd</sup> : 11.29	102
Supplementary training	Administrative Manager Training	1 <sup>st</sup> : 10.29 / 2 <sup>nd</sup> : 10.29 / 3 <sup>rd</sup> : 11.05 4 <sup>th</sup> : 11.06 / 5 <sup>th</sup> : 11.06 / 6 <sup>th</sup> : 11.07 7 <sup>th</sup> : 11.07 / 8 <sup>th</sup> : 11.12 / 9 <sup>th</sup> : 11.12	465
Monthly Training	Site Environment Management Training [Civil Project Division] Site Environment Management Training [Housing and Building Division] Site Environment Management Training(Plant Division)	1.1~12.31	3,154 12,361 3,536
Total			<b>19,516</b>

## Responding to Climate Change

Daewoo E&C has committed itself to preparing a response system for the continuous reduction of GHG and identifying new opportunities through the implementation of energy-efficient improvement measures. The company continuously monitors GHG emissions in real-time given that the construction industry faces high-levels of GHG emissions from the beginning to the completion of a project.

## Carbon Footprint



Greenhouse Gas Inventory – Greenhouse Gas

Daewoo E&C operates a greenhouse gas emissions management system to preemptively cope with the global environmental issue of climate change mitigation. Since 2012, we have improved the integrated management system BAROCON and added the greenhouse gas inventory system. With this change, we have successfully and effectively managed GHG emissions and measured the amount of energy use in all business sites and buildings. As each division sets its reduction target, GHG emissions compared to sales are automatically calculated with a monthly reduction target, this system automation has achieved the advanced greenhouse gas management system.

## Energy Management



GHG Inventory - Energy

Daewoo E&C conducts real-time monitoring on the amount of energy used by each construction site, building and energy source as part of its efforts to ensure systematic energy use. The company also operates an energy usage reduction program for all employees at its headquarters and at DICT to enhance company-wide awareness about how to efficiently use energy.

## Establishment of GHG Emissions Reduction Plan

Environmental Information Disclosure	Every June
CDP	Every July
IR Report	Every July
IR Report	Reported on a quarterly basis

As a response to the national GHG emissions basic plan and basic roadmap by 2030, Daewoo E&C aims to reestablish a mid- and long-term action plan for GHG emissions reduction and conduct company-wide reduction activities. We will reinforce real-time monitoring for a reduction target, encourage business sites (based on those with a large amount of emissions) to conduct reduction activities, seek company-wide GHG emissions items and expand reduction activities. We will also preemptively deal with requests to disclose information related to GHG emissions to enhance transparency and trust between stakeholders. Report on the establishment and results of GHG emissions reduction plan is made public to stakeholders on a regular basis.

## Management of Air, Waste and Hazardous Chemicals

### Air

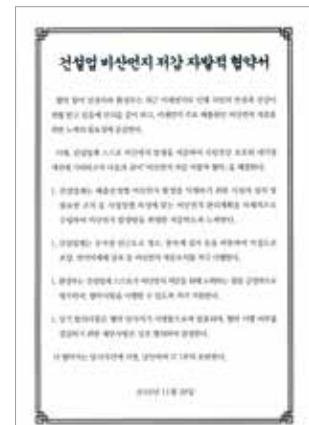
Daewoo E&C participates in the "Voluntary Agreement between the Ministry of Environment and Construction Companies for Reducing Fugitive Dust." In 2017 and 2018, the company proactively implemented both the required and recommended areas of the agreement on 66 construction sites and completed the development signed the for real-time monitoring of construction site performance. In 2019, Daewoo E&C will sign the "Voluntary Agreement for Coping with Highly Concentrated Fine Dust" with the Ministry of Environment and continue its voluntary efforts to address fine dust-related complaints to protect people's health and improve air quality.

### Waste

The Framework Act on Resource Circulation went into effect in January 2018. The act is aimed at reducing the generation of wastes that can cause environmental pollution if buried or burned, with an exception for recyclable construction wastes such as recycled aggregates. Daewoo E&C has further strengthened efforts to prevent generating such waste and has implemented strict recycling standards for any waste generated from construction sites.

### Hazardous Chemicals

Daewoo E&C strictly manages all hazardous substances that are handled on construction sites to prevent the pollution of neighboring areas due to accidental hazardous chemical leakages or discharges. The company transparently and properly manages the entry and final disposal of all hazardous substances on every construction site. In 2018, Daewoo E&C made efforts to reduce hazardous chemical-related risks on all its construction sites by replacing existing hazardous substances with eco-friendly alternatives on 23 facilities that handle highly-concentrated hazardous chemicals.



Voluntary Agreement for Reducing Fugitive Dust



Agreement for Fine Dust



Acquired Anti-Bribery Management System

# ISO 37001

for the first time in the construction industry

Held **34** meetings with suppliers

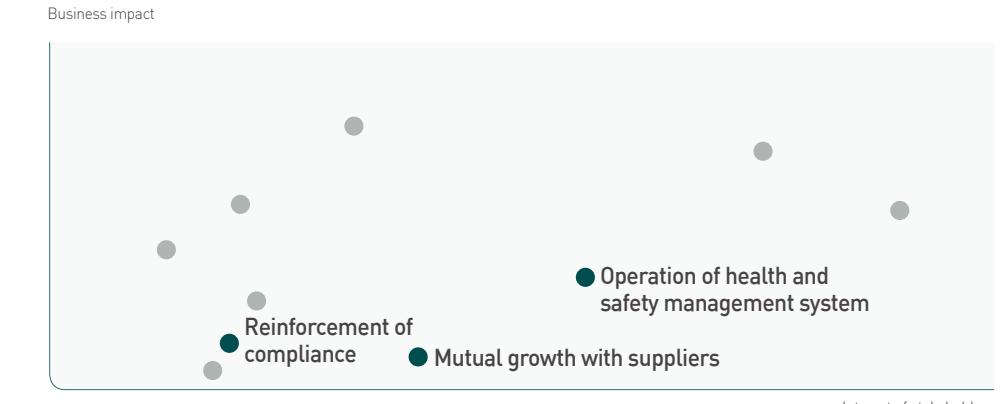


Our Sustainability Topics

## RIGHTEOUS MANAGEMENT

Daewoo E&C strives to fulfill its corporate social responsibility, conduct fair management activities and reinforce compliance. We operate various programs to fulfill social responsibility by providing fair opportunities, mutual growth, customer safety and on-site health and safety management. The company will constantly analyze the environment to fulfill corporate responsibilities and roles and contribute to meeting social needs.

### Major Issues



### Opportunities

Social interests in the safety of not only field workers but also members of partner companies are increasing, and the importance of safety and health management system has been strengthened accordingly. Daewoo E&C operates the safety and health management system based on its "CLEAR" safety culture.

### Risks

To become a company that grows through transparent and fair management, Daewoo E&C received the certificate for Anti-Bribery Management System[ISO 37001] for the first time in the Korean construction industry and set ethical standards for all employees. In addition, we are taking the lead in integrity management through regular meetings with partner companies for mutual growth.

### SDGs and Major Issues of Daewoo E&C



## Coexistence and Mutual Growth

Four Major Elements in the Guidelines by Fair Trade Commission

1. Contract guidelines for Win-win cooperation
2. Guidelines for selecting and operating suppliers
3. Guidelines for installing and operating an internal review committee for subcontracts
4. Guidelines for issuing and preserving desirable written statements for subcontracts

## Strengthening Coexistence with Suppliers

**Daewoo E&C has taken the lead in settling a culture of mutual growth in the construction industry as we established Business Partnership Management Team (currently Business Partnership Planning Team) as a department in charge of mutual growth for the first time in the construction industry in 2000 and served as an organizer for the joint proclamation ceremony of fair trade and mutual growth agreement with ten construction companies in 2011. We maintain relationships with various suppliers and support them to reinforce self-sufficiency by focusing on the possibility of mutual growth through partnerships based on the philosophy of "growth of suppliers means the growth of Daewoo E&C".**

Daewoo E&C conducts various support activities to promote mutual growth with suppliers. Reinforcing partner relationships through funds, education support and meetings is leading to improving the competitiveness of suppliers and mutual growth, and communication programs to strengthen mutual bonds contributes to developmental partnerships between Daewoo E&C and suppliers. In addition, we have independently established and operate principles to respect the physical and intellectual properties of suppliers. We also established the four major elements in the fair trade guidelines for partnerships between large-scale companies and SME and complied with the rules in signing a contract. These guidelines are notified on our website.

Support for Coexistence with Suppliers



Daewoo E&C has focused on supporting suppliers to establish the foundation for self-sufficiency to reinforce coexistence and cooperation with suppliers. As of 2018, we have created a mutual growth fund of KRW 28 million and granted loans to suppliers, and have also exempted and relieved suppliers with exceptional and outstanding performances from performance bonds to help address financial burdens.



To promote the practical growth of suppliers, Daewoo E&C provides supplier education programs based on quality, construction and HSE (Health, Safety, Environment). We operate four education courses on construction jobs, Subcontracting Act and Framework Act on the Construction Industry to improve the job capabilities of suppliers' employees; in 2018, a total of 179 employees completed education. The company also conducts safety and environmental education for on-site directors of major suppliers, new suppliers and the CEOs of new suppliers.



With the aim of fulfilling social responsibilities based on coexistence with suppliers, Daewoo E&C provides support to improve awareness of sustainable management and address any problems. We conduct a "Clean Holidays Campaign" to enhance the mindset for ethical management by suppliers. We offer benefits such as exemption of penalties for suppliers achieving outstanding performances in the supplier improvement program results. By designating Safety Inspection Day, we hold a safety activity briefing and session for suppliers' CEOs and on-site directors and encourage them to participate in implementing sustainable management.



Daewoo E&C invites the employees of excellent suppliers to a Mutual Growth Conference to share policies and programs related to mutual growth. We also held a meeting and invited the CEOs of 33 suppliers to promote communication between suppliers and share information. The company also operates the unfair transaction reporting center through the supplier communication channel "e-Cos", which solidifies a role as a communication channel for coexistence with suppliers.

## Agreement on Mutual Growth Financial Support between Daewoo E&C and KDB

On April 25, 2018, Daewoo E&C signed an agreement of financial support with the KDB to achieve mutual growth with suppliers. Both Daewoo E&C and KDB created the mutual growth fund of KRW 28 billion in total. With this fund, about 400 suppliers of Daewoo E&C can benefit from reduced interest rates for loans from the KDB. Various coexistence programs are currently run based on the belief that the development of suppliers with remarkable technology skills and high potential of growth can lead to the growth of Daewoo E&C. These efforts will be the foundation for the development of construction industry in the future.

## Our Sustainability Topics

### Shared Cooperative Association for Balanced Development

Our efforts to operate a cooperative association to ensure balanced development and sustainable growth with suppliers were recognized, so Daewoo E&C was ranked 1st among construction companies in the mutual cooperation evaluation of balanced development with construction companies and efficient construction performance in 2018. This achievement can be attributable to our efforts to establish a long-term coexistence model as "KEEP COOP (Key Environment Engineering Professional Cooperation)" to improve technology competitiveness between suppliers and create added value and to establish "4S Structure Safety Cooperative Association" to create a cooperative culture for coexistence. The company will continuously prepare measures for coexistence and mutual growth with suppliers.

#### Operation of Shared Cooperative Association

Category	Detailed implementation	Purpose
4S Structure Safety Cooperative Association	Total engineering service regarding structural safety throughout the entire construction period from design to construction and maintenance after completion	Establish a new mutual growth model combining Daewoo E&C's technological competence and practical skills of SMEs in the field of structural safety
KEEP COOP (Key Environment Engineering Professional Cooperation)	Total service in all business areas including core material production, integrated management S/W development, design, diagnosis, plant building, trial operation and Maintenance	Overcome SMEs' structural limitations such as shortage of research personnel and lack of technological competence, and strengthen business competitiveness by securing new high-value added business areas

### Meeting with Suppliers

No. of Employees Participating in the Meeting with Suppliers

2016	2017	2018
110	100	101

#### 2018 Meeting with Suppliers (total 34)

- Excellent / Mutual Growth Meeting with Major Suppliers 1(for Outside Suppliers)
- Material / medium-term business partnership mutual Growth Meeting 1 (for material / medium-term cooperation company)
- Material supplier meeting 32 (by general material item)

#### Mutual Growth Conference

Daewoo E&C has taken the lead in creating a culture of mutual growth in the construction industry as we established Business Partnership Management Team (currently Business Partnership Planning Team) as a department in charge of mutual growth for the first time in the construction industry and served as a major supervisor for the "joint proclamation ceremony for fair trade and mutual growth agreement with ten construction companies" in 2011. For instance, we provide collective training for suppliers' executives and practical education for site management by employees. We also hold meetings to reinforce communication with suppliers. In February 2018, the proclamation ceremony for safety innovation was attended by suppliers' CEOs to ensure commitment. In the technology research support sector, we improved technology skills among suppliers by holding a technology presentation and supporting joint research and patent application. On February 22, 2018, we held a meeting with suppliers selected as excellent/major suppliers and prepared countermeasures for any common issues. Through these efforts, we established the "performance sharing system" and contributed to forming a sustainable supply chain.



Schedule	Meeting
Domestic HSE team	Positive safety culture (CLEAR)
Supplier awards ceremony	Giving a plaque of appreciation to excellent/major suppliers and commendation to excellent suppliers

## Selection and Evaluation of Suppliers

Daewoo E&C has established a systematic process for selection and evaluation to maintain a sustainable supply chain in selecting and evaluating suppliers. We select new suppliers based on seven-staged procedures and continuously improve systems and infrastructure for efficient work.

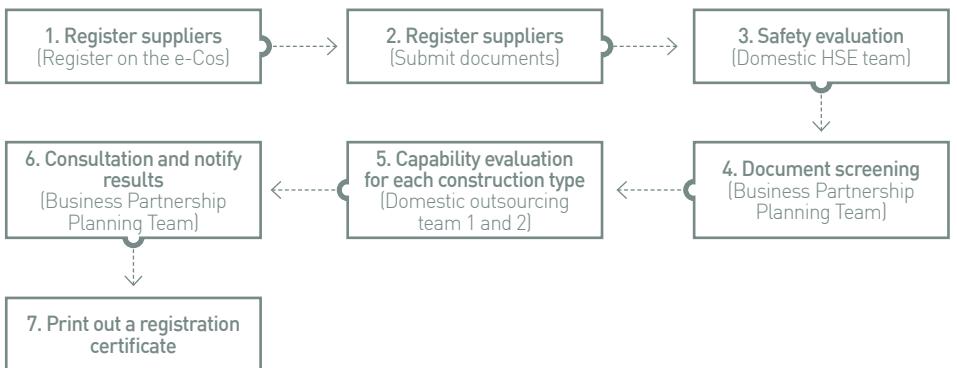
### Selection of Suppliers

Daewoo E&C pioneers new overseas markets and implements new business for mutual growth with suppliers and reinforces capabilities to lead the construction industry. For these goals, we continuously seek excellent and competitive suppliers based on the supplier selection process to secure the quality of construction and promote smooth construction implementation. In addition, we operate IT-based "e-Cos" website to receive applications all year around and select final new suppliers based on safety evaluation, document screening and capability evaluation for each construction type. Applicant reviews are conducted based on construction and technology capability, financial stability and credit rating; added points are given to sustainable management items such as safety environment, labor and ethical management. We also fulfill social and environmental responsibilities in the supply chain by giving added points to companies with the certification of ISO 9001 and ISO 14001.

#### No. of Registered New Suppliers

2016	2017	2018
0	188	212

#### New Supplier Selection Process



### Selection of Overseas Suppliers

To select overseas suppliers in a consistent and efficient way, Daewoo E&C has adopted the PQ (Pre-qualification) system and reinforced the pre-qualification procedure. In evaluating PQ, we conduct a multi-faceted evaluation of company scale, construction performance, safety, quality and financial information to seek excellent overseas suppliers and connect to the overseas external bidding process so that more competitive and fairer suppliers are utilized and managed.

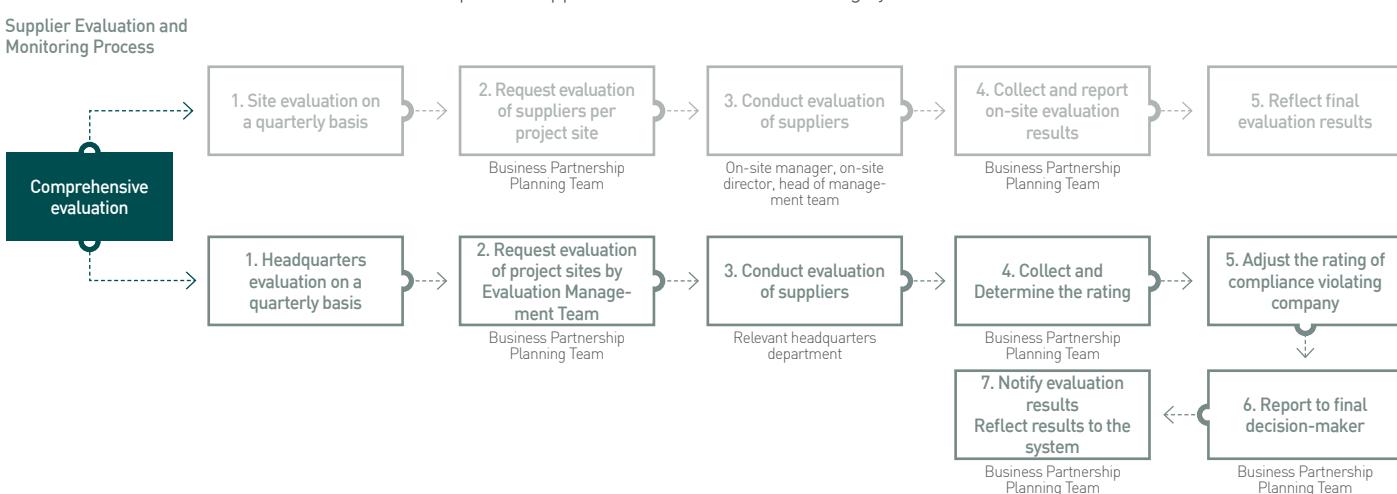
#### Pre-qualification Registration System for Overseas Suppliers



## Our Sustainability Topics

### Evaluation and Monitoring for Suppliers

Daewoo E&C conducts quarterly on-site evaluations and half-yearly headquarters evaluations for suppliers with transaction performances for a certain period to establish a sustainable supply chain. In particular, we check the construction quality and on-site management capability of suppliers by carrying out on-site evaluations on a quarterly basis and examine the financial capability, safety and environmental management and status of repairing defects through headquarters evaluations. With comprehensive evaluations for economic, social and environmental risks in addition to the construction capability of suppliers, we select excellent suppliers and provide them with the benefit of exemption from a performance bond for a year. The company also operates separate bidding participation criteria to promote financially healthy and reliable suppliers to participate in bidding. We impose sanctions such as limitations in bidding and cancellation of registration on suppliers not meeting the criteria, so the company continuously implements a sound and transparent supplier evaluation and monitoring system.



### Conditions for Cancellation of Supplier Status

#### Economy

- Causing financial loss or reputational damage to Daewoo E&C
- Causing serious defects or quality issues and failing to address them
- Engaging in collusion or spreading false rumors
- Failing to meet credit rating standards

#### Environmental

- Causing serious environmental issues

#### Society

- Failing to pay employee wages or other such issues
- Causing repeated safety accidents (Three or more serious incidents or three or more deaths per year);

### Education Regarding Fair Trade for Suppliers

Daewoo E&C provides education regarding fair trade for employees. In 2018, we provided education seven times in total and 207 employees participated in fair trade education.

Category	No. of participants
Supplier fair trade education(off-line)	160
Supplier fair trade special education(off-line)	47
Overuse of Power(on-line)	4,869
Total	5,076

## Operation of Health and Safety Management System

Daewoo E&C was the first in the industry to implement the OHSAS 18001 standard. We continuously acknowledge that health and safety management is crucial not only to protect lives, but also in increasing customer satisfaction and boosting employee morale. Under the corporate policy of "Protecting lives through change and innovation," we strive for continuous improvement of our health and safety culture.

### Establishment of Health and Safety Policies

Our policy aims to create a strategic safety culture, and to apply them to our numerous sites more efficiently. Executive officers at Daewoo E&C commit themselves to communicate a firm intention for safety at the workplace by means of showing exemplary behavior. We have also established and implemented a health and safety management policy system that is combined with safety management and health management for efficient site management.

Health and Safety Management Policy System

Policy	Protect Human Lives through Change and Innovation		
Strategy	Compliance with principles and guidelines	Participation of all members	Consistent improvements
	<ul style="list-style-type: none"> <li>• Comply with health &amp; safety laws and regulations</li> <li>• Implement preliminary risk assessment</li> <li>• Implement prior permit to work system for high-risk activities</li> </ul>	<ul style="list-style-type: none"> <li>• Establish smooth communication system</li> <li>• Allocate roles and responsibilities to all members</li> <li>• Raise safety awareness through consistent training and education</li> </ul>	<ul style="list-style-type: none"> <li>• Eradicate similar accidents</li> <li>• Prioritize health &amp; safety when assessing construction plans</li> <li>• Establish advanced health &amp; safety system through improvements</li> </ul>

### Reinforcement of Health and Safety Organizational System

Daewoo E&C operates the Health & Safety Management Committee with the aim of implementing health and safety management more systematically. As safety-related accidents can be prevented only when employees and workers are guaranteed sufficient rest, our Corporate HSE Team and Global HSE Team directly monitor company-wide activities. Under direct leadership of the CEO, our Health & Safety Management Committee monitors performance indicators and plays a pivotal role in setting the direction of our health and safety policy, and also formulating mid to long-term strategic roadmaps for our safety system. Our Corporate HSE Team and Global HSE Team take part for corporate level affairs, while our Construction Management teams of each business division take part for more detailed strategy making.

Health & Safety Management Committee



### Health and Safety Performance Management

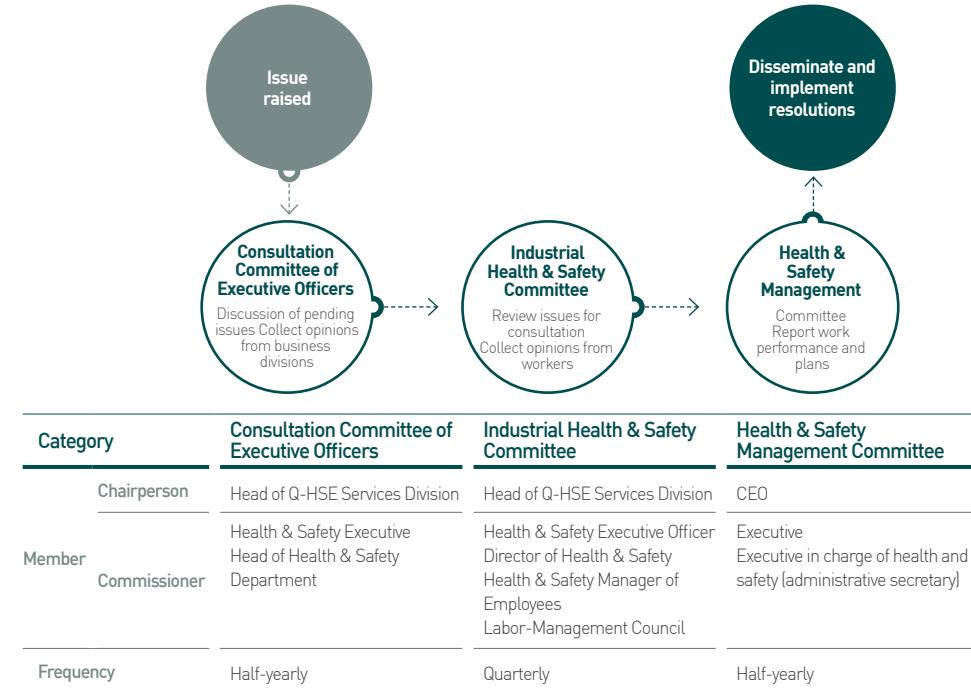
Daewoo E&C encourages all employees to participate in activities for systematic health and safety management. For this we operate and prepare separate KPIs for safety management. In 2018, we conducted 1,271 on-site safety inspections and achieved 0.46% of the accident rate.

## Our Sustainability Topics

### Health and Safety Consultation System

Procedure of Health and Management Consultation

When any issue occurs, Daewoo E&C Health & Safety Management Committee disseminates and implements resolutions through consultation with relevant committees for systematic operation of health and safety. With these activities, we forge a foundation upon which we can improve high-standard safety management system by reflecting opinions from business divisions and on-site workers proactively.



### Health and Safety Management System Certification

Current Status of Health and Safety Management Certification

Daewoo E&C was the first construction company in Korea to implement a proper health and safety management system. In November 2000, we became the first in the industry to attain OHSAS 18001 certification (British Standards Institution) to gain global credibility. In June 2015, we acquired KOSHA 18001 (Korea Occupational Safety & Health Agency) in order to continuously implement and enhance our systems related to health and safety.

Category	KOSHA 18001	OHSAS 18001
Initial certification	2015.06.26	2000.11.30
Follow-up audit	Once a year	Once a year
Extension [renewal] evaluation	Once in three years	Once in three years
Certification agency	Korea Occupational Safety & Health Agency	BSI Korea



## Health and Safety Risk Management

Daewoo E&C predicts and handles risks related to health and safety by developing a monitoring system for health and safety leading indicators. In 2017, 1,400 safety inspections across domestic and overseas sites and 1,271 in 2018. Through the inspections, a safety culture in which all employees are engaged has been created and contributed to establishing, applying and internalizing this culture across all business sites.

## Reinforcement of Safety Inspection System

### Types of Safety Inspection

Daewoo E&C continuously strengthens the level of implementation of safety inspection by expanding inspections of construction machinery. As a result, our safety inspection performance has greatly improved since 2015.

Category	Items to inspect
Inspections by executive officers	Inspections by the CEO, inspections by the heads of divisions, inspections by PM
HSE inspections and support	Regular site and system inspections, HSE theme inspections, etc.
Expert inspections	External system and technology safety inspections
On-site support	HSE Helper, Starter, etc.
Special inspections	Safety inspections for thawing season, etc.
Technical safety support	Sheathing technical safety inspections, tower crane, construction lift inspections before delivery/during use

### Active Participation of CEO in Safety Activities



Check by CEO	Site Audit	Safety of Technique Support	Other Site Check
10 times	94 times	1,032 times	135 times

## Support for Suppliers to Establish Autonomous Safety Management System

### No. of Suppliers Participating in Risk Management

2016	2017	2018
11 suppliers	31 suppliers	43 suppliers

### Level Improvement through Diagnosis

2016	2017	2018
27.5%	40.25%	26.2%

Improved by 26.2% in 2018

## Health and Safety Management for Foreign Workers

With the increasing proportion of foreign workers in domestic and overseas sites and increase in number of overseas projects and sites, Daewoo E&C is focusing on managing the health and safety conditions for foreign workers to respond to the increasing number of foreign workers on the site. In particular, as Chinese workers account for over 90% in the domestic construction sites, we have adapted our system to provide training courses in Chinese, and have also recruited staff to support Chinese workers by distributing guidelines and conducting separate training.

## Reinforcement of Health and Safety Management for Employees

Daewoo E&C has established health and safety policies and a detailed management system based on the regulations for health and safety management to reinforce health and safety for employees. In particular, we implement guidelines for risk assessment and pre-safety evaluation to prevent and deal with any safety issues related to business operation. In addition, we operate the safety management system by setting independent targets and meeting legal requirements with the development of work guidelines through managing various risk elements and establishment of the management system.

## Internalization of Basics and Principles for Health and Safety

### Basic Principle Compliance Campaign for Health and Safety Management

Daewoo E&C conducts a campaign for internalizing basic principles to comply with health and safety management. empowering managers to immediately terminate work upon identifying hazards, we conduct various activities, including Permit To Work (PTW) for high-risk work, authority to shut down work, management of construction machinery for Hold Point and reinforcing proper usage of protective gear. Among them, the PTW System requires workers to check the preparation of adequate safety measures before performing tasks with a high level of accident risk. The system contributes to securing safety and preventing accidents.



## Proactive On-site Support

Daewoo E&C supports activities to prevent any potential accidents on the construction site. We have identified potential risks and near-miss accidents to remove these issues and operate support activities such as making it mandatory to acquire on-site director safety qualification to reinforce safety awareness and operating the nomination evaluation committee.

- Strengthen site responsibilities: Transition from follow up responsibilities to prevention check responsibilities

- Major activity implementation (Plan-Do-Check-Action) check  
(Major activity: Weekly Risk Assessment, Daily Meeting, TBM, Work Plan, PTW)
- Confirmation of R&R implementation
- Feedback (Report/Training)
  - » Reinspection of sites below the optimum level and evaluation result utilization (individual/collective training)

- Expect reduction effect of frequency of accident risk through potential risk/Near miss check and remove

: Risk = Frequency X Strength ➤ Risk(↓)=Frequency(↓)xStrength

- Injury accident management (Reactive) ➤ Potential Risk/Near miss management (Proactive)

- Liability to on-site director safety awareness and safety accident prevention

- Mandatory to acquire on-site director safety qualification
- Nomination evaluation committee operation

## Implementation of Health and Safety Education and Reinforcing Safety Culture

Daewoo E&C implements the CLEAR Culture, a program to provide health and safety education and enhance awareness to promote awareness of all employees of health and safety, including headquarters, sites and foreign workers. We have also distributed foreign education materials for safety education to foreign workers and expanded the scope of safety education to suppliers. By installing a safety experience center at the DICT, we have internalized the importance of experience-based education with facilities such as virtual reality (VR) experience, CPR training, safety belt experience, etc.

### Health and Safety Education for All Employees

Daewoo E&C provides all employees with health and safety education. This education is given to not only safety, health and environmental managers, but also on-site PMs, on-site directors, supervisors and suppliers' CEOs. In addition, on-site directors disseminate the contents of education and contribute to boosting the intensity of health and safety education on the site. In 2018, manager-level education was attended by a total of 274 employees and specialized capability education by 1,447 employees; a total of 2,022 employees completed health and safety education. The company will systemize health and safety education for all employees.

### Reinforcement of Health and Safety Education for Employees

Daewoo E&C aims to strengthen health and safety education to enhance the importance of health and safety and awareness for employees. We will subdivide a common curriculum for health and safety management into specialized courses for each level/job and make it mandatory for all employees to receive the education. We will also operate health and safety management education by proactively utilizing experience-based education facilities for safety and construction safety experience.

#### Plan for Reinforcing Health and Safety Education in 2019

Category	Current	Changed
Direction	<ul style="list-style-type: none"> <li>To establish the foundation for spreading safety culture (CLEAR)</li> <li>To operate common education-based curriculum</li> </ul>	<ul style="list-style-type: none"> <li>To install company-wide education course for safety culture (CLEAR)</li> <li>To develop specialized courses for each level/job</li> </ul>
Operation	<ul style="list-style-type: none"> <li>15 courses/ 61 sessions / 2,022 people</li> </ul>	<ul style="list-style-type: none"> <li>23 courses/ 174 sessions / 5,987 people</li> </ul>
Major points	<ul style="list-style-type: none"> <li>Expansion of mandatory education for all employees: education for safety culture (CLEAR) + Experience-based safety education</li> <li>Vitalization of safety education for Chinese workers: On-site visiting education and development of education materials</li> </ul>	

#### Expansion and Reorganization of Experience-based Safety Education



### Health and Safety Psychology Coaching Program

Daewoo E&C operates Health and Safety Psychology Coaching Program to heal employees' mental injuries, prevent health disorders and cultivate positive minds. In 2017, the program operated for 210 people in 9 sites. In 2018, 79 people participated in the program in 4 sites. Through this program, employees reduced any work loss such as accumulated stress, post-traumatic stress disorder and lowered concentration by stress. The company will create better health and safety education through psychology coaching for employees.

## CLEAR, Unique Safety Culture of Daewoo E&C

Daewoo E&C strives to internalize CLEAR, our unique safety culture, as the company-wide culture. As the unique safety culture of Daewoo E&C, CLEAR was developed by reflecting the specialty of domestic construction sites based on IIF (Incident & Injury-Free, JMJ Associates), which was introduced through overseas projects. After the first launch in Banpo Central PRUGIO Summit construction site in 2015, CLEAR contributes to establishing and leading a positive safety culture up to now.

### Internalization of CLEAR Culture

#### Five Major Behaviors for CLEAR



Daewoo E&C divides core behavioral value into five items to internalize our unique safety culture CLEAR. The CLEAR Program aims to change our underlying behaviors through "recognition" and protect each other through expanded "relationships". Since 2015, the program has been applied and operates in eleven construction sites.

<b>C</b>	<b>Commitment</b> : Executives leading by example on their commitment towards safety through actions and communications
<b>L</b>	<b>Listen &amp; Speak</b> : Two-way communication that ensures that we listen to each other
<b>E</b>	<b>Eliminate UA-UC</b> : Employees look out for each other to eliminate risk factors
<b>A</b>	<b>Appreciate SA-SC</b> : Appreciation and encouragement of behaviors that comply with regulations
<b>R</b>	<b>Relationship</b> : Improvement of relationships between all members

#### Current Status of CLEAR Program

Category	Item to inspect
2015.11~ to current	Banpo Central PRUGIO Summit
2016.07~ to current	Choji Station Major Town Eco Complex Construction Site
2017.01~ to current	Pyeongtaek Vision Lake PRUGIO Construction Site
2017.08~ to current	Daegok-Sosa Double-Track No 4 Construction Site
2017.09~ to current	2nd Daesin PRUGIO Construction Site
2018.02~ to current	Godeok Central PRUGIO Construction Site
2018.03~ to current	Oryong Edu Forest PRUGIO Construction Site
2018.05~ to current	Gwacheon Knowledge Information Town Zone Construction Site
2018.09~ to current	Goobo Construction Co., Ltd. Construction Site
2018.09~ to current	Osstem Implant Central Research Institute Construction Site
2018.10~ to current	Hwaseo Station Park PRUGIO Construction Site

### Future Direction for CLEAR Culture

Daewoo E&C has made implementation plans for the unique safety culture CLEAR in connection with the strategic direction of the new vision. In 2019, we will establish a pool of consultants, expand the scope of site adaptation, promote the culture to the entire company and develop overseas site modules. We also selected a final target as the overall introduction of CLEAR to suppliers by 2021. We will establish a safety culture for suppliers and external stakeholders.

2019	2020	2021
<ul style="list-style-type: none"> <li>Establish a pool of consultants</li> <li>Expand the scope of sites (20 sites)</li> <li>Company-wide CLEAR education/promotion</li> <li>Develop overseas site modules</li> </ul>	<ul style="list-style-type: none"> <li>Operate a responsible team</li> <li>Cultivate consultants</li> <li>Expand a scope of sites (40 sites)</li> <li>Diagnose safety culture</li> </ul>	<ul style="list-style-type: none"> <li>Accelerate consulting</li> <li>Operate the committee</li> <li>Implement in-branding</li> <li>Expand CLEAR to suppliers</li> </ul>

## Reinforcement of Ethical and Compliance Management

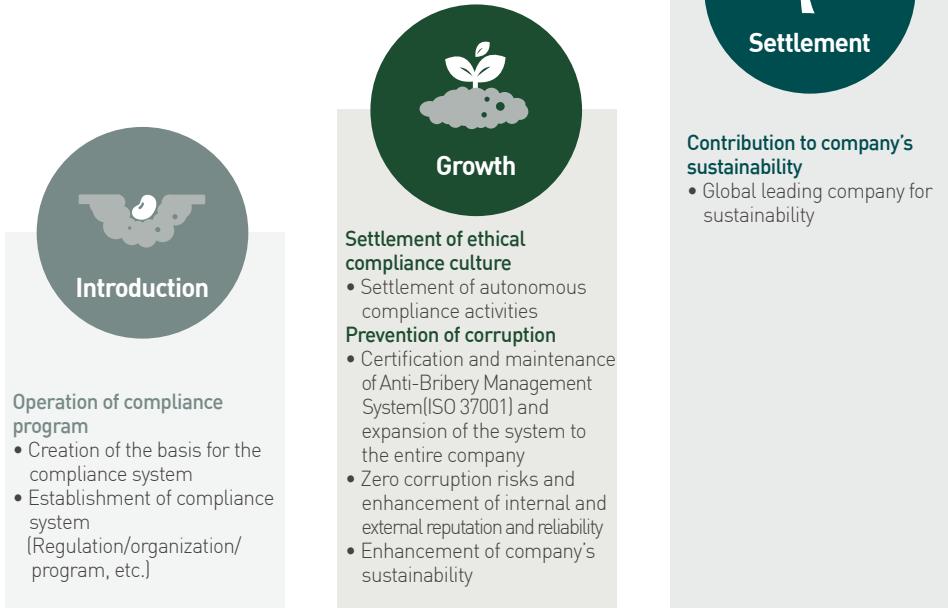
Daewoo E&C seeks sustainable management through fair, transparent performance and enhances awareness of ethics and compliance among all domestic and overseas employees. We carry out various activities to settle the ethical and compliance culture under the slogan of "Build Together with Compliance" with the aim of creating culture of fulfilling legal and social responsibilities as an industrial leader.

### Compliance System

In 2013, Daewoo E&C proclaimed the "Daewoo New Way" and reformed ethics policies and related organizations. As we introduced the compliance system and built the voluntary compliance system in 2015, we committed ourselves to enhancing company's reliability. In 2018, the company adopted Anti-Bribery Management System(ISO 37001) and was certified for establishing the anti-corruption system meeting the international standard. The company receives pledges from employees each year to encourage their active participation and vitalizes reporting unethical cases through the internal report reward system. We also operate the compliance system to ensure an effective response to any issues related to compliance and ethics.



**Mid- and Long-term Strategy**  
Become a global leading transparent company



Major Directions for 2019

<b>Reinforcement of compliance system</b>	1. Reinforce the capability of compliance manager 2. Expand inspection for unit group and increase support for compliance among subsidiaries and suppliers 3. Expand the application of anti-bribery management system (ISO 37001) to the entire company
<b>Reinforcement of education promotion</b>	1. Reinforce case-based education and enhance educational effectiveness 2. Enhance employees' awareness for anticorruption
<b>Enhancement of internal external reputation and reliability</b>	1. Release a sustainability report 2. Manage and respond to reputational risk and needs for corporate social responsibility

### Our Sustainability Topics

#### Compliance Organizational System and Roles

Daewoo E&C conducts compliance-related tasks based on the Compliance Team to strengthen the capability to ensure compliance. We operate the Compliance Committee in charge of deliberating important issues related to ethics and compliance and Compliance Council in charge of carrying out detail activities. Compliance activities are implemented systematically by compliance leaders supervising activities in each division and compliance managers in charge of unit groups under the leadership of the Compliance Supervisor.

##### Compliance Organizational System



Compliance Conference in 2019

#### Training and Promotion

Course	Description
1 <sup>st</sup> Session	Confession of Courageous Conscience (Internal Report)
2 <sup>nd</sup> Session	Information Security (Personal Information Protection)
3 <sup>rd</sup> Session	Expediency does not Work (Anticorruption)
4 <sup>th</sup> Session	ISO 37001 (Anti-bribery Management System)
5 <sup>th</sup> Session	Memory of Gifts (Improper Solicitation and Graft Act)
6 <sup>th</sup> Session	Oversize of Power (Mutual Cooperation)

Daewoo E&C provides offline compliance training to new employees, chief managers and employees of suppliers with outstanding performance to prevent any legal violation and offer video educational materials online throughout the year to enable more employees to complete required compliance training sessions. In 2018, we launched a workshop for compliance managers to focus on reinforcing their capabilities and spreading actual cases. In addition, the company constantly conducts promotional activities on a daily, weekly and monthly basis to call attention to the importance of compliance among employees. We publish the monthly newsletter "Compliance Together" and weekly report of "compliance violation cases" and "weekly trend" and make public daily trends and policies in the bulletin board. The company also carries out multiple campaigns such as "Clean Holidays Campaign" and "Healthy Notice for Family Events" in order to build desirable relationships with stakeholders and prevent unethical conduct related to business affairs.



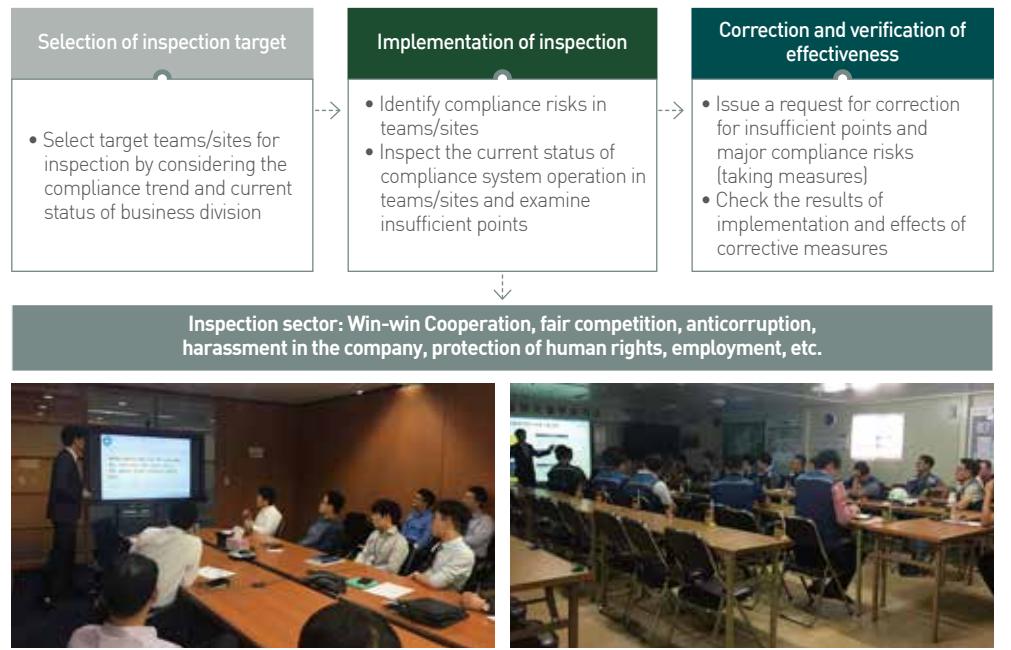
Workshop for Managers



Online Education

## Inspection and Evaluation

Daewoo E&C has implemented compliance inspection and evaluation based on a unit group since 2015 with the aim of enhancing employees' awareness of compliance. Inspection and evaluation for Win-win Cooperation, anticorruption, prohibition of inappropriate behaviors and speeches among employees, and protection of human rights were conducted for 35 unit groups in 2018 and will be carried out for 60 unit groups in 2019. Inspection results are reflected in each division's management evaluation, and a commendation is given to those with outstanding performance to motivate employees.

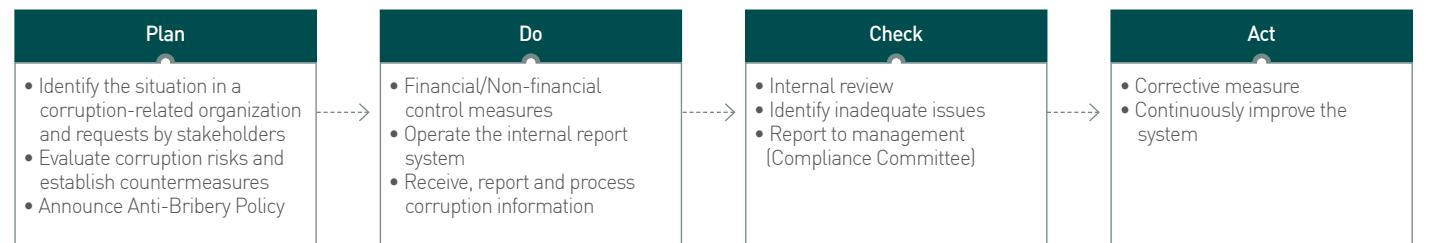


## Third-Party Compliance Risk Management

Daewoo E&C does not limit compliance activities to the company and expands the scope to subsidiaries and suppliers. Subsidiaries conduct independent compliance activities every month, and the outcome of activities is reflected in the evaluation of subsidiaries' management performance. In addition, we send a letter for compliance engagement to suppliers under the name of the CEO to reinforce compliance capability in the entire supply chain; in case of any compliance violation among suppliers, we impose sanctions such as cancelling registration and restriction. The company has enacted the overseas anti-corruption guidelines to prevent any risks in performing a global business and implemented anticorruption activities by inspecting compliance status in overseas sites.

## Definition of Anti-Bribery Management System (ISO 37001)

The standard for anti-bribery measures enacted by the International Organization for Standardization (ISO), ISO 37001 is the international standard to ensure the effective plan and execution of corporate anti-bribery activities.



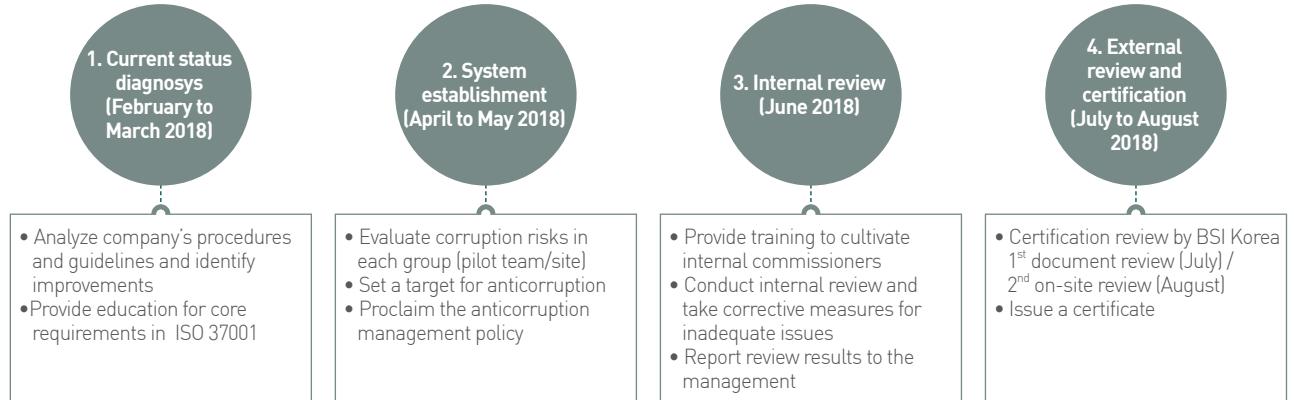
## Our Sustainability Topics

### Receive ISO 37001

To operate the global-level compliance system, Daewoo E&C adopted ISO 37001 (Anti-Bribery Management System) and acquired the certificate in October 2018, the first domestic construction company to do so. For about a year, we diagnosed the internal control measures of the company, established the anti-bribery management system, anti-bribery policy and anti-bribery objectives, and conducted internal audits. After complimentary actions for nonconformities, we were certified for establishment through an external review by BSI Korea. Daewoo E&C will continue righteous management, solidify trust with domestic and overseas stakeholders and serve as the cornerstone for sustainability management.



### Expected effects for the ISO 37001 certification procedure



To block the possibility of any corruption in the organization by the system and reduce corruption risk

### Global sustainability leading company

#### 2019 Plans

#### Expansion of the anti-bribery management system (ISO 37001) company-wide

- Evaluate corruption risks for all teams/sites and establish targets/plants to prevent corruption
  - Establish/Operate measures by identifying the types and significance of corruption risks
- Continuous internal review
  - Identify inadequate issues and continuously improve the system
  - Review by manager
- Reinforce training related to anti-corruption
  - Practical training for staff in charge
  - Online training

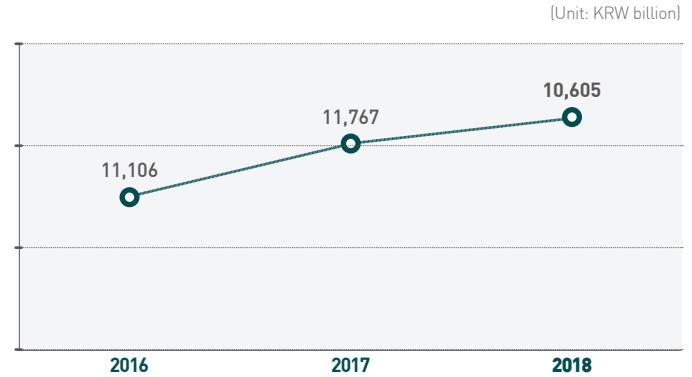
## APPENDIX

- 
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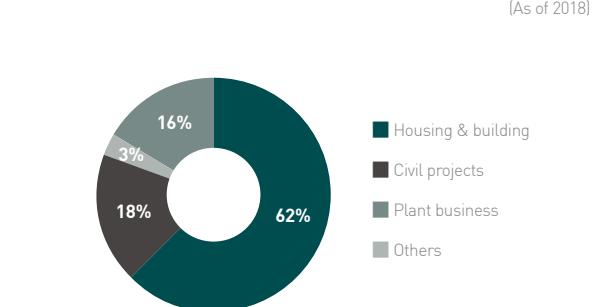
## Management Performance

### Economic Performance

#### Total Company Sales

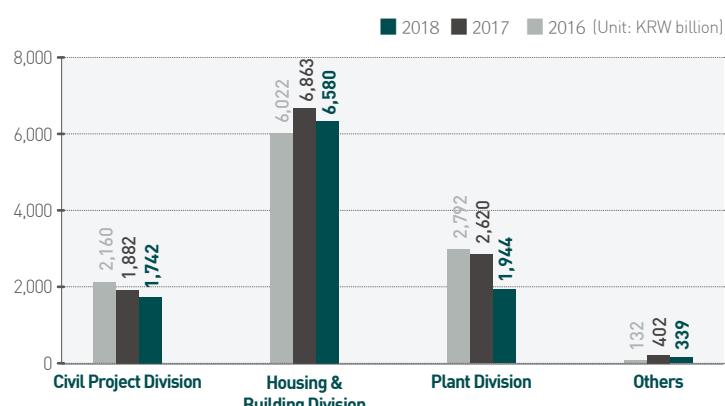


#### Percentage of Total Sales



#### Sales of Each Business Division

Category	2016	2017	2018
Civil Project Division	2,160	1,882	1,742
Housing & Building Division	6,022	6,863	6,580
Plant Division	2,792	2,620	1,944
Others	132	402	339



#### Change in the Amount of Construction Contracts

Category	Unit	2016	2017	2018
Civil Project Division	KRW billion	1,364	1,180	1,219
Housing & Building Division	KRW billion	4,222	6,534	6,525
Plant Division	KRW billion	16	(758)	1,108



#### Credit Ratings

Evaluating Agency	Effective rating		Evaluation category
	Corporate bill	Corporate credit rating	
Korea Ratings	A2-	A-	Regular evaluation
NICE Investors Service	A2-	A-	Regular evaluation
Korea Investors Service	A2-	A-	Regular evaluation

(As of April 2018)

## Key Sustainability Management Performance Data

### Economic Performance

#### Current Status of R&D

Category	Details	Unit	2016	2017	2018
Amount	Investment	KRW million	14,615	13,457	13,880
Manpower	No. of developers	Person	83	83	83
	Research projects		34	38	48
Result	Industrial property rights (Patent, new technology)	Case	62	65	58
	Awards		6	5	6

#### Performance of Contribution Cost for Technical Support

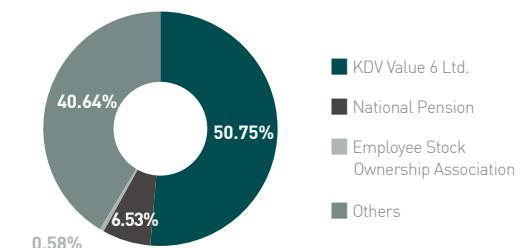
Category	Unit	2016	2017	2018
Performance of Contribution Cost for Technical Support	KRW 100 million	682	808	705

#### Performance of Industrial Property Rights

Category	2017	2018	Remarks
Patent	Existing patent	285	308
	Application	22	20
	Registration	23	23
	Total effective registration	308	331
New technology	Existing patent	9	11
	Application	2	4
	Registration	2	3
	Total effective registration	11	14
Others	Existing patent	153	164
	Application	5	2
	Registration	11	6
	Total effective registration	164	170
Total	Existing patent	447	483
	Application	29	26
	Registration	36	32
	Total effective registration	483	515

#### Current Status of Major Shareholders

Shareholder	Ratio	No. of shares
KDV Value No. 6	50.75%	210,931,209
National Pension Service	6.53%	27,126,251
Employees' Stock Ownership Association	0.58%	2,391,470
Others	40.64%	168,909,822



## Key Sustainability Management Performance Data

### Economic Performance

#### Sales in Each Region

Category	2016	2017	2018
Korea	7,787,956	9,110,477	8,251,919
Middle East	1,238,664	1,417,585	1,585,783
Asia	434,744	480,331	321,421
Africa	1,644,629	757,793	445,961
Others	(63)	654	410
Total	11,105,930	11,766,840	10,605,494

Based on the Business Report

#### Remuneration for Directors and Auditors

		Unit	2016	2017	2018
No. of Persons	Internal Director [Excluding outside directors and Audit Committee members]	Person	2	2	3
	Outside Director [Excluding Audit Committee members]		2	1	1
	Audit Committee members		3	3	3
Total amount of remuneration	Director [Excluding Outside Directors and Audit Committee members]	KRW million	1,612	826	828
	Outside Director [Excluding Audit Committee members]		93	59	61
	Audit Committee members or auditors		122	180	192
Average	Director [Excluding Outside Directors and Audit Committee members]		806	413	276
	Outside Director [Excluding Audit Committee members]		46	59	61
	Audit Committee members or auditors		41	60	64

\*Including remuneration for retired directors

### Operation Performance of Board of Directors

Details	Unit	2016	2017	2018
No. of meetings	Number	16	15	16
No. of resolved agendas	Case	65	49	55
Percentage of directors attendance	%	94.8	98.3	95.5

### Number of Meetings by Subcommittees of Board of Directors

Details	Unit	2016	2017	2018
Audit Committee	Number	6	10	9
Outside Director Nomination Committee	Number	2	1	0

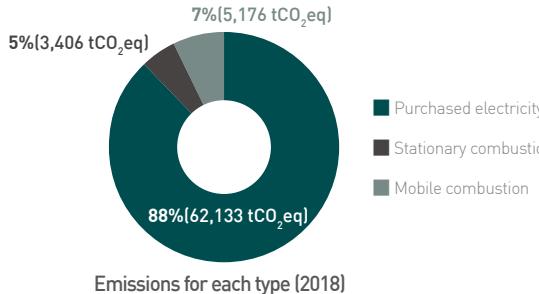
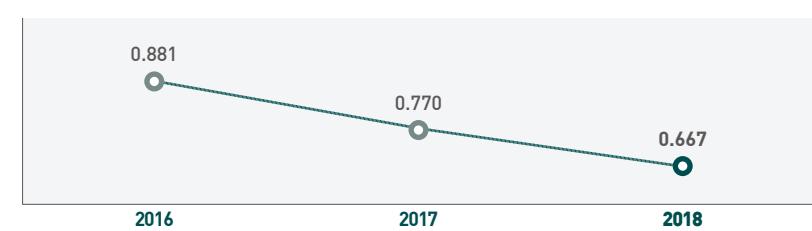
### Appendix

### Environmental Performance

#### Eco-friendly Building Certification Status in 2018

Project	Eco-friendly Building Certification	Project	Eco-friendly Building Certification
Suwon station PRUGIO Xi	G-SEED Preliminary Certification 'General (Green 4 <sup>th</sup> Grade)' / Energy Efficiency 1 <sup>st</sup> Grade	Yeoksam Station Central PRUGIO City	Energy Efficiency Certification '1+ Grade' / G-SEED Certification 'Best (Green 3 <sup>rd</sup> Grade)'
Hwaseo Station Park PRUGIO	Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade' / G-SEED Preliminary Certification 'Excellent (Green 3 <sup>rd</sup> Grade)'	Samsongwonheung Station PRUGIO	G-SEED Preliminary Certification 'General (Green 4 <sup>th</sup> Grade)' / Energy Efficiency 1 <sup>st</sup> Grade
Chuncheon Central Park PRUGIO	Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade' / G-SEED Preliminary Certification 'Excellent (Green 4 <sup>th</sup> Grade)'	Cheonan Buldang Park PRUGIO 1 Complex	G-SEED Preliminary Certification 'General (Green 4 <sup>th</sup> Grade)' / Energy Efficiency 2 <sup>nd</sup> Grade
Yongin Yeongdeok Park PRUGIO	Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade' / G-SEED Preliminary Certification 'Excellent (Green 3 <sup>rd</sup> Grade)'	Cheonan Buldang Park PRUGIO 2 Complex	G-SEED Preliminary Certification 'General (Green 4 <sup>th</sup> Grade)' / Energy Efficiency 2 <sup>nd</sup> Grade
Pangyo First Hill PRUGIO	Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade' / G-SEED Preliminary Certification 'Excellent (Green 3 <sup>rd</sup> Grade)'	Gimhae One Major	G-SEED Certification / Building Energy Efficiency Certification '2 <sup>nd</sup> Grade'
Mapo 3 district 3 district Urban Environment Improvement Project	Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade' / G-SEED Preliminary Certification 'Excellent (Green 3 <sup>rd</sup> Grade)'	Uiwang Zhang'an District Park PRUGIO 1 Complex	G-SEED Certification / Building Energy Efficiency Certification '2 <sup>nd</sup> Grade'
Gumdan Central PRUGIO	G-SEED Preliminary Certification 'Good (Green 2 <sup>nd</sup> Grade)' / Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade'	Gyeongju Central PRUGIO	G-SEED Certification '4 <sup>th</sup> Grade' / Building Energy Efficiency Certification '2 <sup>nd</sup> Grade'
Gwacheon Jugong 1 Complex	G-SEED Preliminary Certification 'Best' / Building Energy Efficiency Preliminary Certification '1 <sup>st</sup> Grade'	Anyang Bisan Elementary School District	G-SEED Preliminary Certification 'Excellent (Green 3 <sup>rd</sup> Grade)' / Energy Efficiency Preliminary Certification '2 <sup>nd</sup> Grade'
Ansan Metro Town PRUGIO Hillstate	G-SEED Certification General (Green 4 <sup>th</sup> Grade) / Building Energy Efficiency Certification '2 <sup>nd</sup> Grade'	Gwangju Central PRUGIO	G-SEED Certification '4 <sup>th</sup> Grade' / Building Energy Efficiency Certification '2 <sup>nd</sup> Grade'

#### GHG Intensity



#### Current Status of GHG Emissions for Each Source

Category	Details	Unit	2016	2017	2018
Direct emission	Stationary combustion	tCO <sub>2</sub> eq	5,061	4,119	5,174.523
	Mobile combustion	tCO <sub>2</sub> eq	6,057	5,027	3,409.104
Indirect emission	Purchased electricity	tCO <sub>2</sub> eq	57,475	61,357	62,136.091

#### GHG Emissions

Category	Unit	2016	2017	2018	Remarks
Total site consumption	tCO <sub>2</sub> eq	60,509	62,958	64,221	Scope 1+2
Total building consumption	tCO <sub>2</sub> eq	8,080	7,544	6,494	Scope 1+2
Total emissions	tCO <sub>2</sub> eq	68,589	70,501	70,715	Scope 1+2
GHG intensity	tCO <sub>2</sub> eq/KRW 100 million	0.881	0.770	0.013	[Scope 1+2] / Domestic sales

\*The number of business sites is rounded off, so there are differences between GHG emissions for each source and total emissions.

#### Water Consumption

Unit	2016	2017	2018
Ton	1,206,713	2,088,275	1,614,303

#### Waste

Category	Unit	2016	2017	2018	Remarks
Volume treated	Ton	597,000	592,790	570,845	Domestic sites
Treatment cost	KRW 100 million	153	169	199	Domestic sites

\*Payment of the Waste Disposal Charge

\*Increased amount of waste generated at large sites

## Key Sustainability Management Performance Data

### Environmental Performance

#### Energy Consumption

Category	Unit	2016	2017	2018	Remarks
Total site consumption	TJ	1,202	1,258	1,295	
Total building consumption	TJ	157	111	126	
Total consumption	TJ	1,359	1,369	1,421	
Energy intensity	TJ / KRW 100 million	0.017	0.015	0.013	Total usage / Domestic sales

#### Eco-friendly Purchasing (Unit: KRW billion)



#### Environmental Unit – Performance of HSE Audit

Category	Civil project	Housing	Plant	(As of 2018)		
				2016	2017	Total
On-site environmental instruction and inspection	10	36	1			47
HSE system audit (Special)	0	1	0			1
HSE system audit (Fugitive Dust)	4	4	2			10
Total	14	41	3			58

#### Environmental Protection Expenditure and Investment

Category	Details	Unit	2016	2017	2018
Expenditure and investment for environmental protection	Environmental investment	KRW million	189	194	190
	Environmental cost	KRW million	182	176	179
Environmental training	No. of employees attended environmental training	Person	31,720	19,516	27,188

#### Environmental Education Performance

Category	Regular (Monthly education)	Training course	Unit	Job education for on-site environmental managers
		Period	Hours	8Hr
Environmental education performance	Occasional (Ordinary education)	No. of participants	Person	198
		Training course	Unit	Job education for on-site environmental managers
		Period	Hours	1Hr
		No. of participants	Person	26,990

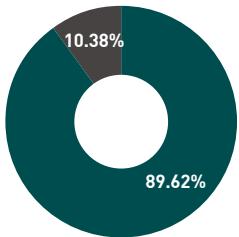
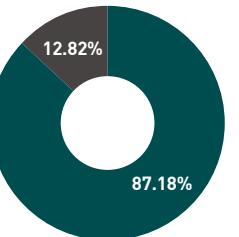
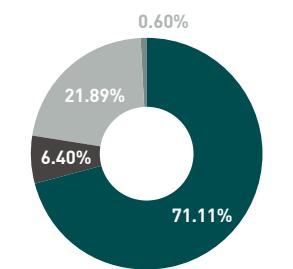
#### Environmental Regulations Violation Cases

Category	Details	2016	2017	2018
Violation of environmental laws and regulations	Total amount of penalties (KRW)	3,000,000	0	1,000,000
	No. of cases	1	0	1
	No. of sanctions	1	0	0

\*Violation of environmental laws about Fugitive Dust Standard

### Social Performance

#### Current Status of Employees



#### By Type of Employment (2018)

Category	Details	Gender	Unit	2016	2017	2018	Remarks
Total number of employees			Person	5,998	5,842	5,359	Employees, contract employees, experts, recruited employees (except foreigners)
Management executives		Male	Person	41	38	32	
		Female	Person	-	-	-	
Permanent employees		Male	Person	3,680	3,628	3,506	
		Female	Person	318	315	305	
Contract employees		Male	Person	420	442	337	Including contract executives
		Female	Person	6	6	6	
Others		Male	Person	1,320	1,175	928	
		Female	Person	213	238	245	
Domestic		Male	Person	4,546	4,499	4,127	
		Female	Person	527	549	545	
Overseas		Male	Person	915	784	676	Excluding overseas local employees
		Female	Person	10	10	11	
Diversity of employees		Male	Person	5,461	5,283	4,803	
		Female	Person	537	559	556	
Elderly			Person	366	323	400	Over 55 years of age
Foreigners			Person	27	17	14	Not included total head count
People with disabilities			Person	65	60	44	As of December 2018

#### New Recruitment, Turnover and Retirement

Category	Details	Unit	2016	2017	2018
New Hires	Male	Person	83	73	46
	Female	Person	12	8	6
Retirement	Male	Person	145	130	208
Resignation	Female	Person	17	11	22

\*Permanent Employees Only

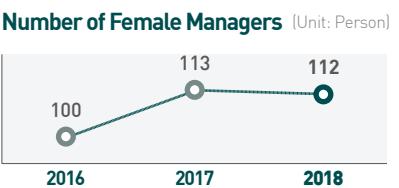
※ Refer to annual reports and disclosure materials

## Key Sustainability Management Performance Data

### Social Performance

#### Total Number of Managers

Category	Unit	2016	2017	2018
Total number of managers (Department manager and higher position)	Person	3,297	3,148	2,736
Total number of executives*	Person	210	160	121



#### Performance of Education and Training

Category	Unit	2016	2017	2018
Education cost per capita	KRW	680,544	687,766	643,135
Education hours per capita	Hour	80	66	49

#### Information Security Education

Category	Unit	Target	Completed	Completed	Completion ratio (%)	Remarks
Information security online education	Person	5,104	5,104	0	100%	3 rounds in total

#### Current Status of Completion for Sexual Harassment Prevention and Human Rights Education

Category	Unit	2016	2017	2018
Education hours	KRW / Person	5,946	5,898	5,487
Education hours per capita	Hour / Person	1	1	1

#### Performance Evaluation

Category	Unit	2016	2017	2018
Eligible person	Person	5,305	5,225	5,025
Evaluation ratio	%	100	100	100

#### Current Status of Labor-Management Committee

Category	Details	Unit	2016	2017	2018
Performance of labor-management committee	No. of committee meetings	Number	4	4	4
Performance of labor-management committee	No. of resolved agenda items	Case	6	5	19



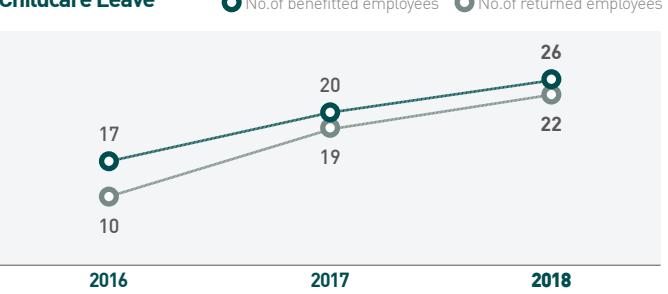
#### Retirement Pension

Category	Details	Unit	2016	2017	2018
Amount of cost		KRW million	234,892	243,796	241,556
No. of subscribers	DC	Person	1	5	5
	DB	Person	4,214	4,217	3,881

#### Maternity Leave



#### Childcare Leave



#### Category

Category	Unit	2016	2017	2018
Total	Person	251	229	182
Male	Person	229	203	165
Female	Person	22	26	17

#### Ratio of return

Ratio of return	Unit	2016	2017	2018
Maternity Leave Total ratio of return	%	99.10	98.10	98.10

#### Ratio of return

Ratio of return	Unit	2016	2017	2018
Childcare Leave Total ratio of return	%	58.82	95.00	84.62

#### Average days of leave

Average days of leave	Unit	2016	2017	2018
Day		359	250	272

## Key Sustainability Management Performance Data

### Social Performance

#### Performance of Domestic HSE Education

Category	2016	2017	2018
Site for pilot operation of CLEAR program	2	5	10
Implementation of mutual growth safety programs for suppliers	20	30	48
Mental coaching program (No of Sites/No. of participants)	10/272	9/210	4/79

#### Performance of Overseas HSE Education

Category	2018
NEBOSH ICC (Construction safety engineer in the U.K.)	10
OSHA 30 (Introductory education for construction safety in the U.K.)	48
OHSAS 18001 (Course for senior experts in the health and safety management system)	4/79

#### In-house HSE-Q Training Performance

Category	Target of Training	Order	Person
In-house HSE-Q Training	On Site Director	6	159
	Supervisors	9	465
	Safety manager	11	379
	Health&Safety manager	2	93
	Safety manager	1	6
	Safety/Health&Safety manager	2	13
	Environmental manager	2	87
	Quality manager	1	12
	Quality manager	1	38
	Quality manager	1	51
	Newly appointed employees( Overseas)	12	70

#### Outdoor Training HSE-Q Training Performance

Category	Target of Training	Order	Person
Outdoor HSE-Q Training	Specialized Training	-	116

#### Supplier HSE-Q Training Performance

Category	Target of Training	Order	Person
Supplier HSE-Q Training	CEO of Supplier	1	84
	On site Director of supplier	11	404
	Machinery and material suppliers	1	45

#### Securing Safety in Advance by Pre-risk Management

Category	System audit	Check		Category	Initial Site	Field Request	safety of technique	Construction Equipment	
	Securing Safety	Theme Check	Hazard Prevention Plan					T/C	Lift/Gondola
Domestic Audit	94	65	56	Domestic Support	12	2	65	625	342
Overseas Audit	12	9	1	0	0	0	0	0	2

#### Securing Safety with Inspection by Managers

Check by CEO	Site Audit	Safety of Technique Support	Other Site Check
10 times	94 times	1,032 times	135 times

#### Accident rate

Category	2016	2017	2018
Mortality per 10,000 workers <sup>1)</sup>	1.29	0.48	0.55
Converted accident rate <sup>2)</sup>	0.33	0.33	0.40
LTIR <sup>3)</sup>	0.02	0.07	0.05

1) Mortality per 10,000 workers: Annual mortality for 10,000 workers

2) Converted accident rate: Converted accident rate for 100 causalities a year (1 fatality = 5 injured workers)

3) LTIR (Lost Time Injury Rate): Rate of accidents for lost work (probability for casualties per 1 million hours)

#### Current Status of Suppliers

Category	Unit	2016	2017	2018
Total No. of suppliers	Company	976	989	1,059
Amount of purchase for suppliers	KRW 100 million	35,608	34,545	31,240

#### Major Suppliers

Category	Details	Unit	2016	2017	2018
No. of major suppliers	Company		123	101	101
Amount of major suppliers purchase among total purchased amount	Total amount Percentage	KRW 100 million %	14,890 41.8	16,904 48.9	12,460 39.9

Category	Unit	2016	2017	2018
Mutual Growth Fund and Loans	KRW 100 million	272	280	280
Education for the improvement of suppliers job capability	Person	195	173	179
No. of employees participating in supplier meetings	Person	110	100	101

## Key Sustainability Management Performance Data

### Social Performance

#### No. of Fair Trade Violation Cases

Category	Details	Unit	2016	2017	2018
Fair trade violation	No. of violation	Case	1	0	0
	Amount of penalties	KRW million	69,207	0	0

#### Rate of Completion for Online Compliance Education

Category	Unit	2016	2017	2018
Completion rate	%	96	97	100

#### Offline Compliance Education

Category	Unit	2016	2017	2018
Attendants	Person	3,036	1,745	2,416

Including CP check education, winter job education, supervisor education, etc.

#### Rate of Autonomous Compliance Activities Implementation

Category	Details	Unit	2016	2017	2018
Talk	Once/month	%	95	99	100
Message	Once/quarter	%	99	99	99
Independent education	Once/half-year	%	100	100	100

#### Company-wide Quality Monitoring

Category	Details	Unit	Monitoring
Quality evaluation for equipment suppliers	New	Number	25
	Re-evaluation	Number	59
Purchase quality prevention activity	Number		53
Plant visiting inspection	Number		1,877
Plant residing inspection	Number		6
Annual short-term contract with a third-party inspection company	Number		10

#### Customer Compliant Counseling

Category	Unit	2018	Unit
No. of integrated call center counseling cases	Case	24,030	Monthly average in 2018
(Response rate in the integrated call center)	%	96.3	
(Immediate response rate in the integrated call center*)	%	87.6	
No. of VOC [Voice of Customers] counseling case	Case	1,837	Monthly average in 2018
(VOC processing rate)	%	97.7	
(Average days of processing)	Day	14	

\* Immediate response rate in the integrated call center:  
Response rate of representatives within 15 minutes after a signal is sent

#### Results of Customer Satisfaction Survey\*

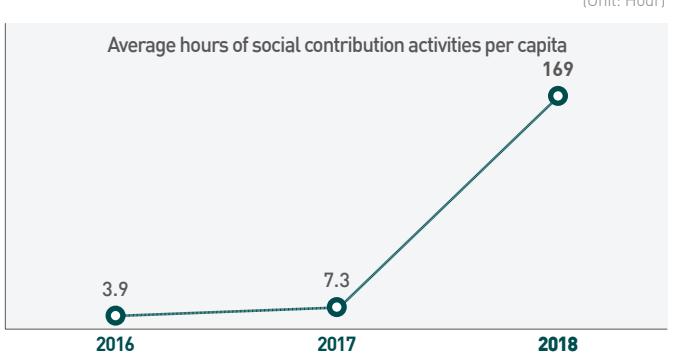
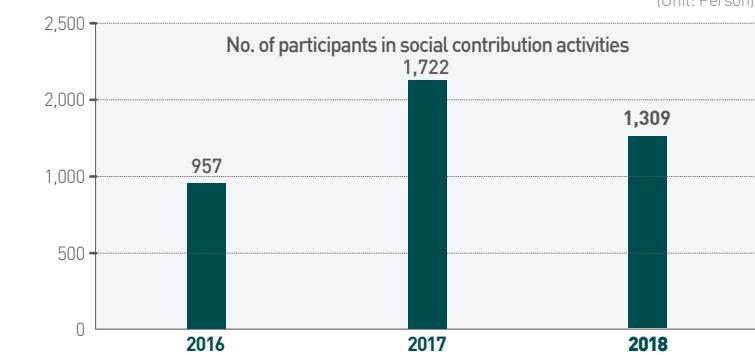
Unit	2016	2017	2018
Rating	6	4	4

\* Results of National Customer Satisfaction Index (NCSI) Survey

#### Headquarters and On-site Quality Management

Category	Unit	2016	2017	2018
On-site quality performance index	Participation rate (%)	89	95	98
Headquarters quality evaluation	Average score	86	86	87
On-site quality evaluation	Average score	85	86	90

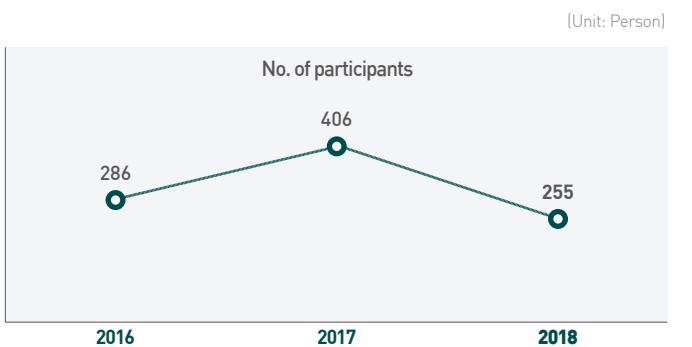
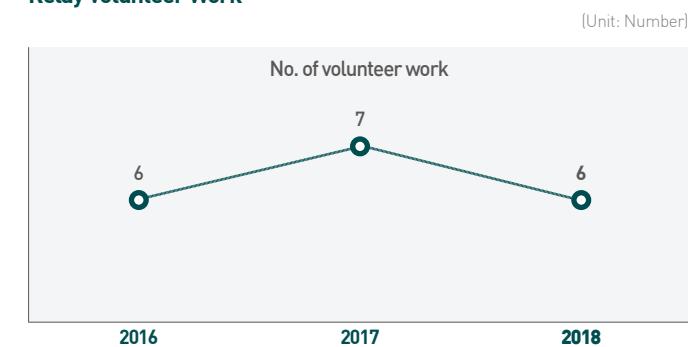
#### Performance of Social Contribution Activities



Average hours of social contribution activities per capita are calculated based on Number of participants in social contribution activities

Category	Unit	2016	2017	2018
Annual number of participants	Person	957	1,722	1,309
Total expenditure	KRW million	9,749	419	214
Operation cost	KRW million	25	58	107
Donation [culture, arts, etc.]	KRW million	9,723	361	107
Average hours of activities per capita	Hour	3.9	7.3	169

#### Relay Volunteer Work



#### Unit

Unit	2016	2017	2018
Number	6	7	6
Person	286	406	255

#### Safety Management Performance

No.	Site	Date of accomplishment	Performance	Note
1	Kuwait AL-ZOUR REFINERY PJ [site]	2017.12.29	Achieved 10 million hours of zero accidents	JV integrated (FDH)
2	Ulsan S-OIL RUC PJ [AREA3] [site]	2018.03.25	Achieved original target for zero accidents 4 times (3.64 million hours)	-
3	Algeria RDPP PJ [site]	2018.07.05	Achieved 20 million hours of zero accidents	-
4	Kuwait CFP PJ [site]	2018.09.16	Achieved 60 million hours of zero accidents	JV integrated (FDH)
5	Saudi Arabia JAZAN REFINERY PJ [site]	2018.09.17	Achieved 60 million hours of zero accidents	JV integrated (JGC, Daewoo E&C)

**GRI Index**

Topic	Disclosure		pages	Issue	
	No.	Title		Core	Normal
GRI 102: General disclosures 2018	102-1	Name of the organization	8	○	
	102-2	Organization's activities	8~9	○	
	102-2	Activities, brands, products, and services	16~39	○	
	102-3	Location of headquarters	8~9	○	
	102-4	Location of operations	8~9	○	
	102-5	Ownership and legal form	44~45	○	
	102-6	Markets served	16~39	○	
	102-7	Scale of the organization	8~9	○	
	102-8	Information on employees and other workers - gender	111	○	
	102-8	Information on employees and other workers - National	111	○	
	102-8	Information on employee type - gender	111	○	
	102-8	Significant portion of the organization's activities are performed by workers who are not employees	None	○	
	102-8	Any significant variations in the numbers reported in Disclosures 102-8-a, 102-8-b, and 102-8-c	None	○	
	102-8	Explanation of how the data have been compiled, including any assumptions made	Annual Report	○	
	102-9	Supply chain	90~93	○	
	102-10	Significant changes to the organization's size, structure, ownership, or supply chain, including	8~9	○	
	102-11	Precautionary Principle or approach	61, 64, 96, 100	○	
	102-12	External initiatives	120~122	○	
	102-13	Membership of associations	126	○	
GRI 102: Strategy 2018	102-14	Statement from senior decision-maker	6~7	○	
	102-15	Key impacts, risks, and opportunities	10~11	○	
GRI 102: Ethics and integrity 2018	102-16	Values, principles, standards, and norms of behavior	10~11	○	
	102-17	Mechanisms for advice and concerns about ethics	100~103	○	
GRI 102: Governance 2018	102-18	Governance structure of the organization, including committees of the highest governance body	44~45	○	
	102-18	Governance structure*	74	○	
GRI 102: Stakeholder Engagement 2018	102-40	List of stakeholder groups	48~49	○	
	102-41	Collective bargaining agreements	112	○	
	102-42	Identifying and selecting stakeholders	48~49	○	
	102-43	Approach to stakeholder engagement	48~51	○	
	102-44	Key topics and concerns raised	48~51	○	
GRI 102: Reporting practice 2018	102-45	Entities included in the consolidated financial statements	Annual Report	○	
	102-45	Entities included entity in the consolidated financial statements	Annual Report	○	
	102-46	Defining report content and topic Boundaries	50~51	○	
	102-46	Defining report content and topic Boundaries that how the organization has implemented the Reporting Principles for defining report content	2, 50~51	○	
	102-47	List of material topics	50~51	○	
	102-48	Restatements of information	None	○	
	102-49	Changes in reporting	None	○	

\* Social Contribution Committee

Topic	Disclosure		pages	Issue	
	No.	Title		Core	Normal
GRI 102: Reporting practice 2018	102-50	Reporting period	2	○	
	102-51	Date of most recent report	2	○	
	102-52	Reporting cycle	2	○	
	102-53	Contact point for questions regarding the report	2	○	
	102-54	Claims of reporting in accordance with the GRI Standards	2	○	
	102-55	GRI content index	118~119	○	
	102-55	GRI content index about Disclosure	118~119	○	
GRI 103: Management Approach 2018	102-56	External assurance	123~125	○	
	103-1	Explanation of the material topic and its Boundary	50~51	○	
	103-2	The management approach and its components	50~51	○	
GRI 201: Economic Performance 2018	103-3	Evaluation of the management approach	50~51	○	
	201-1	Direct economic value generated and distributed	Business Report	○	
	203-1	Infrastrucature investments and services supported	74~75	○	
GRI 203: Indirect Economic Impacts 2018	203-2	Significant indirect economic impacts	74~75	○	
	205-2	Communication and training about anti-corruption policies and procedures	100~103, 116	○	
	302-1	Energy consumption within the organization	110	○	
GRI 302: Energy 2018	302-2	Energy consumption outside of the organization	110	○	
	302-3	Energy intensity	110	○	
	302-4	Reduction of energy consumption	84, 86	○	
GRI 303: Water 2018	303-1	Interactions with water as a shared resource	109	○	
	305-1	Direct (Scope 1) GHG emissions	109	○	
	305-2	Energy indirect (Scope 2) GHG emissions	109	○	
GRI 305: Emission 2018	305-4	GHG emissions intensity	109	○	
	305-5	Reduction of GHG emissions	109	○	
	307-1	Non-compliance with environmental laws and regulations	110	○	
GRI 403: Occupational health and safety management system 2018	403-1	Occupational health and safety management system	94~99	○	
	404-1	Average hours of training per year per employee	112	○	
GRI 404: Training and Education 2018	404-2	Programs for upgrading employee skills and transition assistance programs	76~79	○	
	412-2	Employee training on human rights policies or procedures	76	○	
GRI 412: Human Right Assessment 2018	419-1	Non-compliance with laws and regulations in the social and economic area**	116	○	
	471-8	Type and numbe of sustainability certification, rating and labelling schemes for new construction, management, occupation and redevelopment	84, 109	○	

\*\* Number of violations of fair trade

## UNGC

The UN Global Compact (UNGC) is a voluntary corporate initiative to urge companies to fulfill corporate responsibilities. Since 2012, Daewoo E&C has joined and strived to comply with ten major principles pursued by the UNGC, including human rights, labor, environment and anti-corruption. We will conduct more systemic sustainability management by joining the global standards for corporate social responsibility.

### Ten Major Principles of UNGC and Related Activities

Areas	Principles	Related activities	Pages
Human rights	1. Businesses should support and respect the protection of internationally proclaimed human rights.	<ul style="list-style-type: none"> <li>Supports the international standards and labor standards such as ILO proclamation and OECD guidelines</li> </ul>	76, 112, 116
	2. Businesses should make sure that they are not complicit in human rights abuses.	<ul style="list-style-type: none"> <li>Provides all employees with sexual harassment prevention and human rights education</li> </ul>	
Labor	3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	<ul style="list-style-type: none"> <li>Respect for freedom of association and collective bargaining rights</li> <li>Respect for freedom of association and collective bargaining</li> </ul>	80, 112
	4. Businesses should uphold the elimination of all forms of forced and compulsory labor.	<ul style="list-style-type: none"> <li>Supported global human rights protection standards such as Korean Labor Standards Act, UN Human Rights Declaration</li> <li>Joined UN Global Compact and declaring human rights protection</li> </ul>	
Environment	5. Businesses should uphold the effective abolition of child labor.		76, 120
	6. Businesses should uphold the elimination of discrimination in respect of employment and occupation.	<ul style="list-style-type: none"> <li>Transparent HR recruitment</li> <li>Implements fair evaluation and compensation</li> <li>Operates family-friendly welfare and benefits program</li> </ul>	
	7. Businesses should support a precautionary approach to environmental challenges.	<ul style="list-style-type: none"> <li>Establishes the environmental management system and operates a responsible organization</li> <li>Systemize the eco-friendly construction process to cope with climate change</li> </ul>	
Anti-corruption	8. Businesses should undertake initiatives to promote greater environmental responsibility.	<ul style="list-style-type: none"> <li>Signs a voluntary agreement for fugitive dust reduction in the construction business</li> <li>Voluntary agreement to cope with fine dust</li> </ul>	83~87
	9. Businesses should encourage the development and diffusion of environmentally friendly technologies.	<ul style="list-style-type: none"> <li>Develops zero energy house technology with eco-friendly design</li> <li>Implements renewable energy projects</li> <li>Signs an voluntary agreement for fine dust and fugitive dust reduction</li> <li>Establishes GHG emissions reduction plan</li> </ul>	
10. Businesses should work against corruption in all its forms, including extortion and bribery.	<ul style="list-style-type: none"> <li>Reinforces compliance system</li> <li>Establishes mid- and long-term compliance strategies</li> <li>Training and promotion of compliance education</li> <li>Certification of ISO37001 (Anti-bribery Management System)</li> </ul>	100~103	

## SDGs (Sustainable Development Goals)

The UN General Assembly elected the Sustainable Development Goals (SDGs) in 2015 to promote the world's sustainable growth. The goals, which are to be followed by the international community, including both advanced countries and developing countries, from 2016 to 2030, contain 17 major goals and 169 subsidiary goals. Daewoo E&C has actively discovered and operates projects that are in line with the Sustainable Development Goals, based on Vision 2025, which are Green Growth, Future growth and Shared Growth, as well as our sustainable management strategy systems.

SDGs Goals	Content	Content	Pages
	Ensure healthy lives and promote well-being for all at all ages	Implementation of social contribution activities Mutual growth with suppliers Health and safety management	74~75 90~93 94~99
	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Development of employees capabilities Labor-management relationship based on trust	76~79 80~82
	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Achieve stable business performance Development of capabilities for employees Labor-management relationship based on trust	56~57 76~79 80~82
	Promote sustainable industrialization and innovation	Reinforcement of R&D capability	66~71
	Reduce inequality	Development of capabilities for employees Labor-management relationship based on trust	76~79 80~82
	Create sustainable cities and residential areas	Implementation of social contribution activities Mutual growth with suppliers	74~75 90~93
	Establish sustainable production and consumption culture	Reinforcement of R&D capability	66~71
	Cope with climate change	Reinforcement of eco-friendly system	83~87
	Restore sustainable ecosystem	Reinforcement of eco-friendly system	83~87
	Establish the right legal system for all	Enhancement of brand value and corporate image Preventing corruption	58~65 100~103
	Establish partnership to accomplish a goal	Achieve stable business performance	56~57

## ISO 26000

The UN Global Compact (UNGC) is a voluntary corporate initiative to urge companies to fulfill corporate responsibilities. Since 2012, Daewoo E&C has joined and strived to comply with ten major principles pursued by the UNGC, including human rights, labor, environment and anti-corruption. We will conduct more systemic sustainability management by joining the global standards for corporate social responsibility.

### Core Themes of ISO 26000 and Related Activities

Core Subject	Issues	Related Activities	Pages
Governance	Decision-making structure and process	Operation of the Audit Committee and Outside Director Nomination Committee under the Board of Directors	44~45
Human rights	Due diligence	Operated Compliance System Review by Unit	100~103
	Human rights risk situation	Implementation of human rights education and ethical management campaign	76, 100~103
	Avoidance of complicity	Contract and implementation of the four major guidelines for fair trade	90~93
	Resolving grievances	Implementation of Ethics Help Line and internal reporting system	76, 100
	Discrimination and vulnerable groups	Fair evaluation and compensation	76
	Civil and political rights	Proactively responded to revised Korea Labor Standards Act and Complied with ILO standards	80, 82
	Economic, social and cultural rights	Family-friendly system and support for work-and-life balance for employees	81~82
	Fundamental rights at work	Sexual harassment prevention and human rights education	101, 116
Labor practice	Employment and employment relationships	Compliance with domestic labor standard act and ILO standards	76, 100
	Conditions of work and social protection	Efforts to prohibit discrimination for socially disadvantaged people and address social inequality	76
	Social dialogue	Operation of labor union, labor-management committee and supplier meetings	80, 91
	Health and safety at work	Operation of Health and Safety Committee and employees health management program	94~99
	Human development and training in the workplace	Operation of education, training and program for strategic direction to reinforce HR capability	77~79
Environment	Prevention of pollution	Voluntary agreement for managing fugitive and fine dust	87
	Sustainable resource use	Development of eco-friendly technology and construction materials	83~87
	Climate change mitigation and adaption	Greenhouse gas, waste and energy management	83~87, 109~110
	Protection of the environment, biodiversity and restoration of the natural habitats	Expenditure and investment for environmental protection	83~87, 109~110
Fair operation	Anti-corruption	Reinforcement of ethical managements system and systemization of compliance system	100~103
	Responsible political involvement	Membership and activities for relevant associations and societies in each division (department)	127
	Fair competition	Inspection of unit-based compliance and reinforcement of fair competition	100~103
	Promotion social responsibility in the value chain	Reflection of sustainability management in evaluating suppliers and limitation of unqualified suppliers	90~93
	Respect for property rights	Operation of integrated call center and grievance-handling process and efforts to enhance customer satisfaction level	62, 116
Consumer issues	Fair marketing	Fair marketing by reinforcing competitiveness	16~39
	Protection of health and safety for consumers	Acquisition of domestic and overseas quality certificates (ISO9001, KEPIC, ASME, NBBI, etc.)	60~61
	Sustainable consumption	Eco-friendly purchase, eco-friendly technology development and green building certification	83~87
	Consumer service support and resolution of complaints	Operation of integrated call center, customer satisfaction survey (including immediate response rate)	62, 116
	Protection of consumer data and privacy	Reinforcement of customer information security inspection system and operation of information security education	63
	Access to essential services	Operation of total real-estate service "THE ANSWER" and integrated call center	26, 62
Local community engagement and development	Education and awareness	Operation of total real-estate service "THE ANSWER" and integrated call center	26, 62
	Community engagement	House Renovation with Hope, company-wide relay voluntary work, overseas site social contribution activities	74~75
	Education and culture	Social contribution by talent donation, environmental improvement and sharing activities	74~75
	Job creation and support for capability development	Talent donation by career experience and special lectures	74~75, 79
	Technology development and access	Reinforcement of smart construction technology, eco-friendly technology and drone measuring technology	66~71
	Wealth and income creation	Connection to creating local income by utilizing jointly owned sites with villages	74
	Health	Support for overseas voluntary work for free eye disease treatment in Morocco and India	74
Social investment	Social investment	Establishment of national infrastructure such as road and bridge and implementation of overseas relief activities	16~39, 74

## Assurance Statement on Greenhouse Gas Emissions

KSA-19-GHG-342

### GHG Verification Summary Daewoo Engineering & Construction Co., Ltd.

#### Verification Scope

Korean Standards Association has conducted reasonable GHG emissions verification based on GHG report provided by Daewoo Engineering & Construction Co.,Ltd which includes Scope1 and Scope2.

#### Verification Standards and Guidelines

To conduct verification activities, verification team applied verification standards and guidelines. The standards and guidelines are as follows.  
 ·GHG&Energy Target Scheme guideline(2016-255) provided by Ministry of Environment, Republic of Korea  
 ·Verification guideline for management of GHG emissions trading scheme(2018-070) provided by Ministry of Environment, Republic of Korea  
 ·KS Q ISO 14064-1,2,3 : 2006  
 ·IPCC Guideline.

#### Verification Conclusion

As a result of verification activities, verification team has found no significant errors. Therefore, Korean Standards Association confirms that following emissions data are adequately quantified.

(unit : tonCO<sub>2</sub>eq)

GHG Emissions			
Year	Scope 1	Scope 2	Total
2018	8,584	62,136	70,715

※ There is a difference between the total quantity of GHG emission and the sum of each workplace's emission.  
 (Decimal place is not considered when calculating the emission of each workplace.)

March 31, 2019

**KOREAN STANDARDS ASSOCIATION**

## Independent Third-Party Assurance Statement

### Introduction

DAEWOO Engineering & Construction Co., Ltd. ("DAEWOO E&C") commissioned DNV GL Business Assurance Korea, Ltd. ("DNV GL"), part of DNV GL Group, to undertake independent assurance of 2019 DAEWOO E&C Sustainability Report (the "Report"). The directors of DAEWOO E&C have sole responsibility for the preparation of the Report. The responsibility of DNV GL in performing the assurance work is to the management of DAEWOO E&C in accordance with the terms of reference. DNV GL's assurance engagements are based on the assumption that the data and information provided by the client to us as part of our review have been provided in good faith.

### Scope and Basis of assurance

Based on non-financial data and sustainability performance data generated from 143 domestic project sites and 4 buildings owned by DAEWOO E&C in Korea in 2018, we have assessed sustainability report content and quality definition principles in accordance with GRI Standards. We have reviewed that the Topic-specific disclosures of GRI Standards which are identified in the materiality determination process;

No.	Material topic	GRI Disclosure	No.	Material topic	GRI Disclosure
1	Development of Employee competency	404-2	6	Improvement of R&D capacity	203-1, 203-2
2	Trust between labor-management relationship	N/A	7	Implementation of health and safety management system	403-1
3	Philanthropy	203-1, 203-2	8	Continual improvement of environmental management system	307-1
4	Increase in brand value and improvement of corporate image	203-1, 203-2	9	Compliance	419-1
5	Achievement of stable management performance	201-1	10	Mutual growth with suppliers	203-1, 203-2

DNV GL's assurance methodology, VeriSustain™<sup>1</sup> which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000) is applied for the assurance engagement with the limited level of assurance. The assurance was carried out from April and till May 2019. The site visit was made to DAEWOO E&C's Headquarters in Seoul, Korea. We undertook the following activities as part of the assurance process:

- Challenged the sustainability-related statements and claims made in the Report and assessed the robustness of the underlying data management system, information flow and controls;
- Interviewed representatives from the various departments;
- Conducted document reviews, data sampling and interrogation of supporting databases and associated reporting system as they relate to selected content and performance data;
- Reviewed the materiality assessment report.

### Limitations

The engagement excludes the sustainability management, performance and reporting practices of DAEWOO E&C' subsidiaries, associated companies, suppliers, contractors and any third-parties mentioned in the Report. DNV GL did not interview external stakeholders as part of this Assurance Engagement. Economic performance based on the financial data is cross-checked with internal documents, the audited consolidated financial statements and the announcement disclosed at the website of Korea Financial Supervisory Service (<http://dart.fss.or.kr>) as well as DAEWOO E&C's website ([www.daewooenc.com](http://www.daewooenc.com)). These documents, financial statements and the announcements are not included in this Assurance Engagement. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. The baseline data for Environmental and Social performance are not verified, while the aggregated data at the corporate level are used for the verification. DNV GL expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Assurance Statement.

### Conclusion

On the basis of the work undertaken, nothing comes to our attention to suggest that the Report does not properly address the adherence to the Principles for defining report content in GRI Standards. Further opinions with regards to the adherence to the Principles are made below;

### Stakeholder Inclusiveness

DAEWOO E&C has identified internal and external stakeholder groups such as Future generation, Regulators, Shareholders and Investors, Customers, and Academia / Industry association / Research institute, Employees, Local community and Suppliers. DAEWOO E&C engages with the stakeholders at the company and business unit levels through various channels. Stakeholder engagement and expectations are described in the Report.

### Sustainability Context

The new vision, 'Build Together' announced in 2018 with core values of "challenge and passion" and "autonomy and accountability" and 2025 strategic goals to grow into a company that creates the best value for customers are presented in the Report. The Report also addresses the key strategy and strategic tasks and discloses various sustainability achievements. In addition, Daewoo E&C reports 10 material topics which are featured in 'Financially stable management', 'Future management' and 'Righteous management'. Each material topic is reported in conjunction with SDGs (Sustainable Development Goals), which helps readers understand the sustainability management of Daewoo E&C.

### Materiality

DAEWOO E&C has conducted the materiality assessment to prepare the Report. 37 issues were pooled for internal and external stakeholder survey to rate the material issues. 10 material topics and 4 general issues are prioritized accordingly. The assurance team has reviewed the materiality assessment process and confirmed relevant material topics prioritized from the process are addressed in the Report.

### Completeness

The Report covers the impacts of material topics on the stakeholders for the reporting period and key performance in 2018. The reporting boundary includes the operations over which DAEWOO E&C implements management control in 2018 however the quantified performance data from 143 sites and 4 buildings operated by DAEWOO E&C in Korea. DAEWOO E&C could report material concerns identified through engaging key stakeholders for international projects.

### Balance, Comparability, Accuracy, Timeliness, Clarity and Reliability

The assurance team has sampled data and tested accuracy. Based on the test, the intentional error or misstatement is not noted from the data and information disclosed in the Report. Data owners were able to demonstrate the origin and interpretation of the data in a reliable manner. The data was identifiable and traceable.

### Competence and Independence

DNV GL applies its own management standards and compliance policies for quality control, in accordance with ISO/IEC 17021:2011 - Conformity Assessment Requirements for bodies providing audit and certification of management systems, and accordingly maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We have complied with the DNV GL Code of Conduct<sup>2</sup> during the assurance engagement and maintain independence where required by relevant ethical requirements. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV GL was not involved in the preparation of statements or data included in the Report except for this Assurance Statement. DNV GL maintains complete impartiality toward stakeholders interviewed during the assurance process. DNV GL have no other contract with DAEWOO E&C and did not provide any services to DAEWOO E&C in 2019 that could compromise the independence or impartiality of our work.

May 2019  
Seoul, Korea

Jang Sup Lee  
Country Representative  
DNV GL Business Assurance Korea, Ltd.



J.S.  
Signature

<sup>1</sup> The VeriSustain protocol is available upon request at DNV GL Website ([www.dnvg.com](http://www.dnvg.com))

<sup>2</sup> DNV GL Code of Conduct is available from DNV GL website ([www.dnvg.com](http://www.dnvg.com))

## Social Contribution Performance

### Civil Project Division

Title	Description
Singapore Subway Construction Site No. 216	Improved pavements
Bridge Construction Site in Bihar, India	Operated medical facilities, provided AIDS vaccine and enhanced awareness
Sea-crossing Bridge Construction Site in Mumbai, India	Provided snacks, fruits, school supplies and daily supplies Supported kindergartens near the construction site with school supplies (crayons, picture books)
Expressway in Ethiopia	Provided one refrigerator (190L) and medicines Provided local residents with water from the Zeway Lake by using a sprinkler truck

### Housing & Building Division

Title	Description
Support supplies to Oksan Senior Citizen Center	Provided supplies (rice, ramen)
Support supplies for the summer in the senior citizen center	Provided supplies (fan, watermelon)
Delivered relief supplies for earthquake damage in Pohang	Delivered relief supplies for earthquake damage in Pohang
Making a Beautiful Way to School Campaign	Displayed posters made by Howon Elementary School students on the fence
Sponsored Senior Citizen Party in Godeok 2-dong	Provided supplies (rice)
Implemented residential environmental improvement construction for the disadvantaged	Implemented residential environmental improvement construction for the disadvantaged
Delivered supplies to Gwacheon Welfare Center for People with Disabilities	Provided supplies (rice 200kg)

### Plant Division

Title	Description
Guardians for Gyeonghuigung Palace Park	Contributed to purify the environment by agreement with Jongno-gu District Office
Coin Donation with Love	Supported coin donations
Support for the 11th – 13th Free Eye Camp Voluntary Work - Morocco SAFI Power Generation PJ (construction site)	Supported free eye disease medical treatment

## Awards

Division	Performance
Civil Project Division	Excellence Prize in the Construction and Facility Safety Contest in 2018 (held by Ministry of Land, Infrastructure, and Transport) – Asan-Cheonan Expressway Construction Site No. 3, Excellence Prize in the Construction Safety Innovation Awards in 2018 (held by Korea Expressway Corporation) – Daegu Outer Circular Expressway Construction Site No.2, Highest Level in the Safety Environment for Singapore Subway Construction Site No. 216, Main Prize in the Environmental Management Section by International Road Federation (IRF), Grand Prize for "This Year's Civil Construction Building" by Korean Society of Civil Engineers, Tunnelling Awards by Korean Tunnelling and Underground Space Association (Inje-Yangyang Tunnel), Citation by President and Minister of Land, Infrastructure, and Transport for the "27th Road Day", Grand Prize for Construction Safety Innovation (Asan-Cheonan Expressway Construction Site No. 3), Grand Prize for the Road Section in the Civil Construction Facilities (Cheonmasan Tunnel Construction Site), Appreciation Plaque from KOTRA
Housing & Building Division	Giheung Station Park PRUGIO construction site received an award certificate from the Mayor of Yongin City Government, Godeok Gracium construction site received an award certificate from Gangdong-gu District Office, Godeok Central PRUGIO construction site received an award certificate from the Head of Gangdong-gu District Office, Ansan Park PRUGIO construction site received an award certificate from Korea Occupational Safety and Health Agency, Jungdong Central Park PRUGIO construction site received an award certificate from the Mayor of Bucheon City Government, Yangju New Town PRUGIO construction site was selected as an excellent apartment house in Gyeonggi-do and received an award certificate, Seongnam Sujin Station Studio Apartment construction site received an award certificate from the Mayor of Seongnam City Government, Yeongjong Haneul New Apartment Sales Office received an award certificate from Incheon Metropolitan City Development Corporation, Godeok Gracium construction site received an award certificate from the Head of Gangdong-gu District Office
Institute of Construction Technology (DICT)	Citation by the Minister of Land, Infrastructure, and Transport for the Day of Construction Engineers in 2018, Citation by the Minister of Land, Infrastructure, and Transport for the Construction Day in 2018, Citation by the Chairperson of the National Assembly Transportation Committee, Citation by President of Korea Federation of Construction Contractors, Technology Prize by Korean Geotechnical Society, Excellent Thesis Prize by Korean Geo-environmental Society

## Membership

Division	Associations and Institutes
Strategic Planning Division	Construction Association of Korea, International Contractors Association, Korea Federation of Construction Contractors, Korea Chamber of Commerce & Industry, Korea Electrical Contractors Association, Korea Information & Communication Contractors Association, CM Association of Korea, Korea Specialty Construction Association, Korea Facilities Maintenance Association, Construction Management Strategy Society of Korea Construction Management Association, Professional Infrastructure Developers Association, Korea Machinery Facility Association, Federation of Korean Industries, Korea-Vietnam Friendship Association, Construction and Economy Research Institute of Korea
Plant Division	Korea Atomic Industrial Forum, Korea Plant Industries Association, Korea Nuclear Association for International Cooperation, Korea Nuclear Society, The Korea Gas Union, Korean Radioactive Waste Society, Korea Engineering & Consulting Association, Korea Plant Industries Association (PEA Club), Korea Electric Engineers Association, Korea Coating Experts Society, Engineering Guarantee Insurance
HR & Management Service Division	Korea Construction Engineers Association, Korea Employers Federation, Korea Fire Facility Association, Construction Industry Human Resource Manager Council, Korea Software Technology Promotion Association, Korea Personnel Improvement Association, Korean Human Resource Development Association, Jongno Integrated Defense Council, National Workplace Commander Association, Korea Emergency Planning Officer Association, National Association of Reservist Battalion Commander, Korea International Trade Association, SeriCEO, Korea Emergency Plan Commission by the Ministry of Land, Infrastructure, and Transport
Housing & Building Division	Korea Housing Association, Korea Institute of Construction Engineering & Management, Architectural Institute of Korea, Korea Institute of Building Construction, Korea Housing Service Society, Korean Institute of Electrical Engineers, Korea Developer Association, Korean Institute of BIM, Korea Military Supplies Cooperative, Korean Institute of Illuminating and Electrical Installation Engineers, Korean Institute of Electrical and Electronic Material Engineers, Korean Institute of Landscape Architecture, Construction Engineering and Management Society, Korean Institute of Architectural Sustainable Environment and Building Systems, Korea Green Building Council, Korean Society of Living Environment System, Korean Institute of Traditional Landscape Architecture, Korea Society of Environmental Restoration Technology, Korea Institute of Information & Telecommunication Facilities Engineering, IBS Korea, Korean Association of Air Conditioning Refrigerating and Sanitary Engineers, Korea Facility Management Association, Construction & Residence Study Group, Korea Green Roof & Infrastructure Association, KMU Industry-Academic Cooperation Foundation, Korea Remodeling Association, Korea Institute of Ecological Architecture and Environment
Civil Project Division	Korean Society of Civil Engineers, Korea Planning Association, Korean Society of Transportation, Korean Geotechnical Society, Korean Society of Engineering Geology, Korean Tunneling and Underground Space Association, Korean Geosynthetics Society, Korea Road & Transportation Association, Korea Society of Road Engineers, Korean National Committee on Large Dams, Korea Water Resources Association, AWC(Asia Water Council), Korea Railway Association, Korean Society for Railway, Korea Railway Association (International Cooperation Committee), Korean Railway Construction Engineering Association, Korea Ports & Harbors Association, Korean Society of Coastal and Ocean Engineers, Korean Society of Hazard Mitigation, Korea Environmental Industry Association, Korean Society of Coastal Disaster Prevention, Korean Wetlands Society, Korea Concrete Institute, Korean Society of Steel Construction, Korea Association of Waste to Energy Technology, Road Engineering Association of Asia & Australasia, Korea Road Forum, Korean National Committee on Irrigation and Drainage, Korea Water and Wastewater Works Association
Institute of Construction	Korea Industrial Technology Association, Korea Carbon Capture and Storage Association, Korea Construction Transport New-Technology Association, Council on Tall Buildings and Urban Habitat (CTBUH), American Concrete Institute (ACI), International Federation for Structure Concrete (FIB), American Institute of Steel Construction (AISC)
Finance Division	Korea Listed Companies Association, Korea Association for CFO, Listed Companies CFO Forum
Q-HSE Services Division	Construction Safety Officers' Council (CSOC), Korea Construction Quality Association, Korean Society for Construction Quality, Construction Safety Manager Committee, MaeKyung Safety & Environment Institute, Korea Environment Construction Association, KOSHA 18001 Conference, Korea Safety Management & Science, KEPIC WEEK Sponsorship (Korea Electric Association), Association of Construction Safety Managers, Association of Construction Health Managers
Internal Audit & Consulting Division	Fair Competition Federation, UN Global Compact

**Build Together**

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