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posco  
E&C

2017 - 2018  
SUSTAINABILITY REPORT

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ARCHITECTURE

# SMART PLAYER in Steel Construction & Concession

POSCO E&C 2017 - 2018 Sustainability Report

Guide to Using Report



VIEW  
SUSTAINABILITY  
REPORT (PDF)



VIEW POSCO E&C  
PR FILM

## ABOUT THIS REPORT

### Report Overview

This report is the seventh sustainability report developed by POSCO E&C. We transparently share our sustainability activities and performances during the year by annually publishing the sustainability report.

### Reporting Standards

This report is developed in accordance with the Core Options of the Global Reporting Initiatives (GRI) Standards. The financial information is recorded based on the Korean International Financial Reporting Standards (K-IFRS), and the non-financial information is reported based on the GRI Standards and/or POSCO E&C's managerial standards.

### Reporting Period and Scope

This report shows the activities and performances of POSCO E&C from January 1 to December 31, 2017. Such information that may have significant impact on stakeholders as governance includes the activities until July 2018, and some quantitative data are reported for three-year period for easier comparison. The reporting scope is domestic worksites (excluding investment companies and affiliates) and some major overseas worksites. Any unusual scopes are annotated separately.

### Third-Party Assurance

The financial data were verified by the independent auditor to ensure the credibility, and the non-financial information regarding environment and social information were verified by the third-party assurance agency, DNV GL. The assurance results are reported on pp. 99 - 100.

### Special thanks to:

Jeongah Kang, Sunghu Ko, Gyeongyul, Kim, Eunbyeong Kim, Jaeshin Kim, Jungin Kim, Hwaran Kim, Gyeonghun Min, Dongmin Park, Sangyong Song, Somyeong Lee, Ina Jeon, Hyejin Jung, Sunyeong Choi, Pyeongdong Han, Hyemin Huh

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### POSCO E&C Sustainability Report 2017 - 2018

For more details about the report, please visit POSCO E&C's homepage and download the PDF version of the report.

Developed by Social Contribution Group / Administrative Division / POSCO E&C

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## C E O M E S S A G E



Safety is our most prioritized management value, and based on such principle, we aim to create a safe work environment. We continue our unwavering effort in building an esteemed company for the employees, stakeholders and the community.



Dear our stakeholders,

POSCO E&C, since its foundation in 1994, has demonstrated remarkable growth as Korea's most prominent construction company based on integrated business expertise ranging from steelworks to power plant, civil infrastructure, and building works by adapting groundbreaking technologies and thinking beyond the norms. We now lead the new paradigm of construction industry with our focus on 'Smart Construction' utilizing virtual construction, big data, IoT, and artificial intelligence.

During the downturn of the market in 2017 caused by consistent decrease in project awards in overseas market and for public works, we were able to recover business performance and successfully achieve turnaround through merging with POSCO Engineering, divesting from low-profit businesses and strengthening project execution capabilities as a part of our efforts for substantial management.

We are committed in maintaining strong financial fundamentals by continuing to implement substantial management activities in 2018. We plan to expand our markets in conventional sectors with proven track record such as steelworks, housing, thermal power plant, and rail, as well as to cultivate new core products in petrochemicals and other sectors. In addition, we aim to leverage strategic approach for our overseas business by identifying the right capabilities aligned with market attractiveness.

I believe in creating social values through the practice of socially responsible corporate activities, which is as important as business performance. POSCO E&C, therefore, intends to fulfill its role as a corporate citizen by contributing to the community and solving social issues such as education, environment, and low-fertility rate.

Safety is our most prioritized management value, and based on such principle, we aim to create a safe work environment. We continue our unwavering effort in building an esteemed company for the employees, stakeholders and the community.

I ask for your sincere support and encouragement for POSCO E&C's relentless efforts in innovation to overcome challenges and regenerate as 'Global Smart Player in Steel Construction & Concession.'

Sincerely,

CEO & President  
Young-Hoon Lee

# SMART PLAYER in Steel Construction & Concession

We are growing towards a global leading construction company based on differentiated competitiveness edge.

**Global Network**

**40** Countries

---

**10** Overseas Subsidiaries

Vietnam, China, Thailand, Hunchun, Dalian (IT), Mexico, India, Australia, Brazil, Indonesia

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**03** Branches

Saudi Arabia, Chile, Peru

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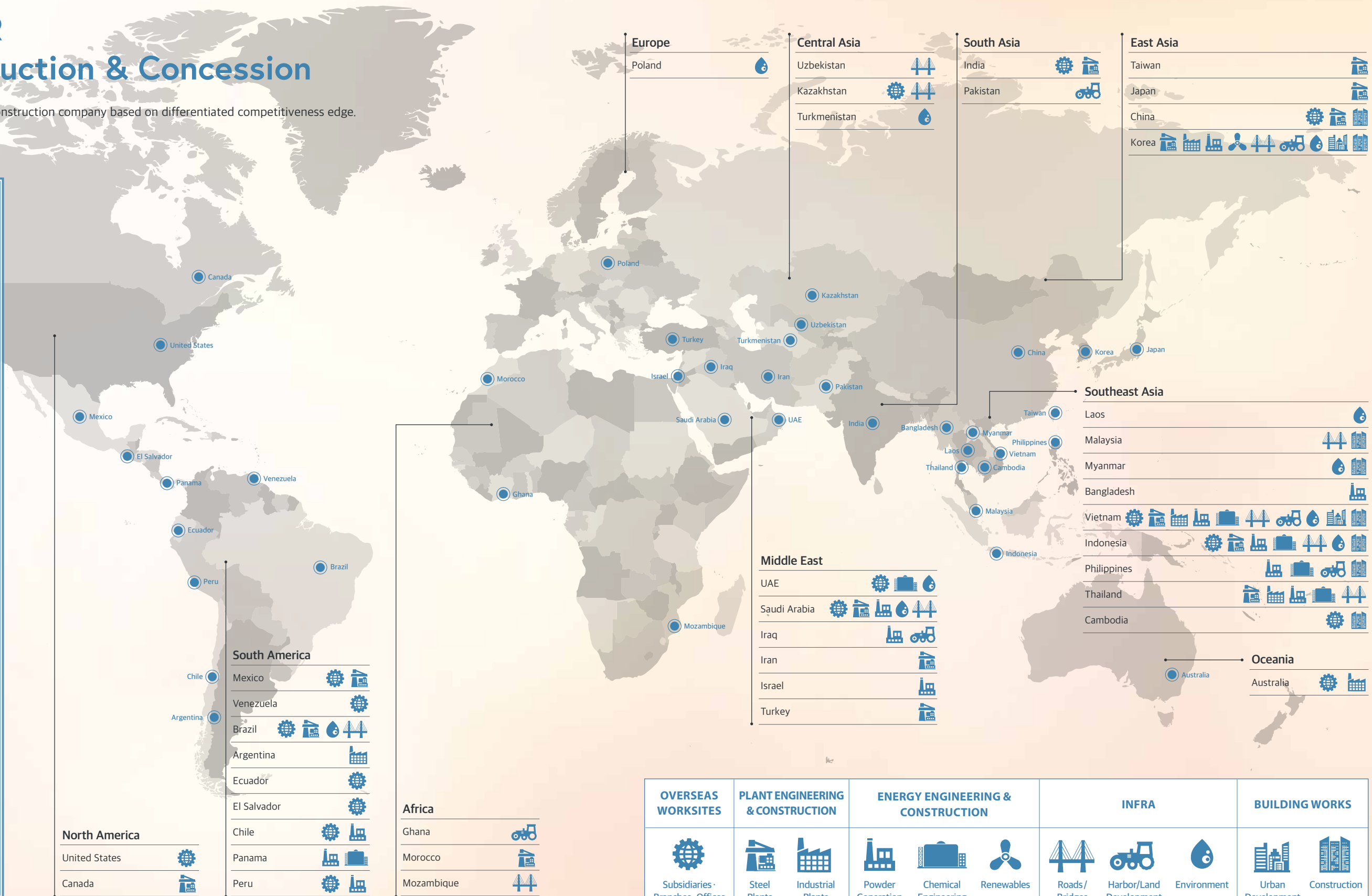
**02** Offices

Malaysia, Hanoi

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**14** Project Management Offices

Philippines, Panama, Bangladesh, Indonesia, Mozambique, Myanmar, Pakistan, Abu Dhabi, Iraq, Malaysia, Kazakhstan, Ghana, Morocco, Laos

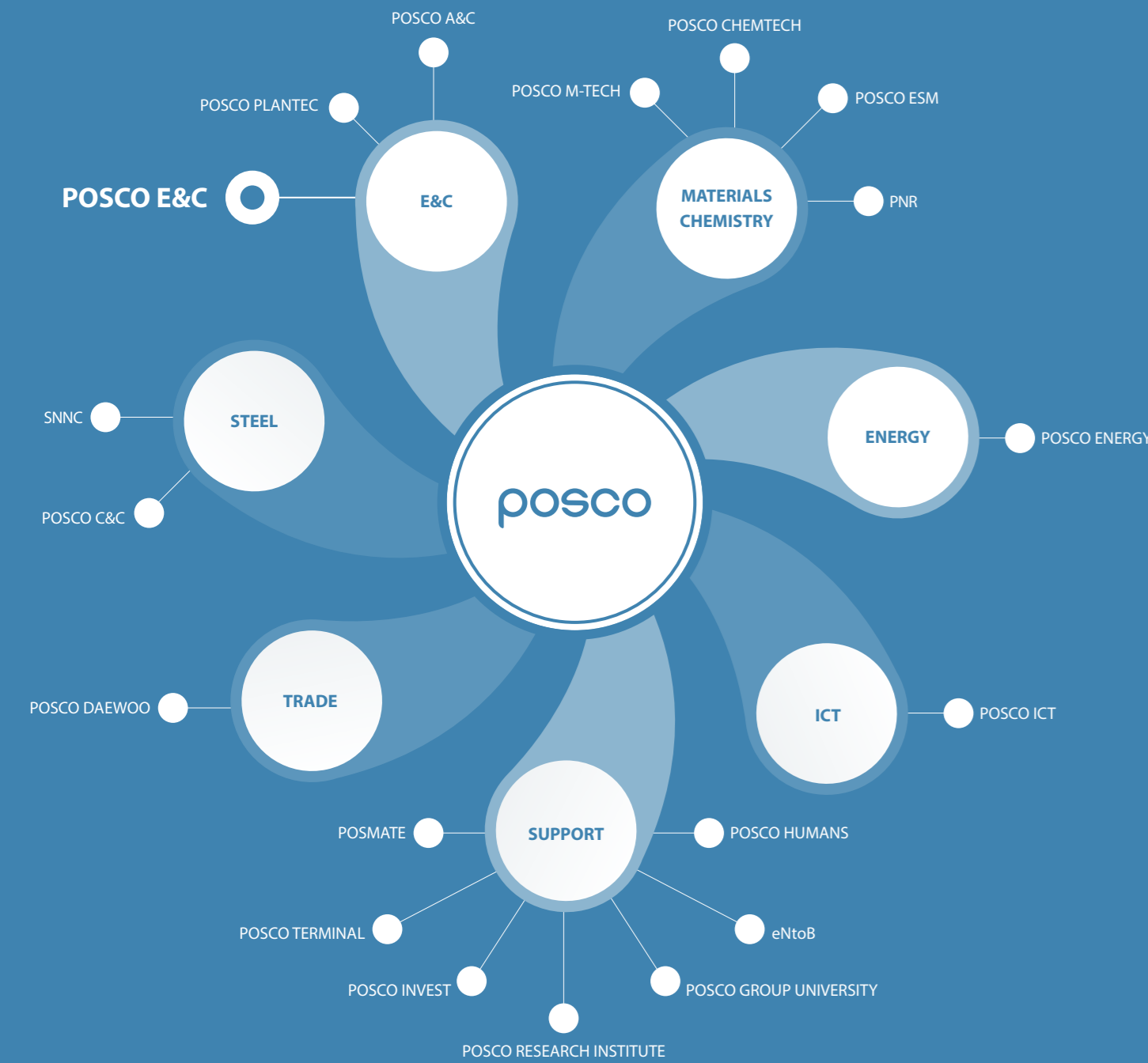


OVERSEAS WORKSITES	PLANT ENGINEERING & CONSTRUCTION	ENERGY ENGINEERING & CONSTRUCTION	INFRA	BUILDING WORKS
Subsidiaries · Branches · Offices	Steel Plants Industrial Plants	Powder Generation Chemical Engineering Renewables	Roads / Bridges Harbor/Land Development Environment	Urban Development Construction

\*As of March 2018

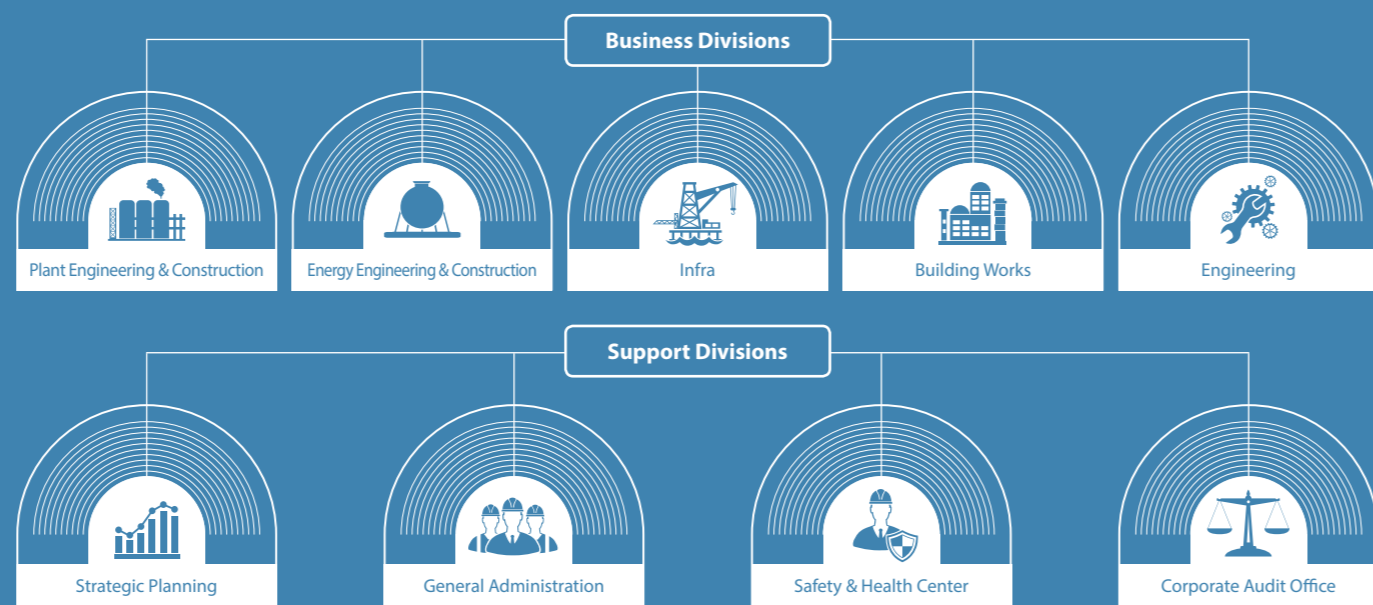
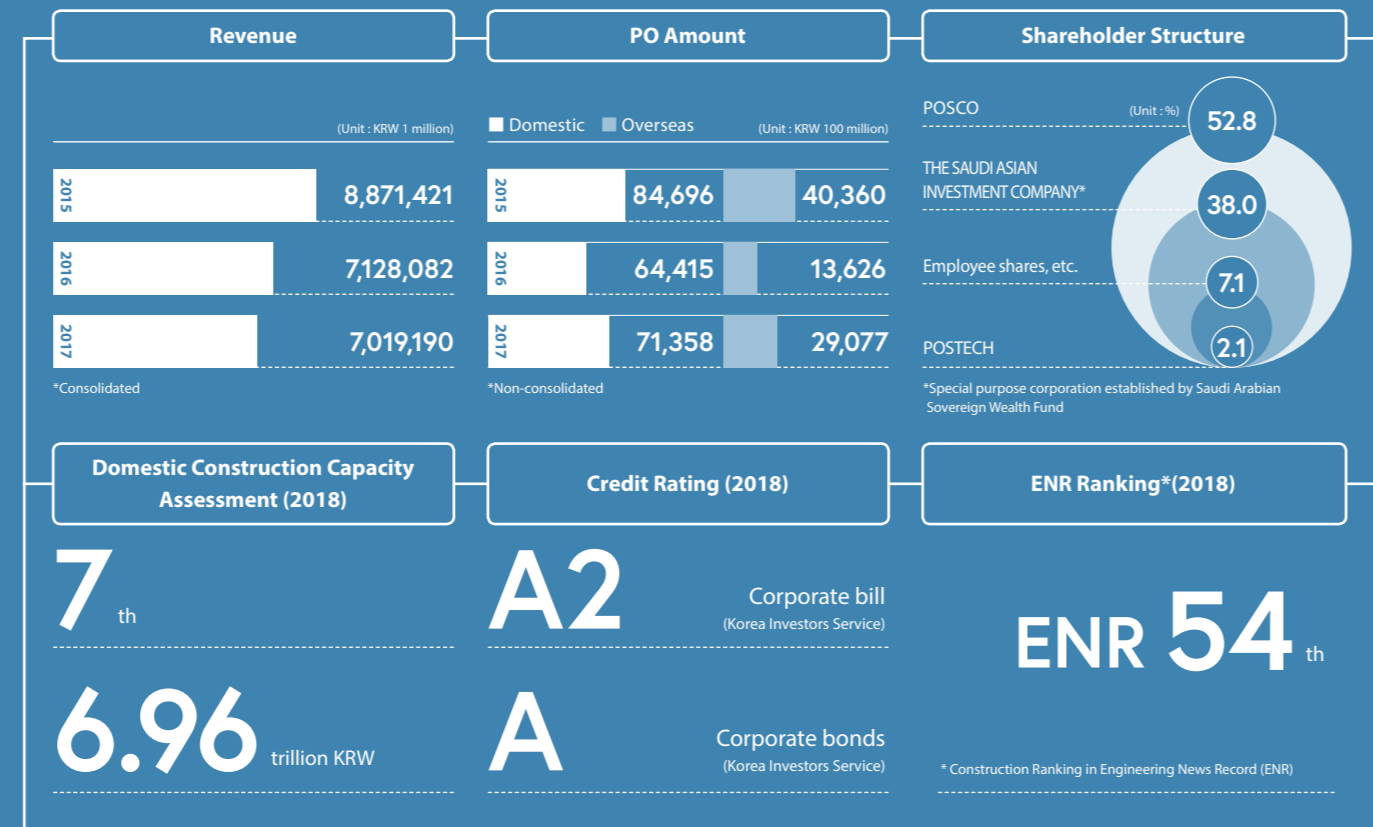
# POSCO GROUP

By utilizing our competitive spirit and execution power for the past 50 years, POSCO Group went beyond its limits and became a forerunner of the Korean steel industry. POSCO Group is continuing to strengthen its capabilities with our unique global competitiveness and synergy in the fields of steel, and also new materials, E&C, energy, ICT, and trade. Based on a forward-looking business structure that harmonizes steel & non-steel, manufacturing & services, tradition & the future, POSCO and its affiliates are growing into a much-loved global business group.



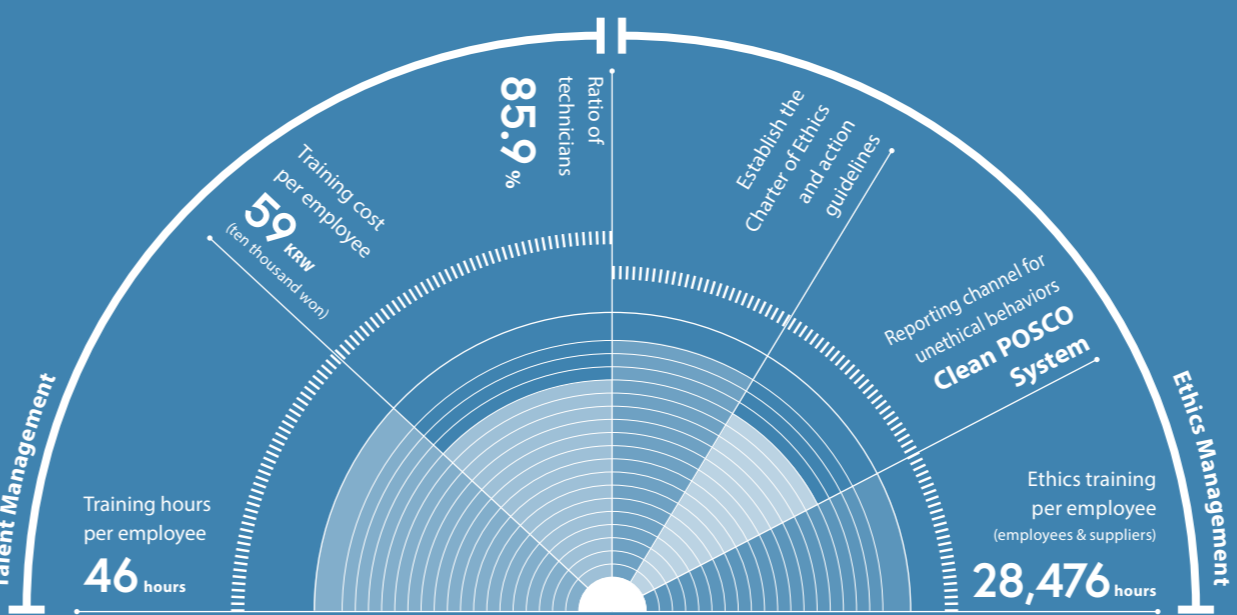
# POSCO E&C

Founded in 1994, POSCO E&C has grown into an integrated construction company with global competitiveness, with by reaching an average annual growth of 14% in the past 24 years. With our top-tier level of steel plant technology as our groundwork, POSCO E&C is showing distinguished performances in energy and environmental plants. POSCO is also gaining global recognition for its competence in implementing projects in social overhead capital (SOC) including roads, light rail system and harbor as well as in all other areas of construction including new urban development and skyscrapers. We are continuing to pursue our passion by fusing smart technology into the overall process of our construction.



## Talent Management

Secure and cultivate global talents who will drive changes with future-oriented thinking and passion.

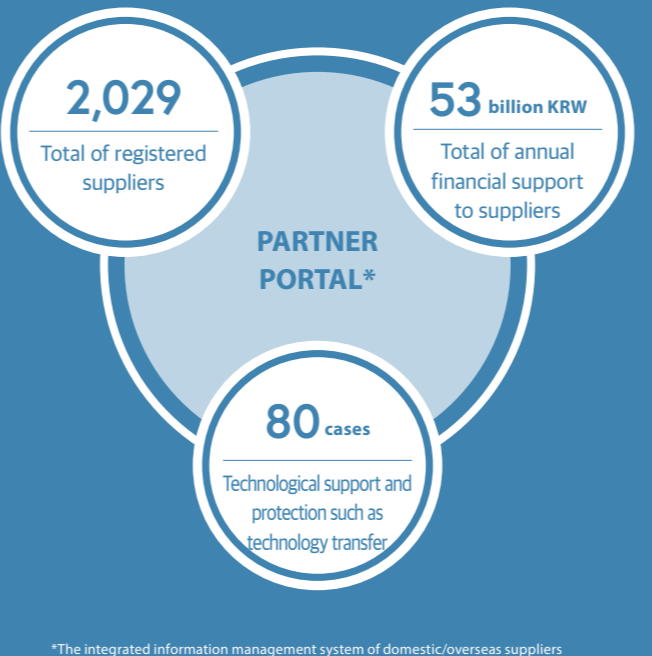


## Ethics Management

Realize 'Clean POSCO E&C' by establishing fair and ethical corporate culture.

## Shared Growth

Establish an integrated management system of global suppliers to secure excellent suppliers and promote collaborative programs for shared growth.



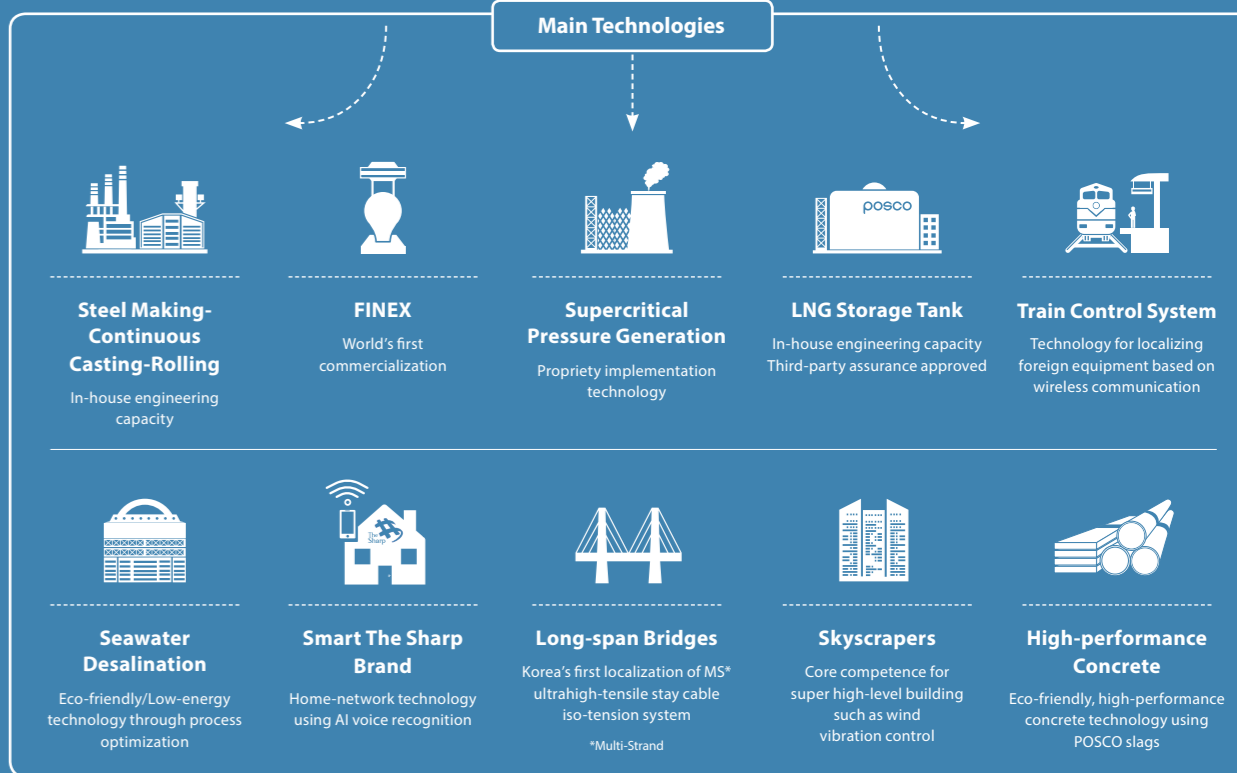
## Social Contribution

Support enhanced collaboration with regional strongholds in Korea, and expand social contribution with a focus on overseas countries.



## Technological Competitiveness

Secure differentiated technological competitiveness on basic design (FEED) and Smartization.



\*The integrated information management system of domestic/overseas suppliers

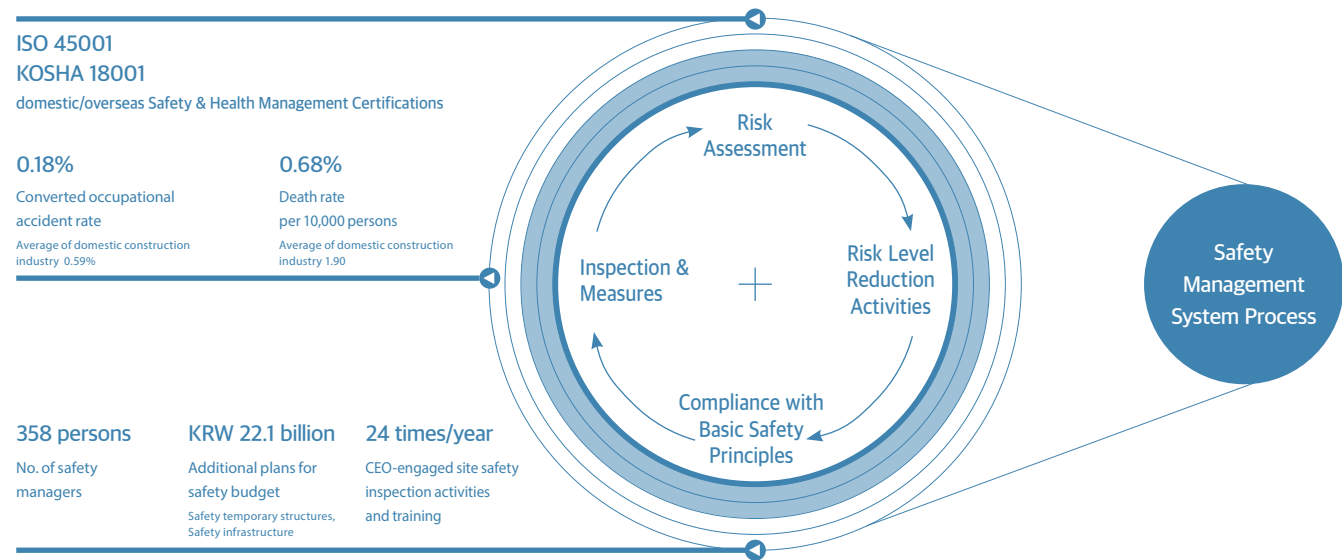
\*Total amount of employees' donation and company's matching grant

\*The certification system for promising green technology and business in accordance with the Framework Act on Low Carbon, Green Growth

\*Technologies approved by the government with high potential for commercialization and economic ripple effect

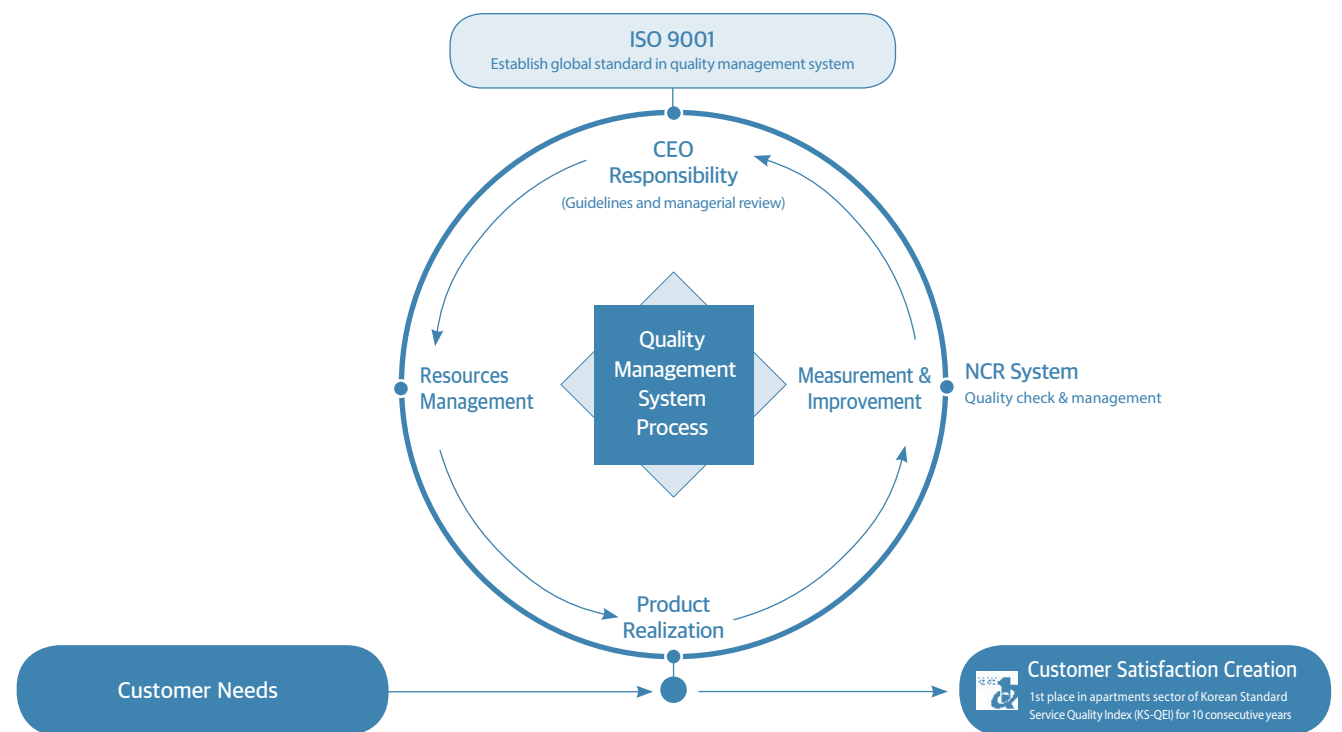
### Safety Management at Field Operation

- Execute 12 tasks of integrated corrective action plans for safety management
- Rearrange supervising system by expanding the Safety & Health Center under the CEO and establishing Safety Technology Section in each business division
- Realize Smart Safety Process by applying IT technologies such as hazardous gas detecting system in confined spaces, smart safety helmets, drones, etc.



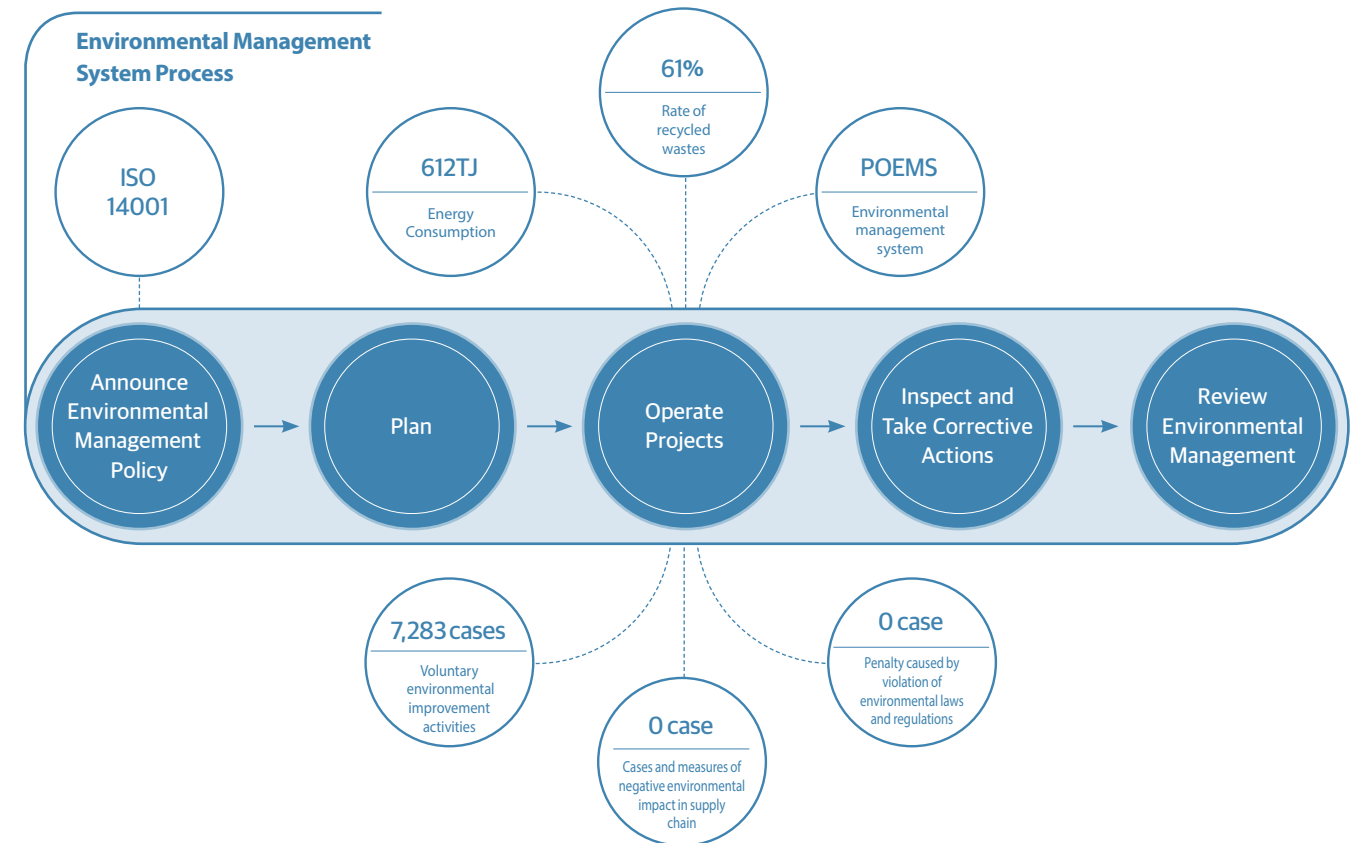
### Quality Management

- Eliminate waste factors and enhance work quality based on ISO 9001
- Operate the Non-Conformance Report (NCR) System that manages database such as cause analysis and action results of quality defects
- Run real-time quality inspection system at sites and implement the Quality Improvement Day activities



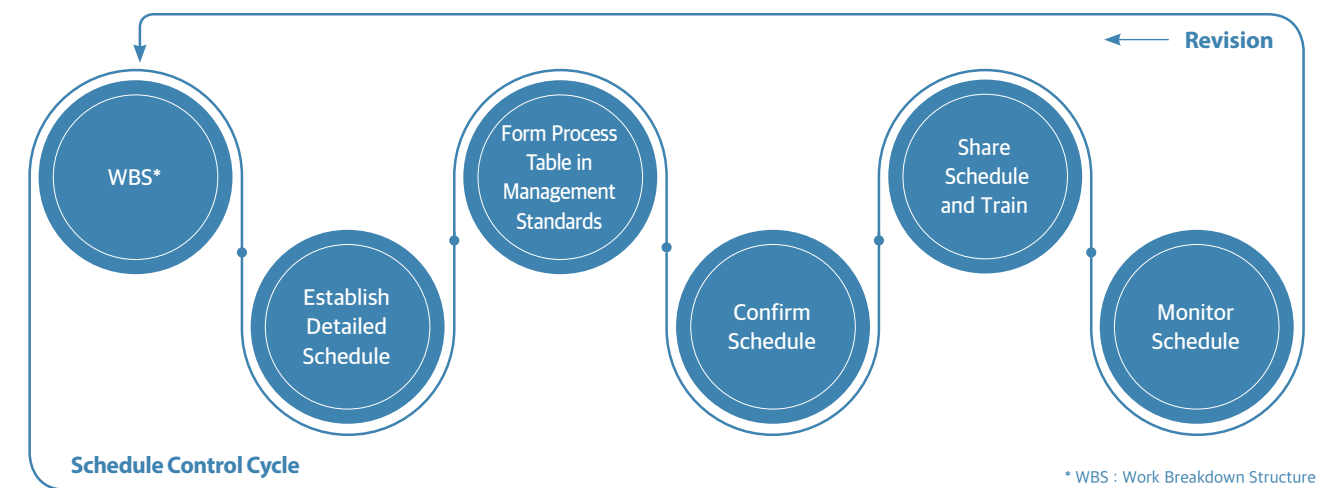
### Eco-friendly Construction

- Build eco-friendly construction sites through the ISO 14001 certification and POEMS\* which is optimized construction industry
  - Conduct voluntary improvement activities and increase applied suppliers in environmental management to minimize environmental impacts in construction process.
  - Establish the eco-friendly system by setting a vision, 'Green Plus' and 'Eco-Save' campaign
- \* POSCO E&C Environmental Management System



### Process Management

- Manage project lead time using CPM Tools such as Primavera, MS Project, etc.
- Identify and respond to risks of schedule through process management by business area



### Q-HSE Certifications

- Realize customer satisfaction through the certifications of ISO 9001 (quality management system), ISO 14001 (environmental management system), and ISO 45001 (safety & health management system)
- Secure global competitiveness by acquiring construction qualifications such as domestic/overseas nuclear power (KEPIC/ASME Section III) and overseas thermal power plants (ASME Section I)

#### Q-HSE MANAGEMENT SYSTEM



Quality Management System  
Quality-ISO 9001



Environment Management System  
Environment-ISO 14001



Safety & Health Management System  
Safety & Health- ISO 45001

#### NUCLEAR PLANT/POWER BOILER



Nuclear plant installation & fabrication  
KEPIC EN, MN, MH, SN



Nuclear Plant installation & fabrication  
ASME Sec III NA, NS, NPT Stamp



Manufacture and assembly of power boiler  
ASME Sec I S Stamp

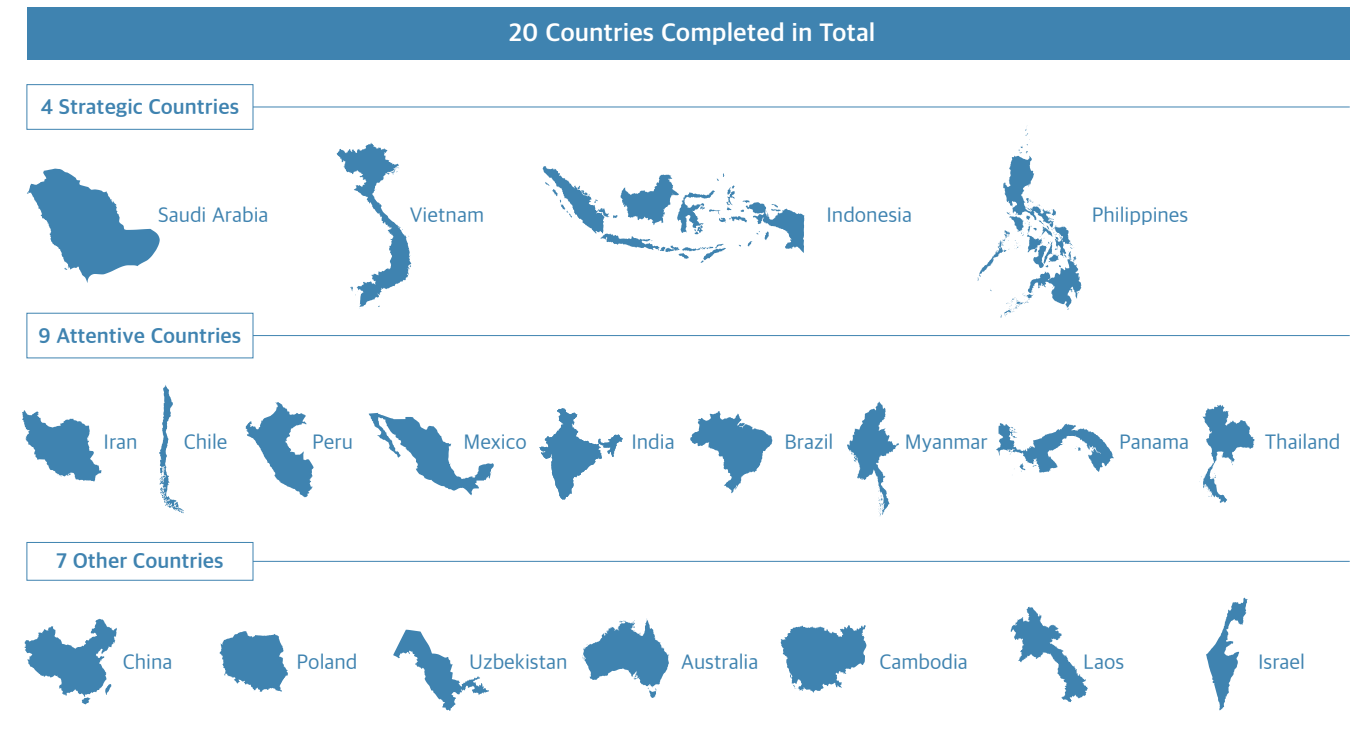
### Global Q-HSE Performance

- Create safe and eco-friendly worksites by implementing the Q-HSE Management System of POSCO E&C
- Establish a culture of safety that collaborates with local workers, suppliers and communities through the localization strategy of Q-HSE activities in consideration with local regulations and culture
- Preemptively eliminate risk factors through risk management system



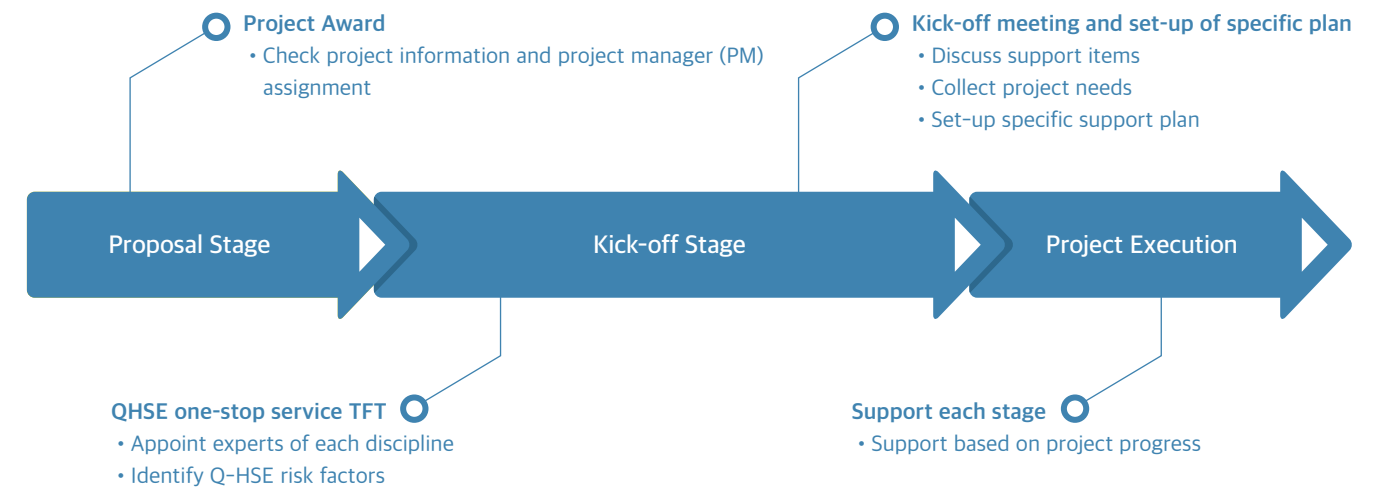
### Q-HSE Country Report

- Systematically record local regulations related to Q-HSE, customer guidelines, and utilize lessons learned during PJT for operation and execution of new projects
- Develop country reports in 20 countries including the strategic counties



### Q-HSE One-stop Service

- Develop integrated Q-HSE support system by operating the task force team (TFT) composed of experts in each discipline
- Proactively identify and respond to potential Q-HSE risks in projects
- Support set-up of early stages of projects for stabilization by implementing Project Q-HSE





# BUSINESS

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- 23 ENERGY PLANTS
- 29 INFRASTRUCTURE
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# STEEL & INDUSTRIAL PLANTS

POSCO E&C built Pohang Works and Gwangyang Works of POSCO, named the world's most competitive steelmaker for 9 consecutive years. Along with the execution of overseas mega projects including Brazil CSP Integrated Steel Plant and Indonesia Krakatau Integrated Steel Plant, POSCO E&C is now building its global reputation as a total solution provider in the steel plant industry. In addition, we are diversifying our plant business areas from steel plants toward industrial plants through the M&A with POSCO Engineering.



CSP Integrated Steel Plant (Brazil)

Project Period: 2012. 01 ~ 2016. 02  
Production Capacity: 3 million tons/year

STEEL PLANTS



01	03
	04
02	05
	06

01 - Krakatau Integrated Steel Plant (Indonesia)

Project Period: 2011. 07 ~ 2013. 12  
 Production Capacity: 3 million tons/year

02 - Formosa Steelworks (Vietnam)

Project Period: 2013. 08 ~ 2015. 11  
 Production Capacity: Hot rolling 5.1 million tons/year  
 Coke oven gas (COG) 150,000Nm<sup>3</sup>/h  
 Fuel 7 million tons/year

03 - FINEX (No. 3), Pohang Steelworks (Korea)

Project Period: 2011. 06 ~ 2013. 11  
 Production Capacity: 2 million tons/year

04 - Asia Special Steel's Steel Plant (Japan)

Project Period: 2007. 12 ~ 2009. 05  
 Production Capacity: 120,000 tons/year

05 - POSCO Gwangyang No.4 HRM (Korea)

Project Period: 2010. 12 ~ 2014. 08  
 Production Capacity: 3.5 million tons/year

06 - IISCO Blast Furnace (India)

Project Period: 2007. 01 ~ 2010. 12  
 Production Capacity: 1.4 million tons/year

RESOURCES PLANTS



01
02
03

- 01 - **Moolarben Soft Coal Plant (Australia)**  
Project Period: 2016. 02 ~ 2017. 08  
Production Capacity: 12 million tons/year
- 02 - **FINEX (No. 3), Raw Material Treatment Facility (Korea)**  
Project Period: 2011. 10 ~ 2013. 09  
Capacity: 60,000 tons, 3 units
- 03 - **Silo, Gwangyang Works Raw Material Treatment Enhancing Yard (Korea)**  
Project Period: 2009. 12 ~ 2012. 09  
Capacity: 50,000 tons, 15 units

INDUSTRIAL PLANTS

01	
02	03
04	05

- 01 - **New Plant of STATS ChipPAC Korea (Korea)**  
Project Period: 2015. 11 ~ 2016. 11  
Total Land Area: 147,783m<sup>2</sup>
- 02 - **Aprogen Biologics**  
Project Period: 2016.07 ~ 2018. 02  
Total Land Area: 46,289m<sup>2</sup>
- 03 - **Il-Yang Pharmaceutical Eumseong Vaccine Plant (Korea)**  
Project Period: 2012. 06 ~ 2013. 03  
Total Land Area: 14,026m<sup>2</sup>
- 04 - **Kyungdong Navien New Plant & Facilities (Korea)**  
Project Period: 2012. 04 ~ 2014. 03  
Total Land Area: 94,857m<sup>2</sup>
- 05 - **IASS Holdings Cold & Frozen Warehouse (Korea)**  
Project Period: 2013. 12 ~ 2016. 02  
Total Land Area: 24,379m<sup>2</sup>



Engineering Technology Fulfilling Global Standards

POSCO E&C is recognized for EPC capacity in accordance with the global standards (LEED, GMP, HACCP, etc.) by business plants in electricity/electronics/semiconductors, pharmaceuticals/bio/food, warehouse, and general manufacturing, along with its abundant experience of project execution.

# ENERGY PLANTS

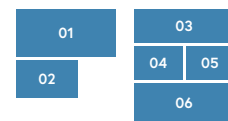
POSCO E&C is enhancing reputation of Korean construction by successfully building energy plants in Central and South Americas such as Peru and Panama, as well as Chile where it entered as the first construction company of Korea. POSCO E&C is expanding our business areas to refinery and petrochemicals, along with the future eco-friendly energy areas including wind power, solar panels, and refuse-derived fuel (RDF).



**Ventanas Coal-fired Power Plant (Chile)**

Project Period : 2010. 09 ~ 2016. 12  
Capacity: 242MW

POWER PLANTS



- 01 - **Ansan Combined Cycle Plant (Korea)**  
Project Period: 2012. 10 ~ 2014. 10  
Capacity: 834MW
- 02 - **Puerto Bravo Thermal Power Plant (Peru)**  
Project Period: 2014. 02 ~ 2016. 05  
Capacity: 154MW X 4
- 03 - **Incheon POSCO Energy Combined Cycle Plant: Units 7-8-9 (Korea)**  
Project Period: 2012. 10 ~ 2015. 12  
Capacity: 400MW, 3 units
- 04 - **Cochrane Coal-fired Power Plant (Chile)**  
Project Period: 2013. 04 ~ 2016. 10  
Capacity: 266MW X 2
- 05 - **Pohang Off-gas Combined Cycle Plant (Korea)**  
Project Period: 2012. 02 ~ 2014. 05  
Capacity: 145MW X 2
- 06 - **R Combined Cycle Plant (Israel)**  
Project Period: 2010. 09 ~ 2013. 07  
Capacity: 400MW



**Foundation for Execution of Power Plants Engineering, Procurement, and Construction (EPC)**  
After acquiring certifications for design and construction of thermal power generation from the American Society of Mechanical Engineers (ASME) in 2007, we subsequently received ASME repair/replacement certifications in 2016, thereby building a bridgehead for expansion into overseas markets. In 2017, POSCO E&C also achieved the nationally approved, Korea Electric Power Industry Code (KEPIC) certification in the field of structural design of nuclear power plants.

RENEWABLE ENERGY PLANTS



01

02

03

01 - Seokmun Energy Plant (Korea)

Project Period: 2015. 01 ~ 2017. 07  
Capacity: 38.9MW

02 - Busan RDF (refuse-derived fuel) Power Plant (Korea)

Project Period: 2010. 10 ~ 2013. 10  
Capacity: 25MW

03 - Jinyang/Hyunjin Solar Power Plants (Korea)

Project Period: 2015. 10 ~ 2017. 04  
Description: 17 solar power plants in 14 cities nationwide

Universal Access to Modern Energy

Ensuring universal access to modern energy is a very important factor for human livelihood. POSCO E&C is expanding the portion of business portfolio in eco-friendly/renewable energy by setting it as the new mid- to long-term growth engine.

Sustainable Supply of Energy with Reasonable Prices

Stable supply of energy has close relation to productivity of national industry. We are realizing the sustainable energy supply by engaging in power plant constructions in countries such as Bangladesh and Philippines.



CHEMICAL PLANTS / LNG TANKS



01 - Gwangyang SNG Plant (Korea)

Project Period: 2009. 10 ~ 2014. 06  
Capacity: 500,000 tons/day

02 - Pohang (No. 16) Oxygen Plant (Korea)

Project Period: 2011. 12 ~ 2013. 12  
Capacity: Oxygen 100,000Nm<sup>3</sup>/h

03 - Gwangyang (No.4) LNG Tank (Korea)

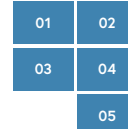
Project Period: 2010. 06 ~ 2013. 05  
Capacity: Tank 165,000 m<sup>3</sup> X 1

04 - Samcheok (No. 8-9) LNG Tank (Korea)

Project Period: 2012. 03 ~ 2016. 06  
Capacity: Tank 200,000 m<sup>3</sup> X 2

05 - Yeosu MDI (Korea)

Project Period: 2015. 10 ~ 2017. 11  
Capacity: MDI 10MTA expanded



# INFRASTRUCTURE

## Nohwa-Gudo Bridge (Korea)

Project Period: 2011. 11 ~ 2017. 06

Scale: 1.62 km (two-lane extradosed sea bridge – 780m, access road – 840m)



POSCO E&C is contributing to global community development by building various infrastructures such as roads, railroads, harbors, airports, and environmental facilities worldwide including Asia, Middle East, Europe, and Africa. In order to lead the transition into a better world, we not only engage in constructions of eco-friendly facilities of sewage/wastewater, waste-to-energy, clean air, and desalination, but also provide environmental solutions in the area of operations & maintenance (O&M), and further expand our business areas to eco-friendly renewable energy such as hydro power generation.



ROADS / BRIDGES



01

02

03

01 - Capital Region 2nd Ring Expressway (Incheon-Gimpo expressway) (Korea)

Project Period: 2012. 03 ~ 2017. 03  
 Scale: Section 2 - 3.6 km; 1 underwater tunnel; Section 3-1, 3.7 km; 1 junction

02 - A380 highway (Uzbekistan)

Project Period: 2014. 05 ~ 2016. 12  
 Scale: Extended by 85km

03 - Noi Bai - Lao Cai Expressway (Vietnam)

Project Period: 2009. 07 ~ 2015. 11  
 Scale: Extended by 80km

RAILROADS / NEW TRANSPORTATION



01

02

01 - Busan-Gimhae Light Rail Transit (Korea)

Project Period: 2006. 04 ~ 2011. 04  
 Scale: Extended by 23.2km

02 - Seongnam-Yeosu double-track railway depot (Korea)

Project Period: 2012. 12 ~ 2017. 03  
 Scale: Maintenance facility for 20 trainsets; Storage facility for 14 trainsets



Resilient Infrastructure & Sustainable Industrialization

The infrastructure such as roads and railroads that are generally used offers opportunities to promote economic development of local communities and create new market for companies.

POSCO E&C has contributed to balanced development nationally through its infrastructure business, and it is working on development and social advancement of local communities by conducting infrastructure projects in the world including Vietnam, Kazakhstan, and Uzbekistan.

HARBOR / LAND DEVELOPMENT / HYDRO POWER



01

01 - Chungju Enterprise City Land Development (Korea)

Project Period: 2008. 06 ~ 2012. 08  
Scale: 7,012,760m<sup>2</sup>

02

03

04

02 - Ulleung Sadong Port 2nd Phase of Break Water (Korea)

Project Period: 2015. 01 ~ 2017. 07  
Scale: 640m, 3 seawater channels; incidental work (1 L/S)

03 - Saemangeum New Port Breakwater (Zone 2) (Korea)

Project Period: 2011. 12 ~ 2016. 10  
Scale: 1.9km

04 - Lampung Hydro Power Plant (Indonesia)

Project Period: 2015. 02 ~ 2017. 09  
Capacity: 55.4MW



ENVIRONMENT



01

01 - Krakow Waste-to-Energy Plant (Poland)

Project Period: 2012. 10 ~ 2016. 06  
Production Capacity: 10.7 MWh/year  
Processing Capacity: 220,000 tons/year

02

03

02 - Abu Dhabi Water Supply System (UAE)

Project Period: 2010. 08 ~ 2013. 02  
Storage Capacity: 30,000 tons/day

03 - Gwangyang Dongho Bay Seawater Desalination Water Supply System (Korea)

Project Period: 2013. 01 ~ 2014. 07  
Production Capacity: 30,000 tons/day



Use of Sustainable Clean Energy and Climate Change Response

POSCO E&C expands its eco-friendly business portfolio such as waste-to-energy facilities for shared growth of nature and mankind and provides practical eco-friendly solutions through O&M business of environmental facilities.

Accessibility to Drinking Water and Sanitary Facilities

POSCO E&C engages in business of integrated water management infrastructure including Abu Dhabi water storage facility in the UAE and Yangon water supply improvement project in Myanmar to solve water shortage issue in local communities.

# URBAN DEVELOPMENT & ARCHITECTURE

POSCO E&C is leading the skyscraper construction by building 101-story Haeundae LCT, 69-story Yeouido Parc One, and 66-story Dongtan Metapolis, etc. We plan to actively engage in overseas urban development projects by creating smart cities suitable for the 4th Industrial era based on our technology and expertise accumulated from large-scale urban development projects, such as Songdo International Business District in Korea and Splendor in Vietnam.

Songdo International Business District (Korea)

Project Period: 2003 ~ 2020  
Scale: 5,720,000m<sup>2</sup>



URBAN DEVELOPMENT / COMPLEX DEVELOPMENT



01 - Splendor (Vietnam)

Project Period: 2010. 03 ~ 2013. 08  
 Scale: Total construction area: 120,000m<sup>2</sup>  
 Apartments: 248 households (B1/16F~22F)  
 Villas: 136 households  
 Town Houses: 117 households

02 - Haeundae LCT The Sharp (Korea)

Project Period: 2015. 09 ~ 2019. 11  
 Scale: 5 underground levels, 101 ground levels



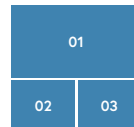
01

02



The Sharp is 'POSCO E&C's apartment brand that provides sincere richness to customers' lives through devotion and consideration by focusing on essentials'. POSCO E&C strives to enable residents of The Sharp to have abundant, refined, and happy lives.

RESIDENTIAL HOUSING



01 - Songdo The Sharp Central Park I & Songdo The Sharp Central Park II (Korea)

Project Period: 2007. 06 ~ 2010. 11, 2007. 12 ~ 2011. 09  
 Scale: 2 underground levels, 47 ground levels; 2 underground levels, 49 ground levels

02 - Dongtan Metapolis (Korea)

Project Period: 2006. 10 ~ 2010. 09  
 Scale: 5 underground levels, 66 ground levels

03 - Songdo The Sharp First World (Korea)

Project Period: 2005. 05 ~ 2009. 01  
 Scale: 2 underground levels, 64 ground levels

OFFICES / COMMERCIAL



BUSINESS

01	02	05
03	04	06

01 - Yeouido Parc 1 (Korea)

Project Period: 2016. 11 ~ 2020. 02  
 Scale: 7 underground levels, 69 ground levels

02 - Northeast Asia Trade Tower (Korea)

Project Period: 2012. 12 ~ 2015. 05  
 Scale: 3 underground levels, 68 ground levels

03 - Hana Bank Head Office (Korea)

Project Period: 2014. 08 ~ 2017. 06  
 Scale: 6 underground levels, 26 ground levels

04 - Beijing POSCO Center (China)

Project Period: 2011. 12 ~ 2015. 06  
 Scale: 4 underground levels, 25/33 ground levels

05 - Sejong City Government Office (Korea)

Project Period: 2010. 10 ~ 2012. 12  
 Scale: 1 underground level, 7 ground levels

06 - Canal Walk (Korea)

Project Period: 2008. 01 ~ 2009. 10  
 Scale: 1-2 underground levels, 5 ground levels, 4 buildings



Eco-friendly Certification and LEED

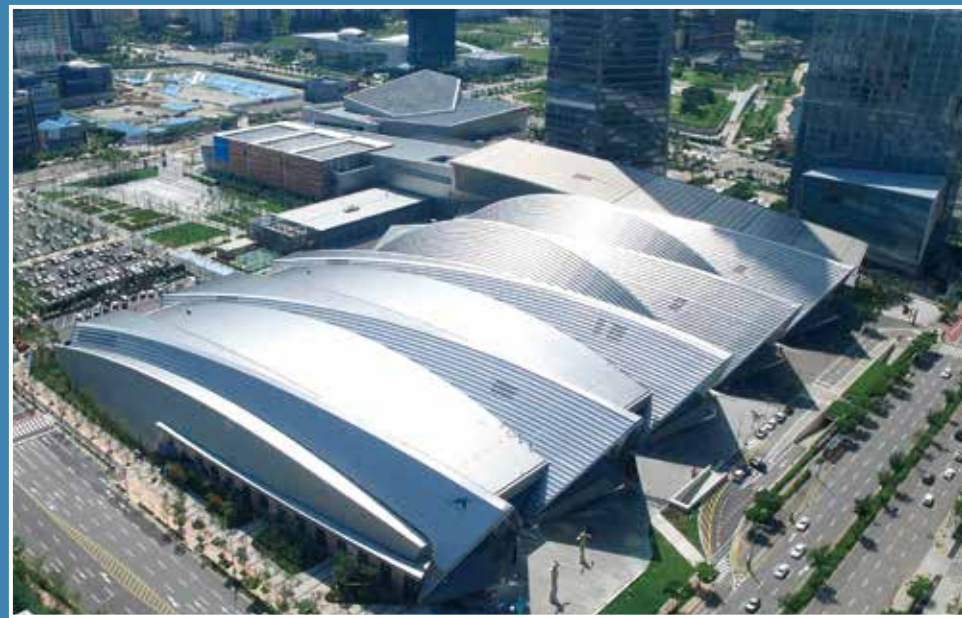
Since 2010 when POSCO E&C received the LEED certification for nature-friendly buildings and structures from the U.S. Green Building Council for the first time for Korean companies, it has acquired the certifications on 16 buildings in total until the first half of 2018. In addition, we are leading eco-friendly city construction by combining technologies such as preventing urban heat island in the summer through introducing building commissioning, minimizing energy consumption and operational issues, strengthening air tightness, eco-friendly glues and carpets, and rooftop landscaping trees.

CULTURE / EXHIBITIONS / ATHELETICS



- 01
- 02
- 03

- 01 - **Tri-Bowl (Korea)**  
Project Period: 2008. 10 ~ 2010. 02  
Scale: 1 underground level, 3 ground levels
- 02 - **Art Center Incheon (Korea)**  
Project Period: 2009. 05 ~ 2016. 08  
Scale: 2 underground levels, 7 ground levels
- 03 - **Songdo Convensia (Korea)**  
Project Period: 1st Phase: 2005. 03 ~ 2008. 06  
2nd Phase: 2015. 12 ~ 2018. 07  
Scale: 1 underground level, 4 ground levels



ACCOMMODATIONS / MEDICAL / EDUCATION / SPECIAL FACILITIES



- 01
- 02
- 03
- 04

- 01 - **Daewoo Amara Hotel (Myanmar)**  
Project Period: 2014. 02 ~ 2017. 05  
Scale: 2 underground levels, 29 ground levels, 2 buildings (658 rooms)
- 02 - **Songdo Chadwick International School (Incheon)**  
Project Period: 2006. 05 ~ 2009. 06  
Scale: 1 underground levels, 5 ground levels
- 03 - **Seoul Metropolitan Children's Hospital (Korea)**  
Project Period: 2005. 11 ~ 2008. 01  
Scale: 1 underground level, 6 ground levels (300 beds)
- 04 - **Heavy Ion Accelerator Complex (RAON) (Korea)**  
Project Period: 2017. 02 ~ 2020. 08  
Scale: 2 underground levels, 4 ground levels; 14 experimental labs/facilities including heavy ion accelerators



# SUSTAINABILITY MANAGEMENT

- 44 Social Contribution through Business
- 47 Governance
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## SOCIAL CONTRIBUTION THROUGH BUSINESS

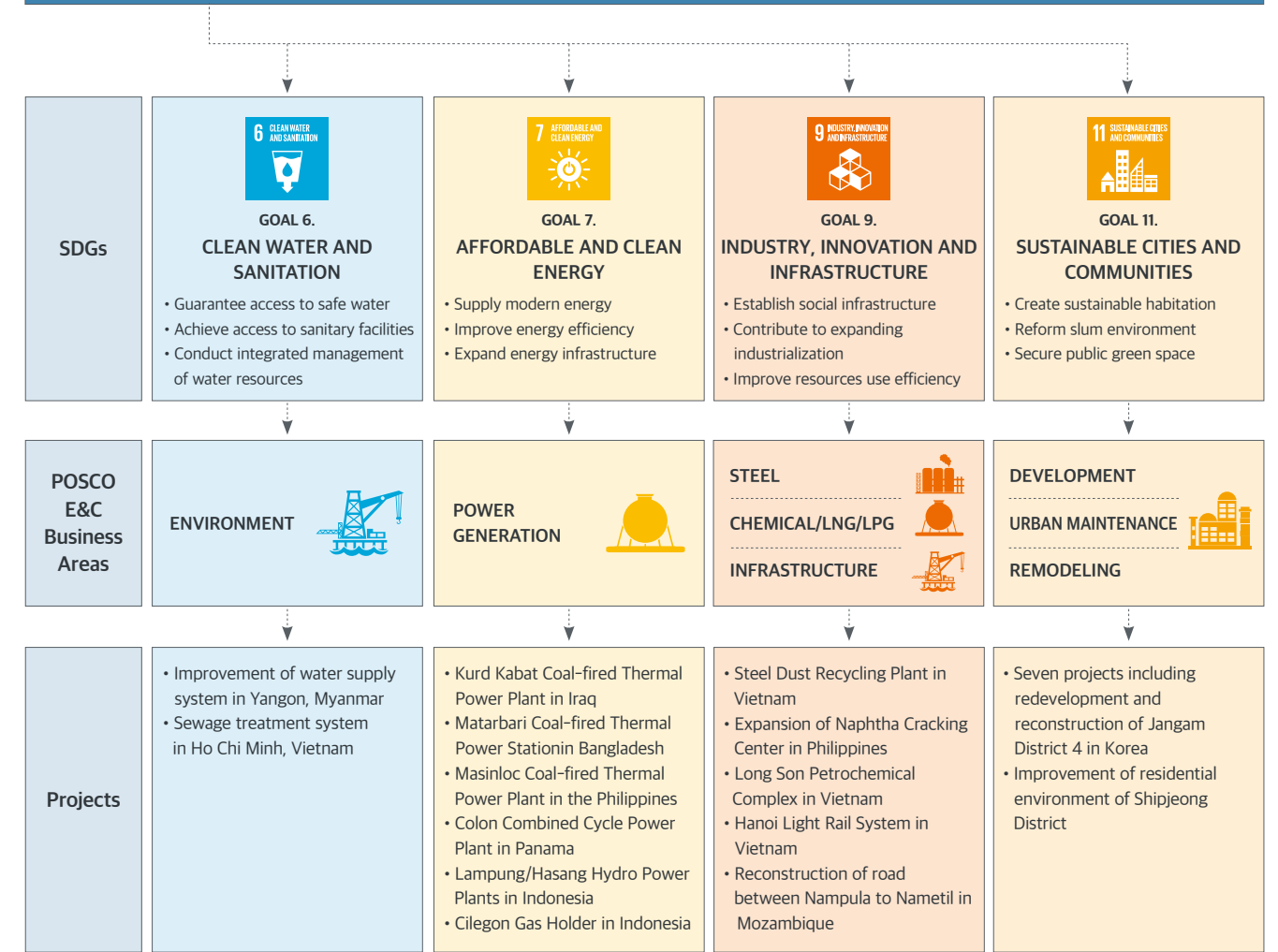
### SDGs & POSCO E&C

In this modern society, corporate social responsibility (CSR) demands more roles and expectations than simple profit creation. Therefore, it is required for a company to put in more effort into creating social values while achieving economic performance. POSCO E&C creates various social values through its main business areas: environment, power generation, and steel. Here, we wish to present to our stakeholders, our social contribution through business using 'Sustainable Development Goals (SDGs).'



### SDGs

The Sustainable Development Goals (SDGs) are a set of 17 goals proposed by the United Nations (UN) to solve social issues and develop global sustainability. The UN requests both public and private institutions around the world to practice the SDGs.



-  Plant Business Division
-  Energy Business Division
-  Infrastructure Business Division
-  Building Works Business Division

\*\* Projects in developing countries as of September 2018  
 \*\*\* Limited to domestic redevelopment/reconstruction projects for Building Works Business Division considering SDGs

**POSCO E&C 's Social Contribution**

Through its business activities, POSCO E&C intends to contribute to solving social issues and fulfill its role as a corporate citizen by pursuing shared growth and values in society. Therefore, we will identify contributing factors for sustainable development and practice them as our CSR.



**Improving Water Environment in Developing Countries**

Main issues related to water environment in developing countries are procurement and treatment of water resources. POSCO E&C approaches sanitary issues of water resources in developing countries through its projects of water supply improvement and sewage treatment.

**Yangon Water Supply System**

- Construct pump station, Stormwater detention tank
- 49,000-ton stormwater detention tank
- For one million residents

Yangon, Myanmar has relatively poor water infrastructure compared to the recent, drastic growth in its population recently. This project of constructing a 49,000T stormwater detention tank will supply household water to approximately 1 million residents.

**Ho Chi Minh Sewage Treatment**

- Increased amount of sewage treatment by 328,000 tons/day
- For one million households

In Vietnam, approximately 500,000m3 of wastewater is emitted daily without treatment due to the drastic industrialization and urbanization. Through this project, the capacity of wastewater treatment will increase by about 330,000 tons/day, and about one million households will benefit.



**Establishing the Basis for Industrialization**

Facilitating industrialization is essential for economic growth and social development of developing countries. POSCO E&C is building facilities for industrialization including steel plants and industrial plants and for social infrastructure including roads and railroads.

**EAF Dust Recycling Plant**

- EAF dust → Zinc oxide facility
- Annual production capacity of zinc oxide : 31,500 tons
- Economic value : USD 79 million

In Vietnam, we began world's first project that recycles steel dust to zinc oxide. This dust recycling plant can treat 10,000 tons of EAF dust annually and produce 31,500 tons of zinc oxide, which is worth about USD 79 million economically. (Zinc oxide 1T = USD 2,500, as of 1st half of 2018)

**Naphtha Cracking Center Expansion**

- Expanding of existing cracking/production facilities & building hydrogen add instrument
- Annual production capacity of Naphtha : 154,000T
- Economic value : USD 95 million

The project of expanding Naphtha Cracking Center in the Philippines is to construct production/refinery facilities of Naphtha, which is a core material in petrochemical industry. This business will increase the production of Naphtha by about 150,000 tons and its economic value is worth approximately USD 95 million. (Naphtha 1T = USD 616, as of 1st half of 2018)

**Long Son Petrochemical Complex**

- Annual production capacities of ethylene, 1 million tons; petrochemical product 1.2 million tons
- 11% of domestic ethylene production

Vietnam's first large-scale petrochemical complex is to be built on Long Son Island, Vung Tau Province, and we are conducting various construction projects including land development, transport facilities, and storage tanks. The complex is expected to produce one million tons of ethylene in the future, thereby contributing to Vietnam's petrochemical industry. (Approximately 11% of annual production of ethylene in Korea, as of 2018)

**Hanoi Light Rail System**

- 8 ground stations & civil engineering structures (8.5km)
- 276,000 persons/day in 2020

Vietnam is in the process of establishing a light rail system to solve heavy traffic in the metropolis and to change its motorbike-centered traffic system. Our project is for Line 3 and it is expected to serve 276,000 persons daily by 2020.

**Mozambique Roads Construction**

- Two-lane road
- Nampula - Nametil
- Period of type for 2.5 hours to 1 hour

Mozambique's 3rd largest city, Nampula has issues with distribution and transportation due to unpaved roads. Our renovation project of a road with the length of 70.6 km connecting Nampula to Southern Nametil will reduce travel time by 1.5 hours.



**Building a Foundation for Stable Power Supply**

Although electricity is an essential factor in life, many people do not have enough supply. We are contributing to a modern power supply by building various power plants, including water power, thermal power, and combined power.

**Kabat Coal-fired Thermal Power Plant**

- Power capacity of 300 MW
- For about 880,000 persons

The industrialization of Iraq was greatly impacted by the political issues and civil wars. The power generation capacity of this power plant is 300MW which can cover the supply of daily electricity to 880,000 persons including the residents of a nearby city, Erbil (population of about 850,000).

**Matarbari Coal-fired Thermal Power Plant**

- Ultra-supercritical technology
- Power capacity of 1,200MW
- For about 13 million persons

About 26% of population of Bangladesh do not have access to power supply due to lack of electric power infrastructure. This 1,200MW power plant will provide electricity to about 13 million people, which is about 8% of total population of Bangladesh.

**Masinloc Coal-fired Thermal Power Plant**

- Ultra-supercritical technology
- Power capacity of 1,200MW
- For about 2.9 million persons

The Masinloc project was implemented in accordance with the energy infrastructure expansion plans of the Government of the Philippines to meet the increasing demands for electricity. The Masinloc power plant will cover electricity for about 2.9 million residents in the northern part of the Philippines.

**Colon Combined Cycle Power Plant**

- Largest-scale power plant in Panama
- Power capacity of 381 MW
- For about 150,000 persons

In alignment with its 6% annual economic growth and increasing demands for energy, Panama is actively investing in the energy infrastructure. The Colon power plant, Panama's largest, is responsible for 23% of total power generation in the country and will supply stable electricity to 150,000 households in the industrial complex and the nearby residential area.

**Lampung/Hasang Hydro Power Plants**

- Conduit hydropower
- Power capacity of 55.4 / 42 MW
- For about 430,000 persons

According to the policy of enhancing electrification rate by the Indonesian Government, the construction of Lampung/Hasang Hydro Power Plants will be carried out as a turnkey project. These two power plants will generate about 100 MW of power and supply electricity to 430,000 residents.

**Cilegon Gas Holder**

- Gas Holder in the Integrated Steel Plant
- Recycled Energy 150MW

This project is to build a gas holder that recycles off-gas generated in the PT Krakatau Posco Integrated Steel Plant in Cilegon, Indonesia. The gas holder will enable recycling of energy similar to annual power generation of a small power plant (150 MW).



**Improving the Deteriorated Living Environment**

Everyone has rights to the basic needs to maintain quality of life. We provide quality of housing by renovating deteriorated residential areas through redevelopment/rebuilding projects.

**Redevelopment/Reconstruction**

- Total area of 655.9 km2
- New supply to 13,809 households (7 sites in progress)

As it has been 40 years since the urbanization and facilitation of apartment supply, demands for redevelopment/reconstruction are increasing nationwide. We are implementing redevelopment/reconstruction projects in 7 sites including Yeonsan-dong, Busan and Jangam-dong, Seoul and plan to supply new housing to 13,809 households.

**Living Environment Improvement Project in Shipjeong District 2**

- Public rental housing supply
- 5,678 new supplies and various housing welfare policy

The living environment improvement project in Shipjeong District 2 with a concentration of deteriorated/substandard housings will be proceeded with the City Regeneration New Deal Project and a total 5,678 new households will be provided. We are contributing to various public policies on housing welfare including housing supplies for young singles/newly-married couples and rental fee limitations.



## GOVERNANCE

### Board of Directors

The board of directors at POSCO E&C is composed of three executive directors and three independent directors. Among the independent directors, two directors were assigned by the Public Investment Fund (PIF) of Saudi Arabia to enhance transparency and independency in the decision-making of the board.

### Roles & Operation

The board discusses statutory requirements, management and finance-related issues, and other agendas that have direct and indirect impacts on business goals indicated in the bylaws of POSCO E&C. Regular meetings are held every second Thursdays in January, March, May, July, September, November, and December; however, the dates are subject to change if necessary. The extraordinary general meetings (EGMs) are held on ad-hoc basis for any urgent matters. In 2017, a total of seven board meetings were held to make decisions on various items required for business operation. In particular, pre-sharing of information and opinions regarding the meeting items was facilitated after the standardization of management session in 2016, thereby reducing time for decision-making.

#### ● Board Performance by Year

Category	Sub-category	단위	2015	2016	2017
Board of Directors	No. of Meetings	No.	16	13	7
	No. of Items	Cases	45	46	41
	Attendance Rate of Directors	%	90.8	91	92.9

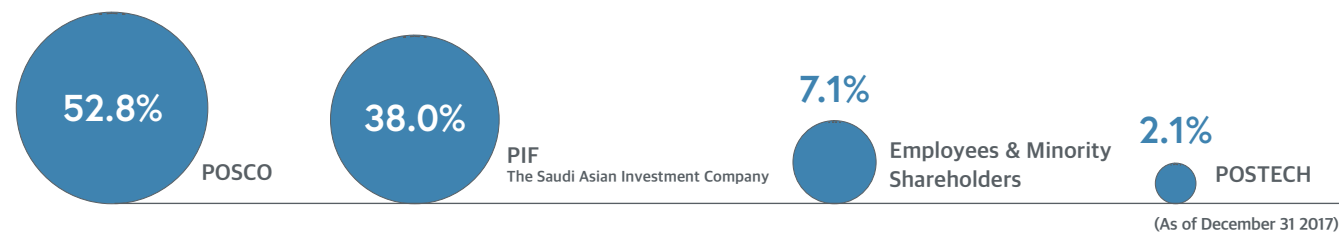
### Audit System

POSCO E&C nominates one auditor through the general shareholder's meeting. The auditor monitors accounting and business activities of the company and is guaranteed to independent authorities using an internal system for accessing any necessary information related to management. The Corporate Audit Department is also run to fulfill a supplementary role when conducting internal audits.

### Shareholder Structure

The shareholders of POSCO E&C include: POSCO, 52.8%; The Saudi Asian Investment Company\* 38.0%; Pohang University of Science & Technology (POSTECH), 2.1%; employees and minority shareholders, 7.1%.

\*The Saudi Asian Investment Company is a special-purpose entity founded by the Public Investment Fund (PIF) of Saudi Arabia.



Category	Name	Career
Executive Directors	Younghun Lee	(Current) CEO of POSCO E&C, (Former) POSCO CHEMTECH
	Wukyu Lee	(Current) VP of POSCO E&C
	Youngho Park	(Current) Senior Manager Director of POSCO E&C
Outside Directors	Sunghee Han	(Current) VP of POSCO
	Ahmed A. Al-Subaey	(Current) VP of Aramco
	Kevin B. O'Donnell	(Current) Global Private Investments Head of PIF

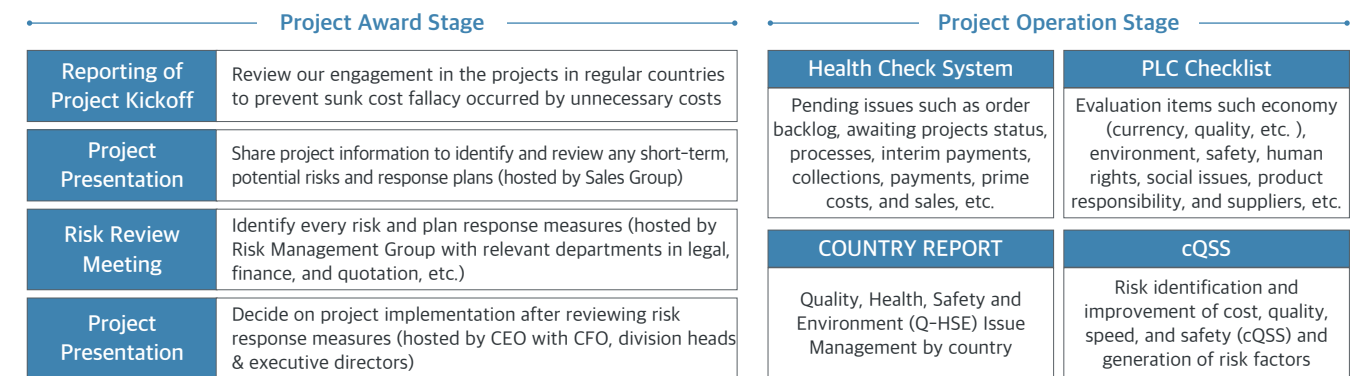
(As of December 31 2017)

## RISK MANAGEMENT

POSCO E&C enhances its crisis response ability by continually strengthening its management of unexpected risks including natural disasters and oil price fluctuation that may occur during its business management activities. Our Risk Management Group, established for more effective risk management, is our means to create a global risk management system for successful and stable business operations.

### Integrated Risk Management

Construction industry not only is easily influenced by the statuses of each country and/or group where the projects are conducted, but also requires a long period of time. POSCO E&C, therefore performs thorough project risk managements in the overall process from initiation to operations by analyzing and managing any potential risk factors. Moreover, our preliminary identification and prevention measures for potential risk factors are enhanced with a database of risk factors with high potential.



#### Risk Management - Project Award Stage

POSCO E&C runs the internal project deliberation process before initiation on all projects with a certain volume. Through the project presentations, we explain the project and review schedules, and through the quotation review meetings, we check the suitability of project quotation and lead time. The risk review meetings are held afterwards to check risks as commercial terms, quotation, and countermeasures. In addition, any high-risk projects, identified by the standards of profit rate, compliance risks, soundness appraisal, new countries of first-time projects, and new type of construction, are limited to be submitted to the business deliberation. Finally, we decide on project participation by running companywide project deliberation committees, if agreed by majority of attendance and majority of electronic votes.

#### Risk Management - Project Operation Stage

During the project operation stage embedded with various potential risk factors, stricter risk management is necessary for successfully implementing the project and achieving goals. POSCO E&C runs the Health Check System that provides financial information at each stage of project operation, thereby securing financial soundness and stability. The financial data collected from big data, when they exceed certain critical standards, are sent to the management and site supervisors to enable them to take preemptive actions toward potential risks. Moreover, we operate the cQSS\* which was converted from the Quick Six Sigma (QSS), POSCO's own site innovation activity, for construction sites in order to identify opportunity factors and risks of cost, quality, speed and safety at early stage and to conduct improvement activities.

#### Risk Management - Global CSR

POSCO E&C aims to successfully implement projects by managing various CSR risks in economic, social, and environmental aspects that may occur in overseas projects and continue to become a sustainable global construction company. We use the Project Life Cycle (PLC) checklist to manage the risks of environment, safety, process, and quality at project sites. We also practice systematic management of the issues related to local laws, labor environment, and Q-HSE by country through Country Reports. In addition, we have derived 232 risk factors based on our accumulated database from the overseas project sites and are using them to check and manage risks by situation at worksites.

# MATERIAL ISSUES

51	Stakeholder Engagement & Materiality Test
53	1. Smart Management, Smart Construction
57	2. Safety-prioritized Culture
63	3. Compliance
67	4. Eco-friendly Construction
71	5. Talent Management & Organizational Culture
75	6. Customer Satisfaction Management
79	7. Win-win Growth through Collaboration
83	8. Systematic Social Contribution

# STAKEHOLDER ENGAGEMENT & MATERIALITY TEST

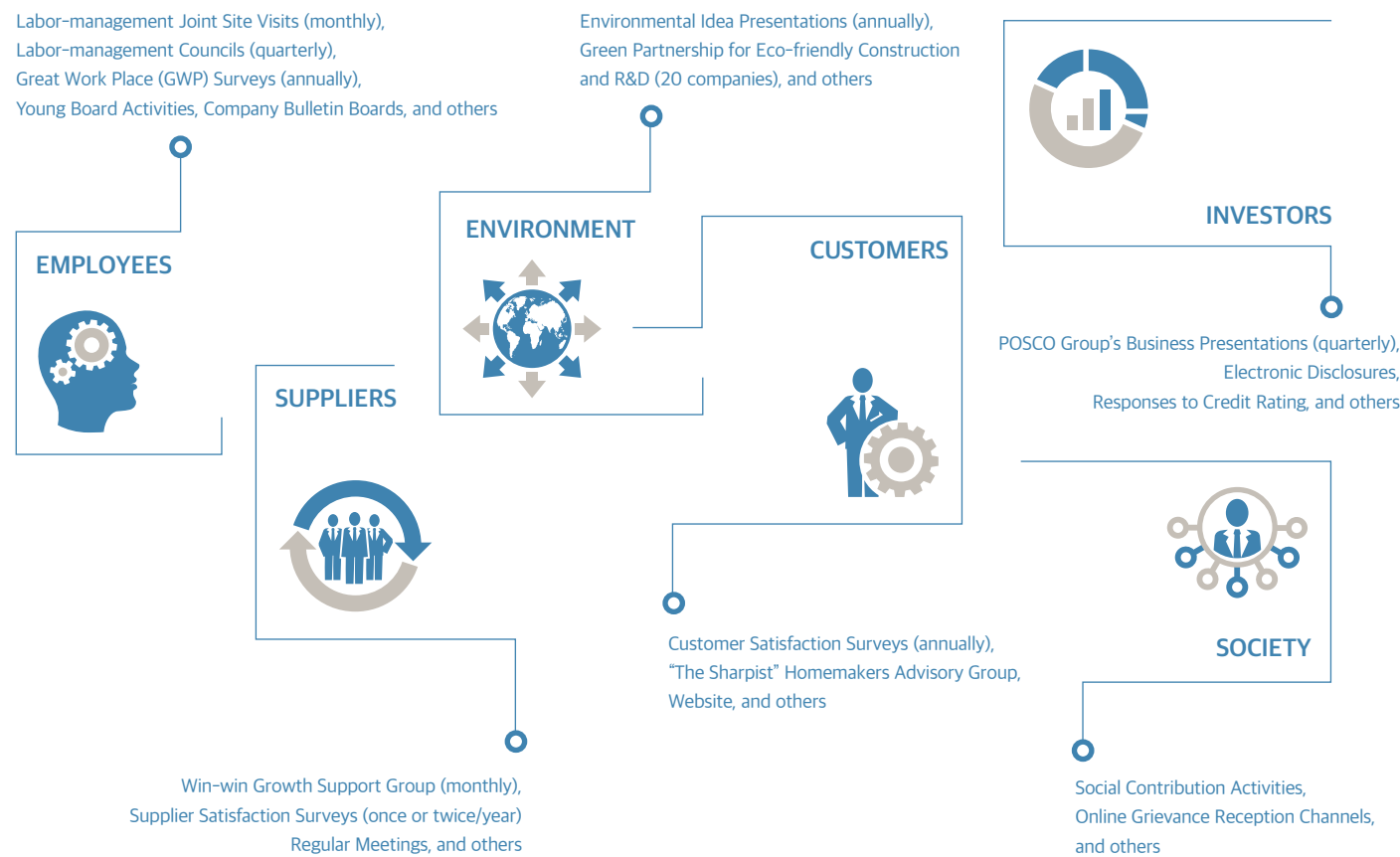
## Stakeholder Engagement & Materiality Test

POSCO E&C conducts the Materiality Test annually to identify our stakeholders's issue of interest and effectively reflect them in our business activities.

In 2018, we created an issue pool from international standards indices such as Global Reporting Initiative (GRI) Standards, ISO 26000, SDGs, and Dow Jones Sustainability Indices (DJSI). Then, we assessed priorities of each issues derived based on the analysis of media research, benchmarks, and surveys to independent sustainability experts and internal stakeholders. After the series of processes, the finalized issues are transparently disclosed in this sustainability report.

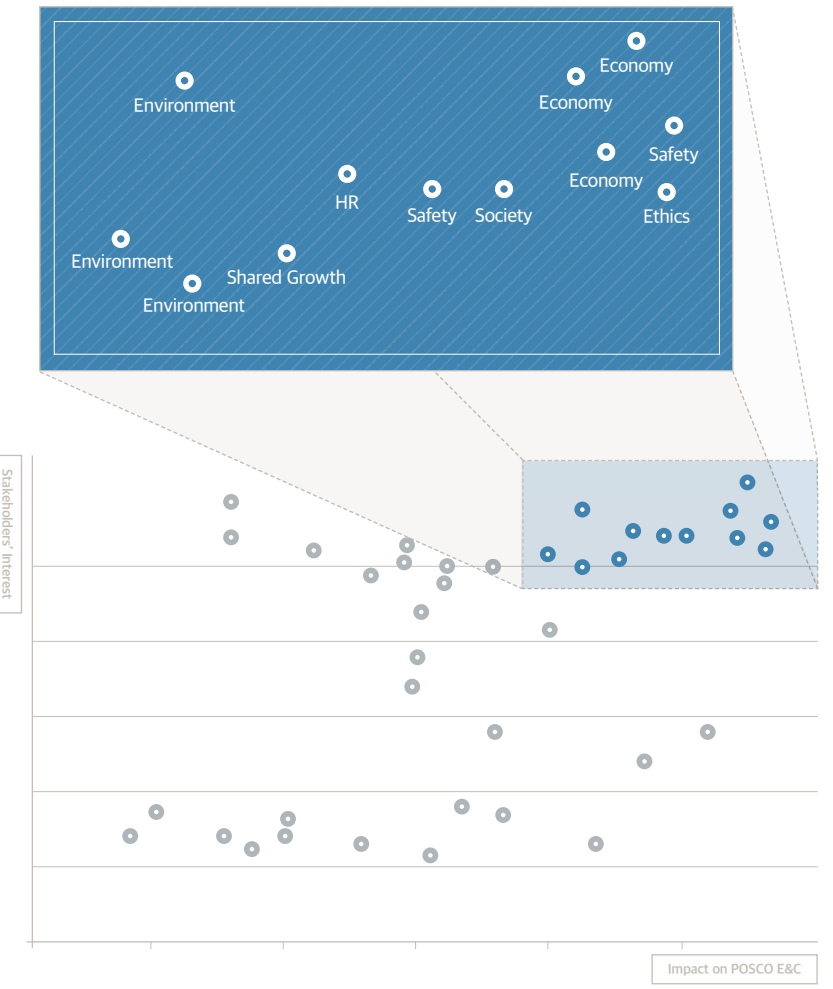
## Stakeholders

POSCO E&C categorized its stakeholders who have direct and/or indirect impacts into six groups to efficiently reflect their needs on with our business activities. Based on these groups, we created diverse communication channels to identify fundamental needs of each stakeholder group. This year, the issues with the highest concern of the stakeholders were related to economy and safety, and these issues were considered when selecting significant matters.



## Materiality Test & Mapping Results

- STEP 1. Pool Sustainability Management Issues**
  - Review international standard indices related to sustainability management such as GRI Standards, ISO 26000, SDGs, DJSI, etc.
  - Derive an issue pool of 40 issues related to sustainability management of POSCO
- STEP 2. Conduct Materiality Test of Issues**
  - Perform media research, benchmarking, and stakeholder assessment on the issues
  - Conduct Materiality Test of each issue
  - Select 8 material issues from 13 reporting issues through the test
- STEP 3. Manage Material Issues**
  - Identify risk/opportunity factors of derived issues
  - Plan for effective response measures
  - Transfer and manage key activities and performance to relevant departments
- STEP 4. Monitor & Report**
  - Develop sustainability report
  - Report to the board or directors and receive feedback
  - Disclose on-/offline to the stakeholders



## Material Issues & Approaches

Reporting Issues	Material Issues	Stakeholders	GRI Topic	Reported Pages
Economy	Securing New Growth Engine, Strengthening Technology, Smart Construction	Employees, Investors	Other Business Issues	53
Safety	Employee Safety & Health, Strengthening Safety Assessment, Reinforcing Safety Quality	Employees, Customers, Suppliers	[403] Occupational Health and Safety	57
Ethics & Compliance	Strengthening Ethics Management & Abiding by Law	Employees, Suppliers	[419] Socioeconomic Compliance	63
Environment	Reducing Environmental Pollution & Strengthening Waste Management, Eco-friendly Construction/ Building	Environment, Society	[306] Effluents and Waste	67
Employees	Improving Labor-Management Culture & Labor Condition	Employees	[401] Employment	71
Customer Satisfaction	Customer Satisfaction Management	Employees, Customers	[416] Customer Health & Safety	75
Collaboration	Shared Growth with Suppliers through Fair Trade, etc.	Suppliers	[308] Supplier Environmental Assessment	79
Social Contribution	Systemizing Social Contribution Activities	Society	[413] Local Communities	83

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## SMART MANAGEMENT, SMART CONSTRUCTION

'Corporate Social Responsibility (CSR)' holds various meanings; however, the most fundamental requirement for a company is the economic responsibility. The economic power of the company has direct impacts on its stakeholders' growth and further affects the society and the economy of a country. POSCO E&C takes multilateral efforts to respond to the changes in external business conditions. We pursue restructuring based on selection and concentration, capability differentiation centered on Front-End Engineering Design (FEED), discovering new growth engines, and Smart Construction. As a result, we were able to achieve orders worth KRW 10 trillion and revenue worth KRW 7 trillion. POSCO E&C will continue to respond to the changes in business environment by practicing the 3 innovation tasks such as creating customer value and strengthening the implementation capacity for global projects.

**EXECUTIVE MESSAGE** Business Strategy Office / Executive Director, Byeonggon Kim

We strive to secure new growth engines for sustainable development.

POSCO E&C accomplished our first big growth by entering into the construction industry with steel plants and then achieved another big growth by entering into the energy area. Now, we want to do our best to find the third growth engine for POSCO E&C in various areas through strengthening of FEED and EPC capacity and expanding of O&M business.



### Companywide Business Strategy & Goals

POSCO E&C is building customers' trust in diverse areas of plant, infrastructure, energy, and construction based on high technology in overall processes of construction projects including design, kickoff, and test runs. We also make effort in technology development and business diversification to become a world leader in the construction area.



### POSCO E&C's 2017 & Turn-around

Even after the recovery of the global economy and the increase in oil price, our overseas orders continued to decrease in 2017. In addition, our public project orders also decreased due to the reduction of government's budget for Social Overhead Capital (SOC). To respond to such business environments, POSCO E&C devoted ourselves to stabilizing business through internal management and business reorganization.

#### Practicing Internal Management

Since 2017, we have been focusing on profit management by engaging in a '100-day Turn-around 100 Days Campaign'. We also have established management system to prevent risks in overall project processes and concentrated on profit-based project activities. As a result of these efforts for internal management, we recorded a much higher revenue (KRW 7 trillion) and profit rate (4.3 %) than the previous year.

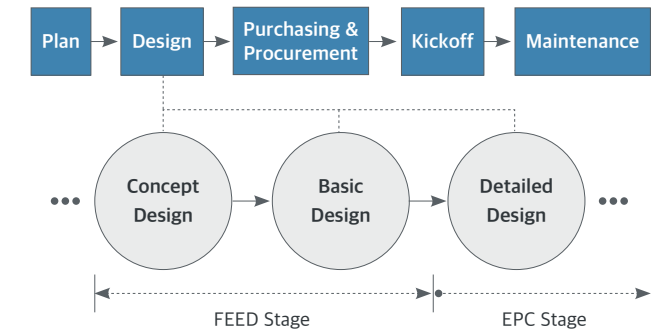
#### Business Restructuring Based on 'Selection and Concentration'

The cores of POSCO E&C's business restructuring are rationalizing and streamlining. We practice portfolio optimization, selection and concentration in competitive business, and rearranging of non-core projects/assets. Therefore, we were able to rearrange a fair number of projects that overlap in portfolio and non-core projects overseas, and this led to improved performances and profits.

### Smart Management

POSCO E&C is focusing on seeking new items for continuous economic outcome and creation. We set 'FEED-based EPC' and 'Q&M' as our main strategic directions and plan to practice Smart Management to actively respond to drastically changing business environments.

#### ● Definition of FEED



\*FEED Stage: Pre-EPC stage that conducts designing, concept setting, countermeasure review, materials list-up, and quotation requests.

#### Securing Advanced FEED Capacity

POSCO E&C focuses on research and development of FEED. The FEED refers to the approved basic design that is conducted after the suitability test during the project planning stage. This can be considered as the key area that decides the added value of projects as technical tasks and overall costs are derived during this stage. We currently are securing differentiated FEED technologies in various ways based on the Six Main Products. As of 2017, we acquired a total of 32 FEED technologies including WP technology and cost efficiency technique. Until 2020, we plan to secure a total 148 FEED technologies through continuous technology development.

#### Creating Portfolio for O&M Business

O&M Business is an emerging business that delegates operating of facilities and/or equipment and maintaining its functions in place of the owner. POSCO E&C intends to standardize O&M Business in the areas of: roads, environment, and building lease to reinforce the collaboration among different business divisions. We also strive to strengthen our business portfolio in various fields such as urban redevelopment, private remodeling, renewable energy, and rental housing projects.

#### Sophisticating Main Products & Localization of Target Countries

For a company to grow constantly, not only entering and succeeding in new areas of business is important, but also continuously maintaining main products and markets. Therefore, we plan to reinforce activities of the Six Main Products\* and projects in Four Target Countries\*\*. As the four target countries have high needs for developing industrial facilities and SOCs, we expect projects to be acquired in various fields.

\*The Six Main Products : Steel, Power Generation, LNG, Railroads, Water Treatment, Housing  
 \*\*The Four Target Countries : Indonesia, Philippines, Vietnam, Saudi Arabia

**Smart Construction**

2018 is the beginning of our new leap toward creating future businesses. However, both domestic and overseas environments for the construction industry are not so optimistic. In order to accomplish both recovery from such environment and creation of new businesses, competitiveness for innovative construction is of utmost importance. We, therefore, plan to standardize the Smart Construction as our sustainable growth engine.

**Definition of Smart Construction**

Smart Construction is the process that integrates overall construction process with digital data-based BIM and combines information & communications technology (ICT) such as virtual construction, modularization of building materials and equipment, and intellectualization of construction, thereby minimizing wastes in productivity and maximizing value creation.

**Key Points of Smart Construction Processes**

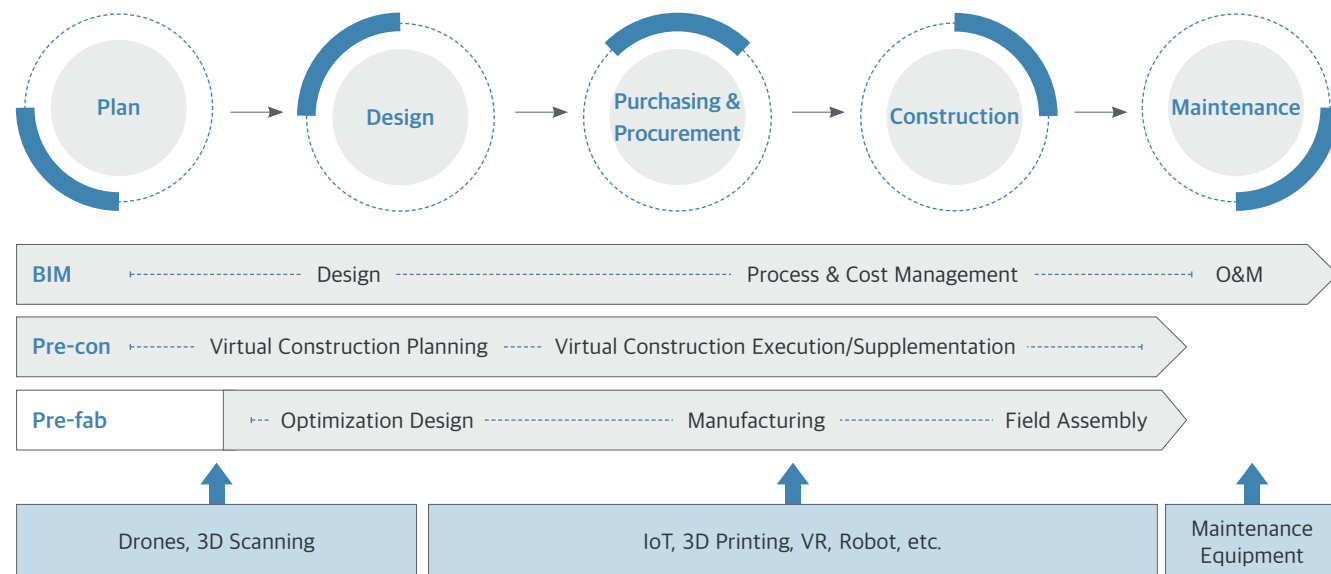
**1 Building Information Modeling (BIM)**

BIM refers to the model and process that conducts integrated management of construction processes in overall based on digital data, thereby maximizing the construction productivity.

**2 Pre-con (Pre-construction)**

Pre-con is a method that enables all relevant companies to optimize cost, lead time, and quality through BIM and virtual construction before the actual construction. During the virtual construction, errors or shortcomings can be identified and the amount of materials needed can be predicted to contribute to cost reduction and quality improvement.

**Smart Construction Process**



**3 Pre-fab (Pre-fabrication)**

Pre-fab is a construction technique to manufacture the sub-components in other sites ahead of time and then assemble them together on the construction field. Through the BIM and Pre-con, we are able to preview key information and potential interferences in each process of pre-fabricated structure and create an optimized design for each construction module.

**4 Smart Tool Application**

In Smart Construction, various Smart Tools are used. Through the application of optimized technology instruments based on tools such as A.I., Big Data, BIM, and Drones, POSCO E&C strives to improve structures' qualities: strengthening safety management, enhancing design accuracy, and preventing errors.

**Future Directions**

The core business strategy of POSCO E&C is 'innovation'. We intend to foster a differentiated competitiveness by setting technology development and business diversification as the 'Dual Engines' in order to maintain growth even in the rapidly changing business environment. We will enhance our competitive edge for our key competence, EPC Business Division, and strengthen business portfolio of new growth engine such as O&M Business. In addition, we will do our best to secure innovative building competitiveness through active R&D such as Smart Construction and FEED technology development.

**FOCUSED CASE**

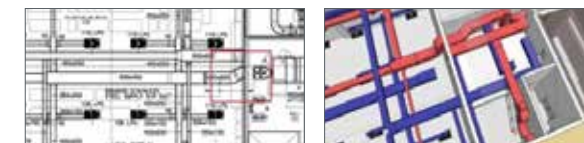
**BIM**

The building information modeling (BIM) is the integrated management model and process that all information including design, process, and materials about the structure is converged in the form of digital data. BIM enables integrated management of all information, which could not have been printed on the 2D paper drawings, and leads to not only efficient design and construction, but also high-quality outcome. This model is a key factor of the Smart Construction which requires organic combination and operation in overall process.

**Use of BIM**

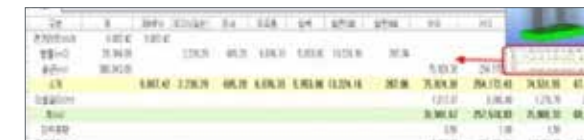
POSCO E&C utilizes BIM mainly in the phases of kickoff, design, construction, and maintenance, and has accomplished various performances. In particular, its 3D-based designing enhances construction quality by pre-identifying errors or interferences, and it also increases accuracy in squaring (cost calculation of construction) process. Furthermore, BIM contributes to advancement of site management in the areas of distribution and drawing plans.

**3D-based Designing**



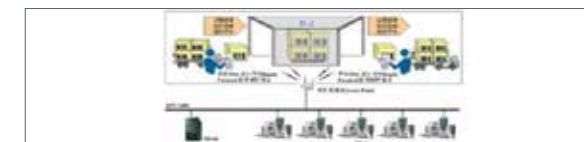
Identify interferences by illustrating 2D drawing using BIM (example)

**Squaring**



Calculate costs of materials based on the technical drawings recorded in BIM (example)

**Site Management**



Check information of distribution status, incoming materials, etc. through BIM (example)

**Mid- to Long-term Plan for BIM**

POSCO E&C is reinforcing the BIM execution capacity on a companywide level to secure the standardization of Smart Construction. We set this goal to realize the integrated management system of field operation by expanding the current level of BIM use which is reviewing interferences and errors in the construction process to the complete process of construction by 2021

- By 2021**

**Expand Project Execution Based on Smart Construction**

  - Build a network of domestic/overseas suppliers
  - Expand Pre-con application
  - Realize integrated management system of projects

---

- By 2019**

**Secure Execution Capacity of Smart Construction**

  - Expand design using BIM
  - Introduce Pre-con/Expand application of Pre-fab
  - Establish integrated platform of EPC based on BIM

---

- Current**

**Partially Use in Each Project**

  - Apply 3D design
  - Review interferences
  - Review construction possibility

In order to achieve our goal, we are strengthening the execution capacity by forming a BIM-focused organization and promoting BIM training tailored for each business division. We are also focusing on building an overseas/domestic collaboration network through reinforcing BIM capacity of suppliers and identifying and developing global BIM suppliers. Establishing the connection process through diverse pilot projects for more effective application during actual projects is also an important aspect of our plan.

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 **0.18%**  
 Converted Accident Rate  
 Average of Domestic Construction Industry 0.59%

 **18**  
 No. of CEO  
 Field Inspection & Training  
 As of First-half of 2018

 **80 pts.**  
 Assessment of Industrial  
 Accident Prevention Activities  
 Average of Top 20 Domestic Construction Companies 70.9 pts.

## SAFETY-PRIORITIZED CULTURE

Safety is a crucial area in the corporate management as it is directly connected to lives of human beings. Its importance is relatively higher in industries as construction which has a higher frequency of industrial disasters and safety incidents than others.

POSCO E&C strives to create a culture that prioritizes safety. In the field operation, we strengthen safety practices through standard safety activity cycles, regular safety & health evaluations, and special safety inspections, while in the head office, we work on establishing systematic safety management process by acquiring a safety & health system and building suppliers' voluntary safety & health management system.

### EXECUTIVE MESSAGE Safety & Health Center / Managing Director, Jongrae Kim

We practice the basics of safety, systemize safety based on PDCA, which is supported through rigorous management and monitoring.

The unfortunate accidents in the past are attributed to lack of management by POSCO E&C. We will strengthen our system of safety management and monitoring in all process of "Plan → Do → Check → Act (PDCA)" to enable the field workers to be equipped with basics of safety.



### The Four Directions of Safety Management

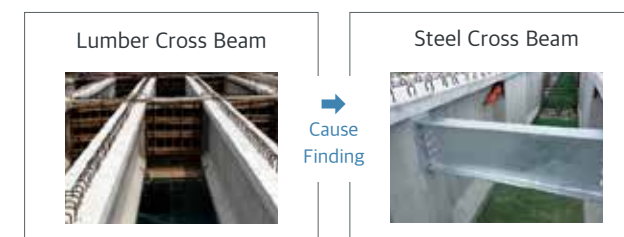
POSCO E&C presents the four directions for strengthening the safety management to realize systematic safety management.



#### Introducing Safety Engineering

The introduction of safety engineering refers to the technological readiness for eliminating safety risk factors from the design and planning phases. POSCO E&C endeavors to standardize the Safety Engineering based on the database of incidents in the past 10 years and reflecting of analysis results on engineering and also conducts risk management based on smart technology to create safer work environment. The Technical Safety Teams are formed in the fields to monitor risk factors of design, structure, and construction methods in the major structures.

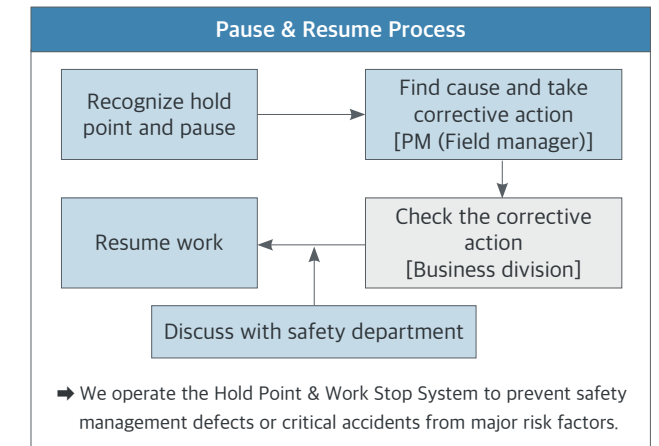
#### Application Case of Safety Design



#### Sophisticating Safety Management

We set and practice various safety management standards such as Hold Point System and special safety management for the seven processes with high accident rate to sophisticate our safety management and prevent large accidents. In addition, we increased the rate of full employment for the safety managers to enable practical safety management in the field operation.

#### Hold Point & Pause System



#### Applying Fail-Safe System

We run a multi safe measure, the Fail-Safe System, to protect field workers even in the unexpected circumstances. The double protection measures that exceed the legal standard for safety facility are applied in all worksites, and additional safety facilities are set in high-risk places. We also increased installation of protection goods and emergency kits.

#### Cases of Additional Safety Facilities at High-risk Places



#### Establishing Safety-Priority Organizational Culture

We built the basis for securing a safety-priority organizational culture by extending safety organization to division-level and appointing Chief Safety Officer (CSO). The safety-related appraisals and compensation system such as expansion of safety KPI and safety performance compensation system were reinforced to motivate employees' voluntary actions. In addition, campaigns such as companywide safety competition and site inspection were conducted to create a safety practicing culture.

**Strengthening Safety Training**

POSCO E&C expanded safety leadership building programs towards all employees and strengthened safety training for the core managers (PM/Group Leaders).

We also employed foreign safety coordinators at overseas sites including China, Vietnam, and Myanmar to provide site-visit trainings and develop training textbooks in foreign languages.

We plan to continue our efforts for 'Zero Critical Accidents'.

**Supplier Safety & Health Management and Safety & Health Impact Assessment**

We provide supports to activate supplier-based safety & health activities by expanding shared growth activities and funding for safe management budgets. In particular, we focus on establishing safety & health system that are applicable at field operations of our suppliers by consulting safety & health activities, developing safety & health manual, building voluntary safety & health system, and expanding incentives for outstanding suppliers in safety.

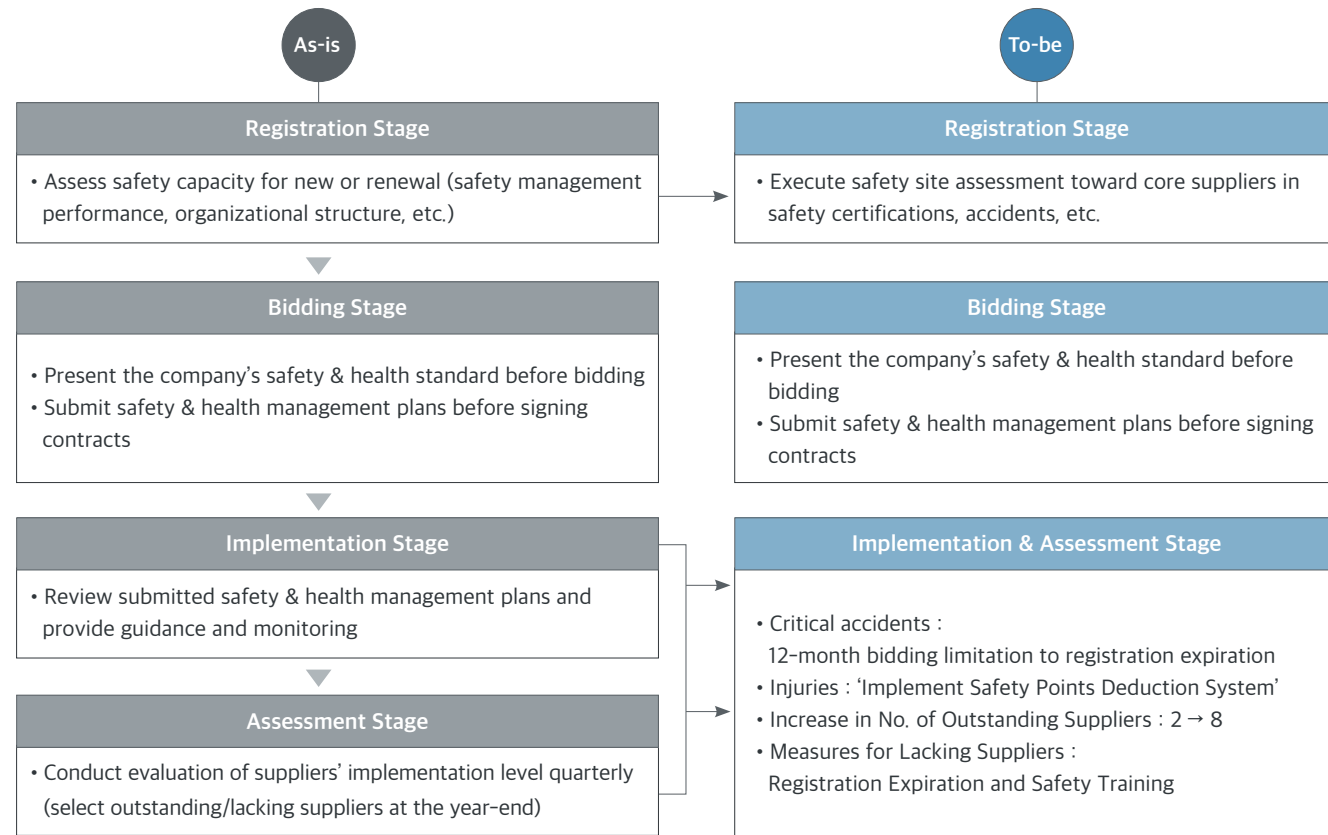
**Continuous Development of Safety & Health Management System**

POSCO E&C runs its safety & health management system which exceeds the Occupational Health and Safety Act and relevant regulations. In 2003, we acquired certifications (KOSHA 18001, OHSAS 18001) in safety & health management system, and in 2018, we became the first Korean company to be certified with ISO 45001, which is the new international standard for safety and health area.

**Future Directions**

All of our safety & health management activities - Safety Management TFT, organizational restructuring and appraisal / strengthening rewards system, supplier safety management, and ISO 45001 certification - are aimed for the 'systemization of safety'. We will abide by the basics of safety, fully equip with safety management system, and eliminate safety risk factors through technical reviews, thereby realizing voluntary safety management.

● Updated Supplier Safety & Health Capacity Assessment



FOCUSED CASE

**ISO 45001**

In June 2018, POSCO E&C acquired ISO 45001, which is the international occupational health and safety management system, for the first among Korean construction companies. This shows our companywide efforts in establishing safety-priority organizational culture and our will to create safety business environment.



**ISO 45001 is:**

The International Organization for Standardization (ISO) established the new safety & health management system, ISO 45001 in March 2018 after discussion with the International Labour Organization (ILO). ISO 45001, developed from safety & health activities of the ISO members and standards of the International Labour Standards (ILS), is expected to replace OHSAS 18001.

**Features of ISO 45001**

There are four aspects that makes ISO 45001 different from the existing standards.

1. Emphasize CEO's leadership to secure safety & health at worksites
2. Share the awareness of safety & health companywide
3. Discuss with laborers and engage them in safety system planning
4. Operate by integrating/connecting with ISO 9001 (quality) and ISO 14001 (environment)

**Acquisition of ISO 45001 and POSCO E&C's Response**

POSCO E&C intended to maintain continuity of safety management by introducing the safety & health management system under its goal, 'Zero Critical Accidents'.

Acquiring and implementing of ISO 45001 supplemented/advanced our safety & health system, and we improved our management system through the approaches below:

<b>Reinforce System</b>	• Create, expand, and reinforce safety & health policy and relevant processes
<b>Enhance Safety Awareness</b>	• Extend safety KPIs • Build safety performance rewards system for employees
<b>Manage Suppliers</b>	• Give preferences to outstanding suppliers in safety • Strengthen incentives for outstanding suppliers
<b>Expand Employee Engagement</b>	• Guarantee labors' engagement in the decision-making process of safety related areas such as risk evaluation and amendment of relevant procedures

## PROMISE FOR SAFETY

Recently, several safety incidents occurred in the construction sites managed by POSCO E&C including Haeundae LCT site. POSCO E&C feels strongly about its responsibilities in these accidents. We would like to show our sincere regrets and apologies to the deceased, families of the deceased, other victims and their families. We will plan for systematic measures to prevent recurrences of such incidents and conduct thorough management.

### Ministry of Employment and Labor to Execute Special Audit on the Head Office and Construction Sites of POSCO E&C

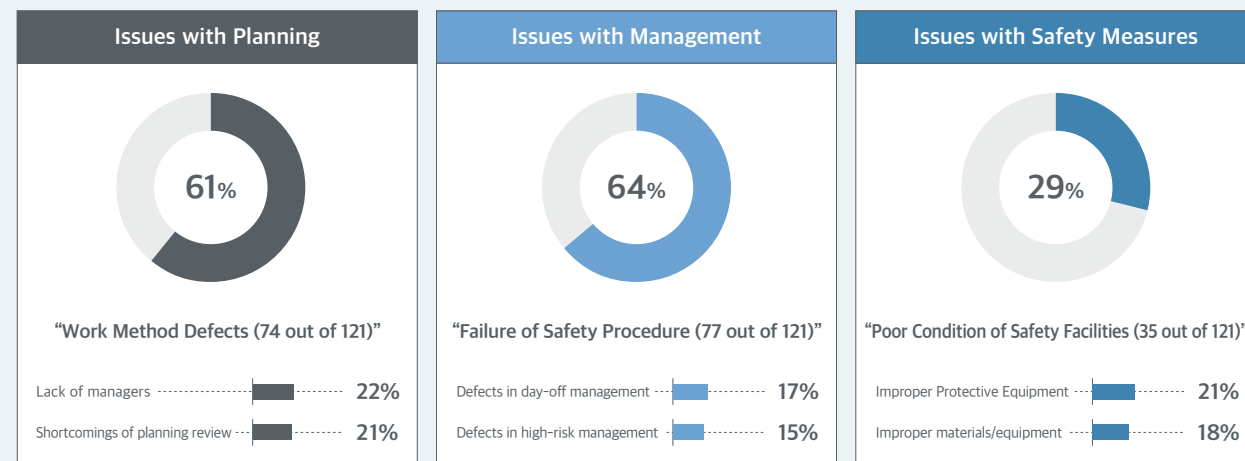
The Ministry of Employment and Labor (MOEL, Minister Youngju Kim) had conducted special audit (June 18 - July 20, 2018) on POSCO E&C's head office and 24 construction sites followed by continued fatal accidents (5 cases, 8 deaths) and announced the results. This audit inspected the safety & health management system including safety organization and budget and supplier support system in the head office, and it checked the measures for preventing workers' occupational accidents in the sites. As a result, 16 sites with lack of falling prevention measures are subject to judicial actions, 24 sites that did not conduct safety & health training

properly were fined, 1 site with poor safety facility was sanctioned of operation, and the head office also was fined for violation of appointing safety/health managers and misuse of safety management budget. The MOEL will order POSCO E&C to expand safety investment and budget, strengthen supplier support, and increase rate of full employment of safety managers, while constantly monitoring the company's fulfillment.

... (The rest omitted.)  
<2Press Release by the MOEL, July 2018>

### Cause Analysis of Safety Incidents

POSCO E&C created the safety management TFT under CEO after recent safety accidents. The TFT conducted multidimensional analyses of the causes of the accidents in the companywide level. In particular, a total of 121 cases\* of safety incidents in the past three years were reviewed. According to the analysis result of the cases, several issues in planning, management, and safety measures were found. Therefore, we categorized the causes of safety accidents into three as below and strived to prepare the integrated corrective action plans for safety management.



\*15 cases of diseases among 136 occupational accidents for the past 3 years were excluded.

## Back to Basics, Prioritizing Safety

### Strengthening Basic Safety

Small accidents that may occur from technical failures, such as collapsing, crumbling, fire/explosion, suffocation/poisoning can be led to larger accidents. POSCO E&C established the Technical Safety Group to prevent potential large accidents and manage work processes.

### Strengthening Technical Safety

The accidents, occurred from technical failures, such as collapse, crumble, fire/explosion, suffocation/poisoning can be led to large accidents. POSCO E&C established the Technical Safety Group to prevent potential large accidents and manage work processes.

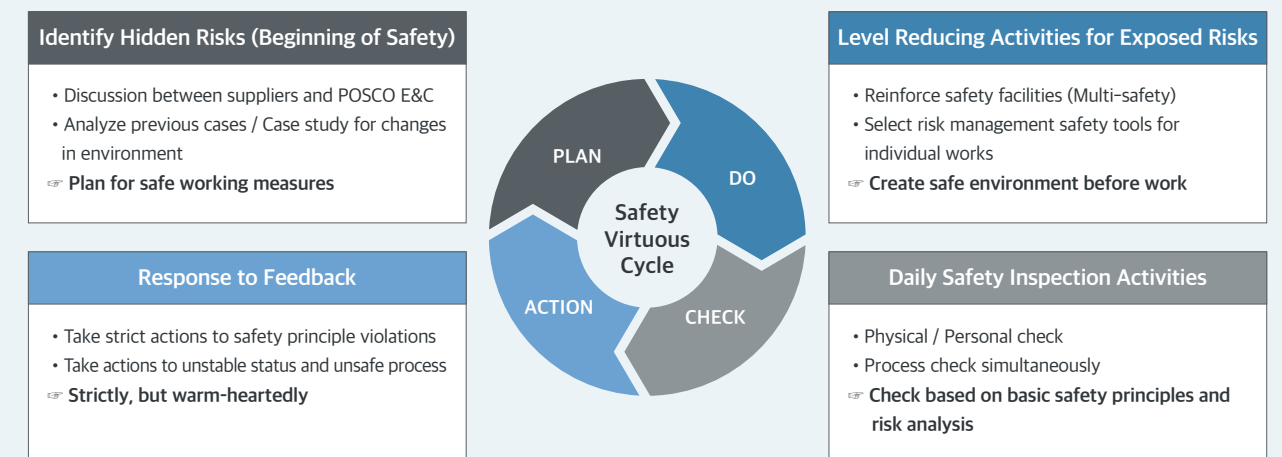
### Strengthening System Safety

We will establish the cycle that can keep the basic safety. Based on the PDCA cycle, we will systemize and manage our safety activities that involve voluntary engagement of all PMs, managers, and suppliers.

### Strengthening Voluntary Safety

We will build the work conditions in which the workers can self-establish safety-priority culture. Through continuous safety awareness trainings, we will achieve voluntary safety activities of the workers.

## Virtuous Cycle of PDCA-based Safety Management



### Pledge by POSCO E&C

We will focus on the basics. We will emphasize the basics of safety to every employee. We will become a building company that prioritizes safety of employees and workers based on the basics. We will establish the safety management system with the basic safety as a start and practice continuous management of the system operation.

“We will practice towards “Zero Safety Accidents” without forgetting that the top priority of industrial fields is safety, and 1% mistake is 100% failure.”



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**121** departments  
Assessment of Ethics & Fair Trade Practices\*

**27,774** hours  
Employee Ethics & Fair Trade Training  
Average of 1.3 hours per person

**702** persons  
Participants to Supplier Ethics & Fair Trade Training  
Average of 0.5 hours per person

\* The activity that all employees participate to identify and improve potential risks of ethics & fair trade.

## COMPLIANCE

The European Union (EU) recently imposed large fines to global companies for unfair trade practices. The requirements related to fair trade and corruption prevention are becoming higher globally, and even in Korea, various policies and regulations for 'establishing fair market' by the Fair Trade Commission (FTC). POSCO E&C also recognizes the establishment of compliance management and ethics & fair trade system as the crucial factors for sustainability management. Therefore, we are endeavoring standardization of transparent and fair trade culture and internalizing the ethics management based on faith and trust.

### EXECUTIVE MESSAGE Corporate Audit Department / Executive Director, Jaeho Ryu

Ethical Management is one of the top priorities of POSCO E&C's principles.

It is very important to prevent individual's deviations and/or violations. So, POSCO E&C strives to form a perfect management system of the issues. Our efforts for Ethical Management will be a healthy nutrient for our growth to the best construction company.



## Ethical - Fair Trade Promotion System

### Operating Main Department

The Fair Trade Group exclusive for jobs related to ethics and fair trade is run under CEO-led Corporate Audit Department. Based on this group, we are striving to forming the ethics & fair trade culture by establishing process and forming system to practicing Ethics Management and Fair Trade.

### Implementation Goals

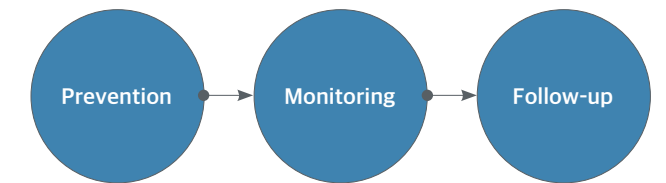
We plan to spread the values of integrity, fairness and trust based on the compliance culture that abides by basics and principles. In addition, we will establish the ethical/compliance management culture by thoroughly and actively responding to risks of ethics, FCPA, and Fair Trade Act violations.

Strategic Goals	Implementation Directions
Minimizing risks of ethical FCPA*	<ul style="list-style-type: none"> <li>• Strengthen monitoring for preventing unethical behaviors</li> <li>• Enhance synergy through participation trainings</li> <li>• Supplement compliance programs for preventing anti-corruption risks</li> </ul>
Minimizing risks of Fair Trade Act violations	<ul style="list-style-type: none"> <li>• Regularly check legal compliance</li> <li>• Strengthen activities for preventing conflicts of subcontracting with suppliers</li> </ul>

\*FCPA : Foreign Corrupt Practices Act

### Advancing Management System

Based on the vision, 'Clean POSCO E&C', we conduct prevention activities for potential unethical and unfair behaviors and practical monitoring for on-going projects. Moreover, we put various efforts to sophisticate our compliance system by thoroughly executing follow-up activities for inevitable violations and unfair behaviors.



### Prevention Activities

Compliance risk management through prevention system for legal violations, Employee training for ethics & fair trade, Amendment and distribution of code of ethics

### Monitoring Activities

Regular monitoring of stakeholders for ethics, anti-corruption, and fair trade by the Fair Trade Group

### Follow-up Activities

Standard process for preventing recurrence of unfair trade behaviors, Management of legality of subcontracting by establishing follow-up system for legal violations, Offering of disadvantages to employees who violated law

## Efforts to Enhance Employees' Compliance Awareness

### Reporting System for Transparent Management

We run the Whistleblower System online to receive reports and complaints related to violations of company or employees and fair trade. This system is run by the Corporate Audit Department and the personal identities of whistleblowers are completely protected.

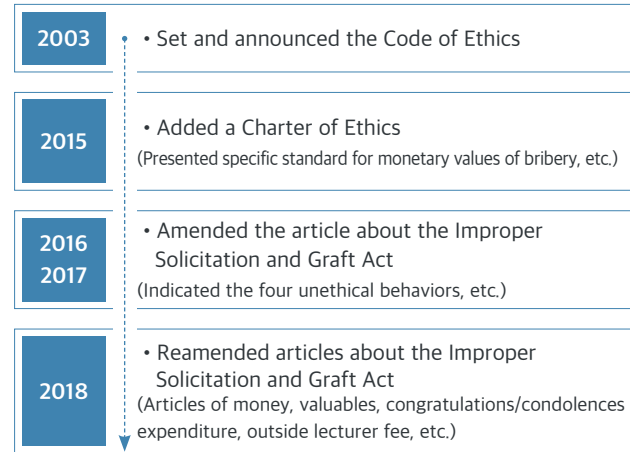
In addition, we collect grievances and opinions of employees through the company bulletin board online. In addition, we provide stickers with whistleblowing reporting related to unfair trade to enable suppliers' employees to use POSCO E&C's reporting system.

\*Homepage reporting : [http://ethics.poscoenc.com/cyber/write\\_guide.asp](http://ethics.poscoenc.com/cyber/write_guide.asp)  
\*Phone +82-32-748-2652, Fax +82-505-106-4141

**Amending & Distributing Code of Ethics**

In 2018, we amended the Code of Ethics and guidelines to abide by with the Act on the Prevention of Corruption in accordance with amendment of the Improper Solicitation and Graft Act. This was implemented to respond to the changes in regulation related to Ethics Management followed by the amendment of the Improper Solicitation and Graft Act and the four ethical behaviors in 2017 and to enhance employees' understanding.

\*Code of Ethics : [http://www.poscoenc.com/service/ethics\\_standard2.asp](http://www.poscoenc.com/service/ethics_standard2.asp)  
 \*Practical Guideline : [http://www.poscoenc.com/service/ethics\\_standard3.asp](http://www.poscoenc.com/service/ethics_standard3.asp)



**Strengthening Monitoring of External Stakeholders**

Before national holidays such as New Year and Thanksgiving Day, etc., we send out letters for 'ethical holidays culture' to our employees, supplier CEOs, and site managers. After the holidays, we conduct surveys to measure the ethics level of suppliers' employees.

**Employees Ethics & fair Trade Training**

We provide compliance training to every employee. Through various training methods such as visual materials and quizzes, we enhance understanding of employees about ethics & fair trade and audit cases. In 2017, in particular, we conducted trainings on preventing violations of the Improper Solicitation and Graft Act using visual contents and developed the questions & answers for the potential legal violation cases to make the training easier to understand.



**● Ethics & Fair Trade Training Plan**



**Efforts for Securing a Fair Trade Culture**

Activities for Preventing Legal Violations

POSCO E&C conducts activities to prevent legal violations by managing the standard subcontracting agreement. The electronic contract system enables fair and transparent management of overall process before purchasing, and major issues related to fair trade are shared to all employees by posting the Fair Trade Report on the bulletin board online. In addition, we run the 'Start Up Council' system that performs collecting VOCs of suppliers and developing fair trade pledges.

Reinforcing Monitoring of Fair Trade Culture

We prevent conflicts of subcontracting by identifying them through monthly monitoring of suppliers with potential risks. In 2017, we ran subcontracting clean-up at eight worksites to conduct training and consulting on relevant regulations and cases of subcontracting disputes as a means of settling fair trade culture.

Establishing Standard Process to Prevent Recurrence of Unfair Trade

In order to prevent unfair special contracts, we enforced the use of standard purchase specification by introducing electronic system. And, we also prevent non-issuance of documents for additional construction by allowing suppliers to check any additional works when applying for payments every month.



Establishing Follow-Up System for Fair Trade

POSCO E&C conducts audits on all subcontracts with order amount of KRW 500 million or higher. The self-audits are performed based on the construction reports which contains the results of inspections on constructed structures.

**● Supplier Construction Report\* Checklist**

- Subcontractors Status (construction, services, etc.)
  - Appropriateness of milestone payment
  - Receipt of subcontractors and sending of official document
  - Status of distributing work procedure
  - Guaranteed securities management
  - Suitability of additional allowances for cost fluctuation
  - Fair trade risks, etc.
- \* Construction Report : A document for recording inspection results of constructed structures.

**Future Directions**

POSCO E&C have put various efforts to systemize the Compliance Management including establishment of standard process for preventing unfair trade behaviors. We plan to continuously monitor and improve the current systems. Moreover, we will strive to prevent deviations and violations of not only our employees, but also all the stakeholders who share the business areas with us.

**FOCUSED CASE**

**Clean-POSCO System**

The Clean-POSCO System is to enforce every employee to record and manage all solicitations occurred in the worksites and activities, thereby creating transparent POSCO E&C. If any employee does not register such issues, he/she will be imposed with strict penalty.

**Types of Solicitations to be Recorded**

- Requests for special treatment in purchasing and contracting
- Requests for preferences in employment
- Requests for excessive favors and preferences
- Requests for inattentive management such as inspections, etc.

**Registration Method**

Install 'Clean-POSCO' application and record based on the Five Ws.



Access main page through PC application

※ Improved the standard of system operation by informing those who asked for solicitations that the information about their names, request details, and beneficiaries must be recorded in the system, registering the solicitations on the system even if they were recanted (for this case, the reporting can be in anonymous), and registering even if they are uncertain to be considered as solicitations.

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 **16** case  
 2018 LEED Certifications  
 1 case in progress

 **2** case  
 Outstanding Awards at 2017  
 Korea Intelligent Awards  
 Northeast Asia Trade Tower, Songdo The Sharp Green Walk III

 **24** items  
 Voluntary Improvement  
 Activities\*

\*Activities to self-inspect environmental management factors such as scattering dust, water quality, dust vibration, wastes, and soil, etc.

## ECO-FRIENDLY CONSTRUCTION

POSCO E&C devises measures to identify various environmentally hazardous factors such as noise and dust and mediate their negative impacts. Through the R&D and reinforcement of field environment management, we try to reduce environmental pollutants as well. We are continuing eco-friendly construction activities by standardizing systematic environmental management such as focused management in high-risk sites, optimization of environmental management process, and introduction of environmental management system (ISO 14001). In addition, we increased supports for suppliers' environmental management to comply with relevant regulations in overall supply chain.

**EXECUTIVE MESSAGE** PJT Innovation Department / Executive Director, Kyuwon Kyung

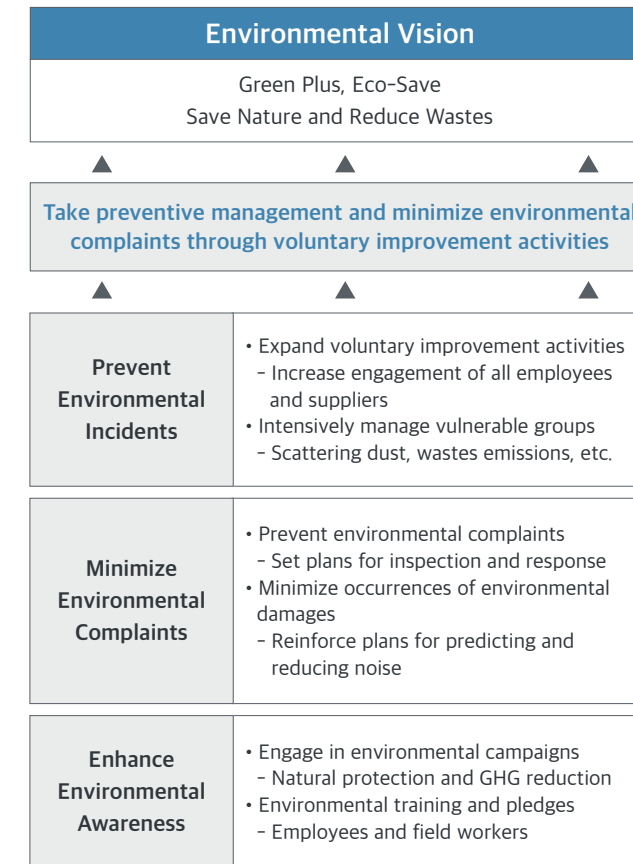
We will carry out innovative improvements of environmental issues including chronic noises and dusts from the construction sites and support for prevention.

POSCO E&C set noise reduction at apartment construction sites as an innovation task and plans to pursue construction standard and patent through the pilot tests and expert consulting this year. We will become a leading company of environmental management in the domestic building industry by paying attention and solving issues that may arise in the construction environment.



### Eco-friendly Strategy System and Focused Goals

POSCO, in accordance with the group-level 'POSCO Group Environmental Management Policy', conducts activities applied with environmental perspectives in overall business management. In particular, POSCO E&C recognizes environment as a core factor of business strategy and set environmental management visions to perform.



### Eco-friendly Construction Activities

POSCO E&C performs diverse activities to realize eco-friendly construction in overall project process.

#### Research and Development (R&D)

We are continuing to develop building methods to reduce energy consumption and greenhouse gases (GHG) emissions, along with developing and introducing energy-efficient equipment. We own the highest number of LEED certification in Korean construction industry. And, we are also recognized for our outstanding technologies such as Zero-energy Building Certification and Outstanding Awards at 2017 Korea Intelligent Awards.

#### Designing

POSCO E&C minimizes energy consumption of building structures by maximizing insulation and also offers eco-friendly

structures with great energy efficiency through eco-friendly materials and designs.

In addition, we developed the analysis system for environmental performance and energy based on the Building Information Modeling (BIM) which is an integrated information management technology for building structures.

Based on this design, we were able to reduce 60% of energy consumption in apartments as of December 2017, and in January 2018, Pangyo Techno Valley III Corporate Support Hub Project became the first non-housing structure to receive energy certification in Korea.

#### Purchase and Procurement

The purchase and procurement are very important part in the process of construction industry. POSCO E&C puts various efforts to activate uses of low-carbon/eco-friendly products. Since 2016, we discuss about plans for improving low-carbon/eco-friendly products and technologies and for activating purchase through presentations and technology support programs to the suppliers.

#### Construction

POSCO E&C thoroughly conducts environmental management at the worksites through the analyses of cases by construction types (i.e. apartments, building, roads, etc.) and by environmental factors (i.e. dust, wastes, noise, vibration, etc.).

For the remodeling and reconstructing sites, management plans for demolition and disassemble process are established and distributed to all sites.

After the construction, we perform site visits to prevent any remaining environmentally hazardous factors. We strengthen guidance through regular visits, wastes categorization, and recycling training towards the sites with high potential of wastes.



\*Explosive demolition at Bundang Office of Korea Gas Corporation (2017. 6. 15)

**Fine Dust Management**

We have managed gas emissions from construction equipment through voluntary improvement activities for fine dust reduction. The fine dust caused by excavators, forklift trucks, dump trucks, pump trucks, and ready mix concretes (remicon) are measured monthly, and various actions for fine dust reduction from the Ministry of Environment (MOE) is introduced to the fields, including replacement of machinery that exceeds standards.

- 1 Simply measure fine dust from construction equipment**
  - ▶ Measure fine dust concentration level monthly as voluntary improvement activities at worksites
  - ▶ Control the level II or below, which is the standard of MOE
- 2 Take corrective actions for equipment exceeding the MOE standard**
  - ▶ Adjust operation of equipment with overload or sudden stops
  - ▶ Perform maintenance such as replacing lubricating oil of engines
- 3 Re-measure fine dust after corrective actions**
  - ▶ Re-check whether they meet the level II or below
- 4 Recommend to replace equipment exceeding the standard**
  - ▶ Explain to suppliers and/or equipment owners about governmental aid system



Measuring method for find dust of construction equipment

**Environmental Management during Demolition/Disassembly**

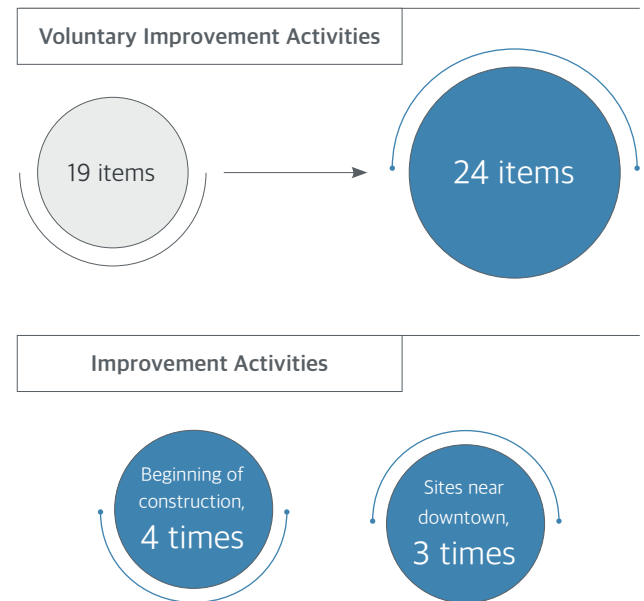
We are strengthening management of demolition/disassembly sites that have relatively higher risks of complex environment such as asbestos, wastes, scattering dust, noise, and vibration. At these sites, we offer multidimensional aids by providing relevant documents and training to minimize damages. During the work process, we perform constant monitoring and improvement activities in accordance with the environmental regulations.

**Reinforcing Voluntary Improvement Activities of Environmental Management**

POSCO E&C executes voluntary improvement activities of environmental management to achieve 'Zero Environmental Incident'.

The improvement activities on the sites in the beginning stage of construction or in downtown area were expanded from twice a week to three or four times a week due to high risks of environmental issues.

In addition, we also increased the number of the activities from 19 to 24 by including wastes disposal by classification and watering management during demolition/disassembly, etc.



**Environmental Complaints Prevention**

We work on complaints prevention activities in the construction sites in downtown area. If any complaints are reported, the worksite, Environmental Group, and Legal Group discuss about response plans. In March 2018, we developed the Guidebook for Environmental Complaints Management and distributed them at the worksites for better negotiations regarding environmental disputes and complaints.

**Future Directions**

The goal of POSCO E&C's eco-friendly management is more focused on prevention activities through proactive risk management than solving after the issues are occurred. We will continue to endeavor to prevent environmental issues and aid implementing successful projects.

**FOCUSED CASE**

**NOISE REDUCTION OF APARTMENTS FRAME CONSTRUCTION**

Followed by the recent increase in reconstruction and mega projects in downtown areas, the complaints related to environment also has increased. The apartment construction, in particular, creates bigger impacts on people as they are performed closed to living areas (about 30 - 40 m away). The continuous complaints on environmental issues lead to additional actions such as imposing fines, sanctioning construction, and creating compensation, which result in lead time increase, cost increase, and profit decrease.


According to the analyses of main causes of environmental complaints, noise was found to be the biggest cause. Especially the noise from dismantling of aluminum casting during the framework construction creates high level of noise.

Category	Noise Level (dB)	Remarks
Pins removal	105	Railroads when trains pass by
Aluminum foam falling	110	Siren / Rock bands
Aluminum foam falling and impact	120	Thunder / Planes departing and landing

Therefore, POSCO E&C began setting improvement plans for noise reduction. The core issue was to minimize impact noise during the disassembly aluminum casting while blocking noise transfer to victim area.


We identified the problems of the existing disassembly methods, and now we are in the process of effect analysis by the experts from the Conflict Committee of the MOE while collecting ideas for reducing noise in the field. In addition, we closely reviewed the pilot projects at sites, opinions of suppliers, and efficiency of materials in order to minimize workload and additional costs during the actual project.

The existing methods of disassembling aluminum casting were conducted in three ways. However, these methods had issues with increasing labor costs, inadequate noise level, and low work efficiently.




**Duo Process**

This is a method to pull down one sheet of castings at once with two people in one group. Although it does not generate noise, about 4 to 5 times of regular workforce is required, and the lead time is longer.



**Drop-down System**

This method is to pull down one sheet of castings by 30 - 50 cm and another sheet afterwards. This can reduce noise as the falling height is low, but it requires high workforce.



**Noise Wall**

This is installing 1-cm thickness of polycarbonate noise walls on windows of framework. The noise control effect is great, but the cost of materials is high.

We set noise reduction plans during casting disassembly as the innovative task and are working on to find a way to efficiently reduce noise. In 2017, we estimated the possibility and effectiveness to apply in the field through pilot projects, and in 2018, we plan to pursue construction standardization and patents through field tests and external experts' consulting. Even after the standardization, we will continue supplementing various efficiency enhancing plans such as cost reduction, applicability, and workforce reduction, thereby expanding the facilities.

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Parental Leave Rate

Return-to-work Rate after Parental Leave



Child Labor  
Forced Labor



Training Time per 1 Employee



Training Cost per 1 Employee

## TALENT MANAGEMENT & ORGANIZATIONAL CULTURE

Employees are the reasons behind POSCO E&C's continuous growth, even in the drastically changing business atmosphere. We recognize that acquisition and nurturing of key talents is the main decision-making components to strengthen future competitiveness. Moreover, we pay special attention to employee welfare and strive to create a corporate culture that values the 'work-life balance'.

### EXECUTIVE MESSAGE

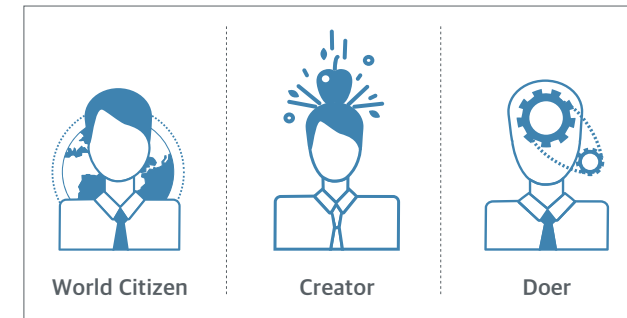
We strive for talent development based on the philosophy of respecting human beings and intend to achieve fair and reasonable talent management.

Followed by the changes in government policy in labor-related area, POSCO E&C put a lot of efforts in improving HR system. We plan to have close communication with the employees as one of the means. In addition, we are working on capacity building and nurturing of our talents in alignment with the changes in external environment. We will provide supports in improving POSCO E&C's competitiveness through reasonable talent management and cultivation.



### Talent Management System

POSCO E&C nurtures global talents who can play leading roles in the global market to realize 'Smart Player in Steel Construction & Concession'. As the Smart Industry based on big data, artificial intelligence (A.I.) and internet of things (IoT) has been emerging recently, we are working on cultivating creative, professional human resources who can embed the Industry 4.0 technologies in the construction sites and business divisions.



### TFT for Organizational Culture Innovation

POSCO E&C plans to accelerate collaboration and create synergy among the employees by activating communication and mutual exchange. In March 2017, we created The Plus Task Force Team (TFT) and selected 24 goals to achieve toward improving organizational culture.

### Organizational Culture & Welfare

#### The Plus Campaign for Improving Organizational Culture

We practice The Plus Campaign to establish strong and active organizational culture. This campaign is conducted under the four themes: 'Organization = Performance+', 'Leader = Initiative+', 'Employee = Loyalty+', and 'Customer = Happiness+' to create active corporate culture that the employees are happy with.

#### ● POSCO E&C the Plus!

Strong Organizational Culture to Recover Crisis through Leaders' Initiatives and Employees' Voluntary Engagement



#### Establishing Labor-Management Relations through Mutual Respect

POSCO E&C is building a sound labor-management relation based on mutual respect through the Labor-management Councils and regular meetings with the Labor Union. Moreover, we run communication channels with our employees to discuss such important matters as management activities and employee treatment and further to reflect their opinions in the business activities.

#### Implementing Deferred Retirement

The Deferred Retirement System of extending retirement age to 60 years old is executed to guarantee employee to maintain their high-quality lives. Therefore, we offer the wage peak system from the age 56 and prevent retirement pay from decreasing through the transition to the defined contribution (DC) plan for retirement pension system.

#### Work-Life Balance

POSCO E&C provides various supports to the families of its employees. We created the childbirth grants to aid employees who conceive or adopt children and also vacation to those who had subfertility. In 2018, we will expand the size of the corporate childcare center to reflect employees' needs.

Talent Cultivation System

Group-wide Integrated Corporate Title System and Experts Cultivation

The P Corporate Title System was introduced to create integrity and collaborative culture in the POSCO Group by unifying the job title, position, and roles. In the future, we plan to apply this system to the local employees overseas. In addition, we intend to support the employees with expertise in certain areas to implement performance creation tasks by starting the POSCO Certified Professional (PCP) System.

Training System

Under the goal, 'Strengthening Competitiveness for Global E&C Business', we systematically manage the Talent Cultivation System based on the three core strategies. The operation of POSCO E&C's the Three Core Competence Training is allocated to the head office and POSCO Group University depending on the specialty and expertise of the industry.



Leadership Training by Corporate Title

We provide leadership trainings for each job position to accelerate our innovation. The Leadership Academy is an online training program under the academic credit system, and the completing courses are set as basic requirements for promotion.

● Leadership Training System by Corporate Title

P7~	PIUM	Executives Nurturing Course, etc.
P6	PIUM	New Group Heads Course
P5	Team Leader Leadership	New Leaders Course
P4	Performance Leadership	Group Leaders Cultivation Course
P3	Implementation Leadership	P3 Promotees Course
P2	Relational Leadership	P2 Promotees Course
P1	Self-Leadership	New Recruits Training

※ We conduct leadership capacity building training towards P5 positions who are the candidates for manager-level promotions.

PM Nurturing Courses

POSCO E&C runs training courses to cultivate project managers (PMs) who can execute overall process of projects from project promotion to construction. Under the goals of project operation and management/leadership capacity building, theoretical learning, assignments completion, and real-world experience trainings are provided for seven months.

In 2017, the courses such as executives' lectures and decision-making training were operated to enhance overseas project capabilities, and a total of 362 PMs have been trained since 2003 in these courses.

Construction Management Academy

We run the Construction Management Academy composed of 78 courses broken down with job positions and duties of each business division. Through this academy, we are cultivating experts in tasks such as sales, E&C technology, PM theme, and management.



Compliance with Human Rights and Labor Practices

Strengthening Human Rights Management System

POSCO E&C conducts systematic management to prevent human rights violation in project sites by providing labor management training to the site managers and distributing labor management case booklets.

Reducing Working Hours

We are equipped with several measures to apply 52 working hours per week. We shared the guidelines for complying with legal working hours throughout the company and make the practical surroundings for going home by broadcasting before the closing hour. Moreover, the flexible and selective working hours systems are introduced in the worksites as a means of standardization of reducing working hours.

Future Directions

POSCO E&C intends to reinforce its sustainability by creating fun and worthwhile corporate culture. Therefore, we will not only nurture creative talents for future competitiveness, but also create a 'company to work for' by organizing job and performance-based, fair human resources (HR) system.

Core Job Experts Cultivation Training

We are cultivating experts in sales, contract management, and risk management to activate overseas sales and reinforce project execution capacity. The outstanding human resources are selected from each business division and assigned with courses depending on jobs. In 2017, a total of 87 experts were trained.

Employment and Appraisal/Compensation Program

Talent Employment

We plan to strengthen our business and technological competences by recruiting new and/or experienced human resources with global capacity and expertise. POSCO E&C operates fair employment process and all the applicants are not discriminated against their nationality, gender, religion, etc.

Appraisal & Compensation Program

We established the appraisal and compensation system based on personal ability and performance. For the organizations with high job connection with other departments, we perform integrated performance management by running the matrix appraisal system. In 2017, we improved our compensation system such as increase rate of base pay and payment rate of bonus.

FOCUSED CASE

HR SUPPORT FOR SMART CONSTRUCTION

POSCO E&C reinforces HR supports to create the Smart Construction, which is a key matter of sustainable growth.

Smart Construction TFT

The TFT composed of experts in relevant fields is establishing various strategies using Smart Construction technology to improve profitability and secure building competitiveness. In addition, the mutual cooperation system with business divisions and Technology Group strengthens the expertise. In order for continuity and internalization of its work, we are reviewing the possibility for operating the TFT as a regular organization.

Foundation of Smart Technology Research Group

The Smart Technology Research Group is a new organization established for strengthening execution of Smart Technology development and enhancing customer response. This group contributes to the settlement of the Smart Construction through the liaison with our construction experience and the Industry 4.0 technologies (big data, A.I., IoT, etc.)

Smart Construction Training Courses

We operate various nurturing programs for the experts in the four smart technologies by liaising with the Group Talent Creation Center and external professional institutions.

A.I.	Create smart building and city through automatic/unmanned processes
Big Data	Manage construction through data-based forecast modelling
BIM	Strengthen competitiveness of orders and construction based on 3D engineering technology
Drones	Manage safety/construction data using drone technology

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**1<sup>st</sup>**  
Apartment Sector in the Korea Standard Quality Excellence Index (KS\_QEI)  
10 consecutive years



**1<sup>st</sup>**  
Quality Management Maturity  
POSCO Family Management Assessment



**1<sup>st</sup>**  
Apartment Sector in the Brand Customer Loyalty Index  
2 consecutive years



**89.4 pts.**  
After-sales Service Customer Satisfaction

## CUSTOMER SATISFACTION MANAGEMENT

From industrialization and urbanization to Industry 4.0, customers' needs are changing and becoming more demanding. POSCO E&C realizes the need to fulfill customer needs and achieve customer satisfaction through quality and service management. We are creating and maximizing sincere customer satisfaction by developing technologies that listen to the voice of customers (VOCs).

### EXECUTIVE MESSAGE Construction Support Office II / Executive Director, Sanggil Woo

We will get closer to the customers by understanding through communication and sympathy with the customers.

POSCO E&C launched 'The Sharp' in 2002 to create housing brand that enhances quality of customers' lives and have taken many efforts to get closer to the customers continuously. We will do our best for customer satisfaction under the philosophy, 'understanding' from the design stage to move-ins.



### Customer Satisfaction Management Strategic Goals

Enhancing construction quality and customer service is the key of POSCO E&C's customer satisfaction management. In order to realize the customer satisfaction management, we built the quality management system in accordance with the global standards. Moreover, we prevent quality risks through preemptive quality management. We also plan to strengthen measures for quality management and finally achieve 'Zero Construction Defects'.



### Realizing Preemptive Quality Management System

We prevent crucial defects and respond to potential quality risks preemptively by establishing voluntary quality management system at project sites. At the project kick-off sites, we conduct separate visit training and quality inspections, and for the sites with insufficient standard, we conduct customized supporting activities. In addition, we developed manuals and guidelines for quality management for all project sites to maintain constant level of quality.

### Establishing Quality Management System

We established programs to improve construction quality based on the quality management system, ISO 9001 and eliminated the waste factors from the overall process of construction. Moreover, we conduct quality inspections on all project sites to respond to customer requirements proactively.

### Building Quality Prevention System through Big Data Analysis

We build the prevention system for quality issues by analyzing the quality data in the perspectives of 4M (Manpower, Materials, Machines, and Methods) using the big data. This contributes to solving quality risks at project sites by deriving reasons of quality inadequacy and providing solutions in the forms of analysis cases and training cases.

Quality Data	Big Data Analysis	Prevention System	Proactive Support Activities
25,000 cases of improvement of quality inadequacy during construction, etc.	Select inadequate, vulnerable construction types and derive inadequate causes	Develop solutions by 4M cause	Conduct data offering and coaching of customized quality management at each project site

### Strengthening Global Quality Capacity

We assigned professional quality managers at overseas project sites to realize standardized quality management and aid them to acquire international quality qualifications to build their capacity. Since 2017, we established special terms of overseas project suppliers' quality to clearly show our quality standards. Moreover, we conduct cultivation training for overseas quality management experts by selecting outstanding human resources in project management and operate various training courses such as practical training for quality management system, intensive training for overseas quality management, and courses at certification assurance agencies, thereby strengthening global capacity for quality management capacity.

FOCUSED CASE

## The Six Tasks of Quality Management Reinforcement Plans for Preventing Critical Accidents

The accidents occurred at construction sites due to defects or poor quality may lead to large-scale injuries and fatalities. Therefore, POSCO E&C set the Six Tasks of Quality Management Reinforcement Plans for Preventing Critical Accidents and manages these tasks from 2018.

### Strengthen Quality-based Assessment System



In order to strengthen the quality assessment system based on construction quality, we are strengthening construction inspections at project sites and expanding reinforcement of human resources and inspection period. We conduct special coaching and theme inspections on the vulnerable construction types with frequent defects.

### Strengthen Structure Safety Assurance



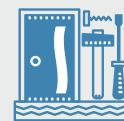
Rebars and concrete are important materials directly related to the stability of structures, but it is difficult to visually check them after processing. We conduct non-destructive check on bearing walls and pillars of structures once or more every year to strengthen safety and quality managements.

### Strengthen Quality Test and Material Check



We measure the materials' performances such as Remicon strength, insulation density, and rebar tensile force. From 2018, we are striving to enhance the trust in overall quality test and materials check by enforcing confirmation of quality test results and conducting execution evaluation of contracted testing agencies.

### Strengthen Quality Management of Materials of Temporary Structures



Due to the recent increase of accidents from temporary structures, necessity for quality management of temporary structure materials have emerged. The project sites plan and conduct tests of the materials, while the head office reviews suitability, check implementation status, distributes best practices of the quality tests.

### Expand Quality Improvement Day



We are expanding the existing quality inspection activities to enhance workers' quality awareness and improve construction quality. Through the Quality Improvement Day, worksites carry out quality resolution, training, quality inspection, and result reporting, and the head office checks the results, provides feedback, and reflect them in worksite quality assessment.

### Strengthen Quality Training for Foreign Workers



Followed by increased number of foreign workers at domestic sites, it became necessary to make the quality training easy to understand. Therefore, we plan to prevent defects of construction by developing guidelines and conducting tailored training. We currently have the quality guidelines in four different languages including Chinese and Vietnamese.

### 'Grand Prize' at 2017 Construction Quality Management Awards

POSCO E&C was recognized for its activities and performances regarding quality by receiving 'Grand Prize' at 2017 Construction Quality Management Award, hosted by the Construction Association of Korea (CAK) and sponsored by the Ministry of Land, Infrastructure and Transport (MOLIT). We will continue to strengthen our competitiveness through quality innovation.

### 1st Place in Apartment Sector of KS\_QEI for 10 Years in a Row

POSCO E&C's 'The Sharp' won the 1st place in Apartment Sector of the Korea Standard Quality Excellence Index (KS\_QEI) for 10 consecutive years. Moreover, 'The Sharp' is becoming a global brand by also winning the 1st place in Apartment Sector in the Brand Customer Loyalty Index (BCLI) for 2 consecutive years as well.

### 'The Sharp' Apartment Enhancing Value of Life

POSCO E&C launched the apartment brand, 'The Sharp' in 2002 under the goal to provide housing to enhance values of customers' lives. We are striving to provide unparalleled living spaces based on human-focused designs.

#### Customer-focused Cultural Space of 'The Sharp'

The Sharp offers its own premium landscapes such as plaza with grass, brooklet, gardens, and family vegetable gardens. In addition, various community places for networking such as kid's swimming pool, mom's cafe tea garden, and farm garden are also provided.

#### Design of 'The Sharp' that Understands Customers

The Sharp relentlessly endeavors to develop for customers' comforts. The Sharp realizes the space to maximize customers' easiness and satisfaction through the designs from the angles of wall sockets to bathroom towel hangers with mobile phone holders.



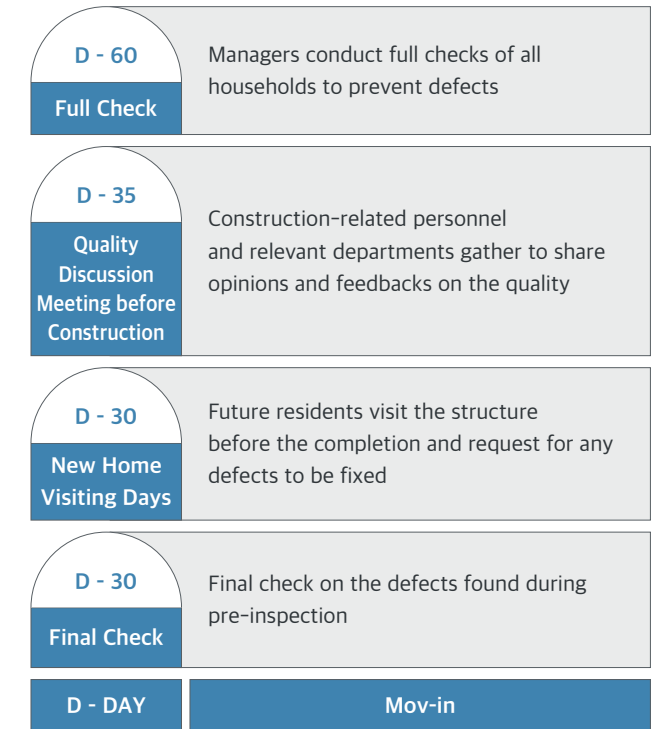
The Sharp Mom's Caf at Busan The Sharp Park City

### Differentiated Service for Customers

POSCO E&C receives VOCs from order to maintenance and conducts through quality management from before to after move-ins.

Before the construction, we host the quality discussion meetings and provide lounge and greeting services. We also enhance customer satisfaction through the 'collaborated defect inspection system' that checks and repairs the defects run by relevant departments.

#### ● Preliminary Inspection Process for Residents





### Future Directions

POSCO E&C will strive to accomplish 'Zero Construction Defect' and realize customers' affection through thorough quality management. We will do our best from project order to maintenance to enhance building quality and customer satisfaction.



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 **50** cases  
**KRW 27.4** billion  
 Technology Transfer

 **14** applications  
**15** registration  
 Joint Application and Registration of Patents

 **17** suppliers  
 Shared Growth Support Groups

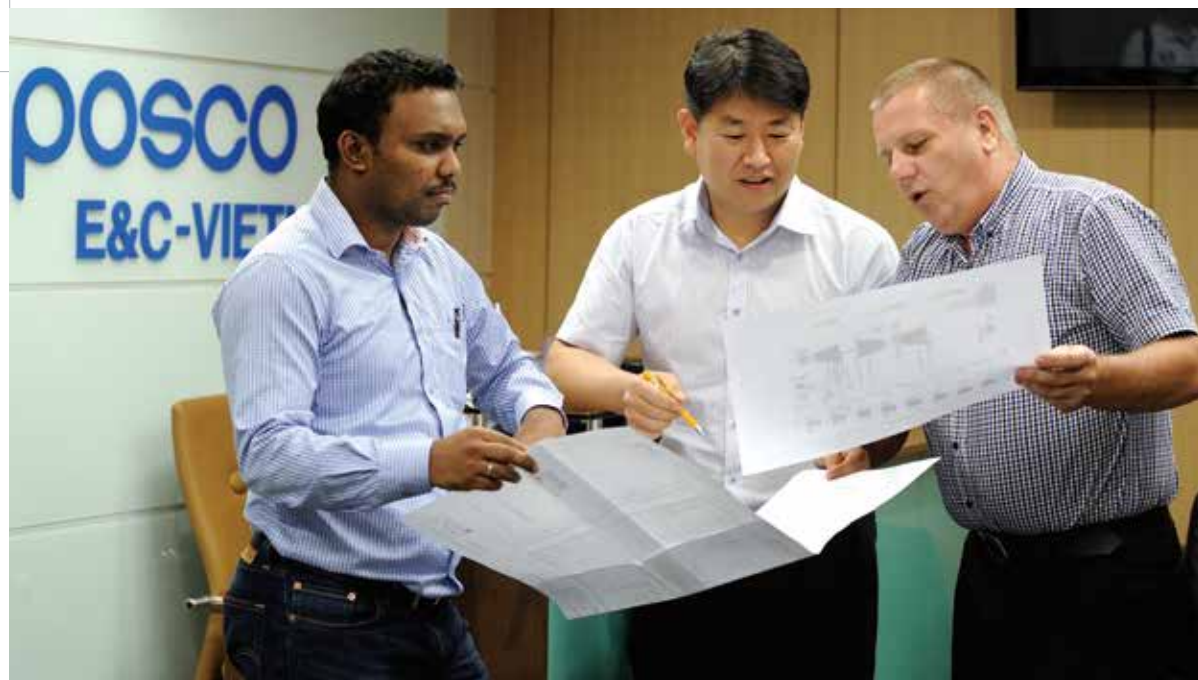
## WIN-WIN GROWTH THROUGH COLLABORATION

The added value of construction industry is created through the cooperation with suppliers. POSCO E&C recognizes shared collaboration as an essential factor for strengthening its competitiveness in the competition with global construction company. Therefore, we intend to establish master plans for shared collaboration and move forward with our suppliers. We will continuously endeavor to reinforce fundamental competitiveness in the supply chain through the various and practical collaboration activities such as technological cooperation, building shared collaboration infrastructure, and spreading win-win growth culture.

### EXECUTIVE MESSAGE Purchase & Contract Office / Executive Director, Tae-Eok Kim

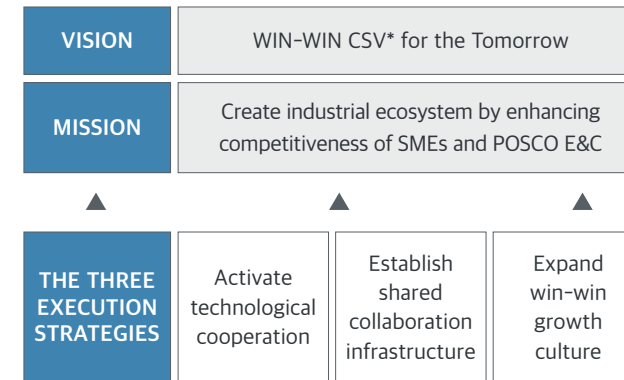
We plan to become a global company through continuous shared growth with our suppliers.

There are many companies in different industries worldwide that builds close relationship with their suppliers for a long period of time. POSCO E&C recognizes its suppliers as companions and provides utmost supports for strengthening their technological competence. Furthermore, we intend to become more sustainable company by strengthening the fundamental competitiveness of our supply chain.



### Execution Strategies & Goals for Shared Collaboration

In January 2018, POSCO E&C established the 'Shared Collaboration Section' exclusive for creating shared value (CSV) to perform strategic shared collaboration. The Shared Collaboration Section promotes the three execution strategies: activate technological cooperation, establish shared collaboration infrastructure, and expand win-win growth culture. Based on the strategies, the section performs various activities to build practical shared collaboration supply chain. We plan to continue shared collaboration activities under the goals to activate technological cooperation and share performances.



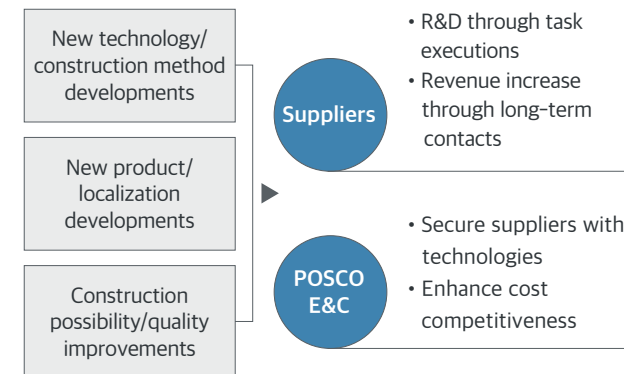
\*CSV : Creating Shared Value

### Activating Technological Cooperation

#### Activating Performance Sharing System

POSCO E&C operates various systems for activating technological cooperation with its suppliers and promotes performance sharing system to provide more practical support. The performance sharing system is a profit-based shared collaboration activity by sharing profits or benefits with the parties engaged in joint business activities.

#### ● Performance Sharing System



### Reforming System for Activating Technological Cooperation

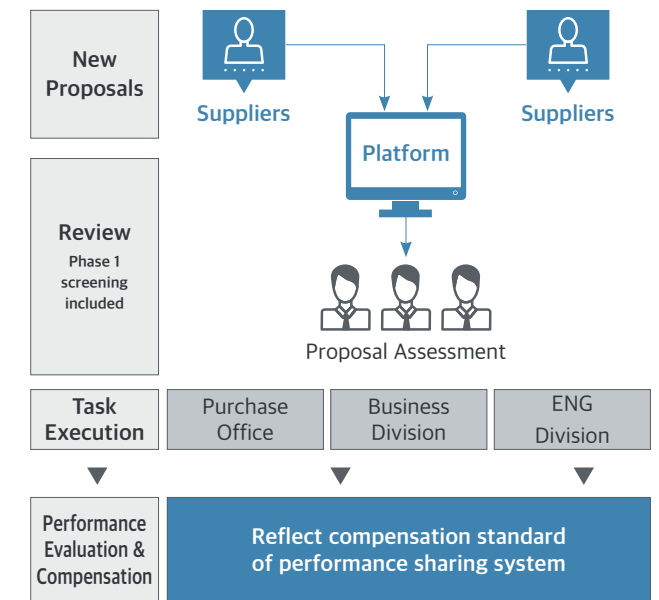
POSCO E&C plans to activate technological cooperation with the suppliers by reforming the existing systems and establishing new systems.

Considering the suppliers with insufficient capitals, we indicate clearly in the agreement about the range of monetary compensation caused by proposal failure to enable recovery from sunk cost generated during the cooperation process. Also, to prevent unexpected issues, we operate review processes for patent application and possibility of selling to third parties.

### Develop Shared Collaboration Platform

We developed the shared collaboration platform to lead suppliers to easier proposals of practical technologies. The platform enables to prevent ethical risks and offers such information as review results, real-time feedback, and transparent compensation system. We will continue to put various efforts for activating technological collaboration.

#### ● Shared Collaboration Platform Operation Plan



#### ● Performances of Technological Collaboration Activities (as of recent 3-year period)

<b>Performance Sharing System</b>	5 cases found, 4 cases rewarded (KRW 3.6 billion)
<b>Joint Technology R&amp;D</b>	28 cases found, 5 cases rewarded (KRW 780 million)
<b>Purchasing Condition New Technology Development</b>	2 cases found, 1 case rewarded (KRW 350 million)

### Fundamental Infrastructure for Shared Collaboration

#### Managerial Support

We run executive 'win-win Cooperation' team to improve the issues of small and medium enterprises (SMEs) using the expertise and experience of our executives. In 2017, 18 executives performed 17 tasks toward 19 SMEs. In 2018, we will focus on consulting activities to enhance safety awareness and prevent accidents to the suppliers in major construction areas.

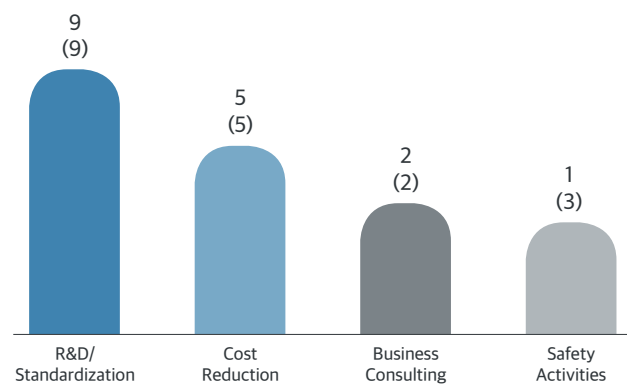
In addition, we develop technological competitiveness of the suppliers by providing tailored training vocational trainings in technology, IT, and business administration, and we also perform activities to support the Quick Six Sigma (QSS) innovation of the suppliers by putting investment through Industrial Innovation Campaigns.

#### Performance of POSCO E&C Executives win-win Cooperation team

##### Participants and Supports

Divisions	No. of Executives	No. of Suppliers (Tasks)
Staff Division	4	2 (2)
Business Division	13	14 (14)
Safety Center	1	3 (1)
Total	18	19 (17)

##### Types of Execution Tasks - No. of Tasks (No. of Suppliers)



#### Financial Support

We run financial support programs for the suppliers to focus on business operation without concerns about budgets need in production and operation. We provide loans with low interests through the Win-Win Growth Fund and sureties for loans from credit rating institutions based on transaction history and contracts for the suppliers with low credit rating. In 2018, we plan to expand the size of the Win-Win Growth Fund for more active financial supports.

#### Technology Support

We promote joint R&D for new technology, financial aids for R&D, and joint application/registration for patents, and we also share benefits through the performance sharing system. Furthermore, we provide unstinting supports for strengthening technological competitiveness of our suppliers by transferring technologies and patents.

#### Supporting Sustainability Management

We offer trainings in ethics and safety to our suppliers. For establishing independent safety management system, we conduct safety consulting such as evaluation of safety management activities to the suppliers in need of acquiring KOSHA 18001. In the first half of 2017, one supplier acquired the certification through this program.

#### Diffusion of Win-Win Growth Culture

POSCO E&C publishes continuously performs shared collaboration system and activities by publishing relevant letters internally and running supplier meetings regularly.

#### Expanding Supplier Meetings and VOCs

We run supplier meetings to share best practices of shared collaboration. In 2017, 43 VOCs were received during the two meetings, and improvement activities for 27 cases were conducted. In 2018, we will expand the communication channel with the suppliers by holding luncheon meeting.



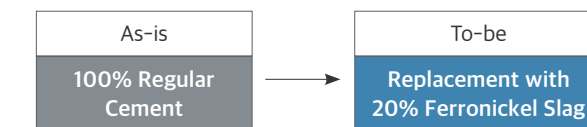
### FOCUSED CASE

## BEST PRACTICE OF POSCO E&C'S TECHNOLOGICAL COOPERATION

POSCO E&C is strengthening technological cooperation with its suppliers. We offer opportunities to apply the ideas of suppliers into real site through the test-beds and proceed with additional contracts for the best practices, thereby increasing revenue.

#### Best Practice of Product Development : Jije Site in Pyeongtaek

POSCO E&C - IS DONGSEO Technological Cooperation  
Improved price-performance ratio through ultra-high-strength PHC Pile development using ferronickel slag (price and bearing strength)



- Enhance resources recycling and cost competitiveness
- Increase revenue by providing long-term contract after performance assurance (This patent was applied by POSCO E&C)

#### Best Practice of Product Improvement : Giheung Site in Yongin

POSCO E&C - IDA E&C Technological Cooperation  
Developed duct processing technique applicable in heat ducts using eco-friendly red clay materials (antibacterial and moisture control)



- ① Developed red clay processing technique to mix with duct (antibacterial and moisture control of red clay)
- ② Reduce costs by developing no-glue construction design

- Made revenue of KRW 240 million (long-term contract provided)
- Joint patent application (99.9% antibacterial eco-friendly duct)

### Transparent Transactions with Suppliers

#### Enhancing Fairness in Supplier Selection

POSCO E&C complies with the four guidelines of the Fair Trade Commission (FTC) when registering and operating new suppliers. Moreover, we have internal audit committee to review the fairness in contracting and prices of all subcontracts with certain amount of transactions to check the compliance with relevant laws.

#### Purchasing Total Cost of Ownership (TCO)

TCO is a total cost generated from purchased item or service, delivery-in-progress to customers, and post-delivery. POSCO E&C secures construction quality and prevents additional cost generation caused by project delays, design changes, and lead time delays by allowing bidding of the suppliers considered to be excellent in quality management and construction.

#### Complying with the Code of Ethics

Since 2014, we have included the articles from the code of ethics which reflects articles related to human rights and labor required by the global initiatives such as the Universal Declaration of Human Rights, the UN Guiding Principles of Business and Human Rights, the International Labour Organization (ILO), and ISO 26000. 98% among all domestic contracts are traded in accordance with the code of ethics.

#### Realizing Social Value through Trade

We formed strategic alliances with the suppliers with certifications of disability employment and continue expanding purchase for them. We plan to find more suppliers who can contribute to solving social issues and increase proportions of transactions with them.




#### Future Directions

POSCO E&C endeavors to build core capacity of its suppliers through technological cooperation, while developing various means to create stronger relationship with the suppliers in a long-term. In particular, the Shared Collaboration Platform, implemented since 2018, is an important task to create sustainable relationship with our suppliers. In the future, we will strive to create real shared value and fulfill social responsibility through various activities to continue mutual collaboration with our suppliers.

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 **24.6** hours  
Voluntary activities per person

 **KRW 880** million  
Total amount of 1% Sharing Fund  
\*Total amount of employees' donation and company's matching grant

 **164** times  
Talent Donation Group Activities

## SYSTEMATIC SOCIAL CONTRIBUTION

To achieve sustainable growth, a company must communicate and live with the community by reflecting its value and strategy.

POSCO E&C is aware of that the community's growth is a basis for virtuous cycle from positive impact on its business to potential growth and pursues to create social value through social contribution activities for solving social issues. Especially, we focus on the three activities: 'Supporting Socially Vulnerable Groups (Smile)', 'Nurturing Future Talents (Hope)', and 'Supporting Culture & Arts (Culture)' to contribute to making better community. We will fulfill our responsibility as a corporate citizen, look after neglected neighbors, and become a beloved company in the community.

### EXECUTIVE MESSAGE Communications Department / Executive Director, Jaeyul Lee

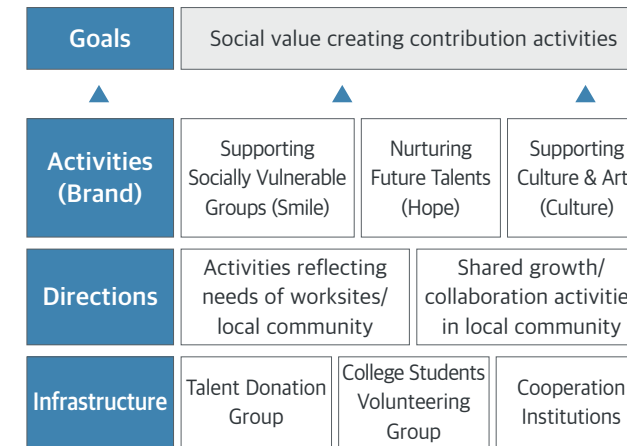
As an accountable corporate citizen, we will get closer to the local community by creating social value.

Since its foundation, POSCO E&C have performed social contribution activities multidimensionally by understanding that shared growth with the community is a corporate social responsibility (CSR). We will create social values based on the core capacity reflecting our industrial nature and build shared collaboration with the local communities where the head office and worksites are located through continuous communication.



### Directions and System Social Contribution Activities

POSCO E&C conducts social value creating contribution activities to solve issues in the local regions. Moreover, we strive for social contribution reflected with needs of worksites and local communities and shared collaboration with local communities.



### Social Contribution Infrastructure

POSCO E&C performs systematic social contribution activities through the infrastructures: Talent Donation Group, College Students Volunteering Group, and Cooperation Organizations.

#### Talent Donation Group

The Talent Donation Group, composed of 383 members in 11 teams, was founded in 2015 to support socially vulnerable group and activate the sharing culture by sharing various talents of employees to the local communities. This group executes voluntary activities on seasonal basis, cultural performances, and educational programs for teenagers in liaison with community centers in each region.

#### College Students Volunteering Group (Happy Builder)

The Happy Builder is both a voluntary activity and global leadership building program of the college students. About 50 students participate in overseas culture sharing activities, medical services, and domestic voluntary activities every year.



### Public-Private Cooperation Partnership

POSCO E&C conducts various social contribution activities through partnerships with socially recognized institutions. We expand the social contribution infrastructure and social influence through the cooperative relations with public institutions including the Ministry of Foreign Affairs (MOFA), Ministry of Culture, Sports and Tourism (MCST), Ministry of Health and Welfare (MOHW) and National Fire Agency (NFA), local governments including Incheon Metropolitan City and Incheon Metropolitan City Office of Education, and other institutions such as Inha University Hospital and NGOs.

### POSCO 1% Sharing Activity

The '1% Sharing Activity' is a POSCO Group-wide activity to share wages. In 2017, a total of KRW 880 million was funded through the employee donation and company's matching grant and used for social contribution in various areas.

### Domestic Social Contribution Activities

#### Smile Activity : Supporting Socially Vulnerable Groups

The Smile Activity focus on the socially vulnerable groups based on shared collaboration with the local communities.

**1** Fire Preventing/Living Environment Improving Activities  
We aid in improving living places exposed to risks of fire by repairing homes and installing fire prevention facilities in cooperation with the local fire stations. In 2017, as a result of our efforts, we were rewarded with the Minister's Award and the Head of NFA's Award in the Fire Safety & Welfare Businesses of NFA.

**2** Seasonal Voluntary Activities  
In collaboration with the Salvation Army and local welfare organizations, we conduct sharing activities toward socially vulnerable groups in the local communities especially in Incheon, Pohang, and Busan in accordance with seasonal period such as New Year and Thanksgiving Day, and Boknal.

<b>New Year</b>	Rice Cake Soup (January)
<b>Boknal</b>	Chicken Soup with Ginseng (July)
<b>Thanksgiving Day</b>	Warm heart sharing (September)
<b>End-year</b>	Rice delivery (December)
<b>Employee Regular Activities</b>	Making Beautiful Incheon (March to October)

**Hope Activity : Nurturing Future Talents**

Talent cultivation is a definite way of investment that not only decides on the future of a company, but also a shortcut to enhance national competitiveness in a macroscopic aspect. POSCO E&C supports health growth of children and teenagers through future talent nurturing.

**1 Construction Training Academy**

POSCO E&C has operated the 'Construction Training Academy' after signing MOU with Incheon Metropolitan City and Office of Education since 2016 in response to the Free Semester System, the national educational policy project. During the academy, the Talent Donation Group and Happy Builder visit the local middle schools to lecture about basic knowledge of construction and share field experiences. In 2017, a total of 2,200 students in 16 middles participated in the academy.

**2 Incheon Childcare Center Activity, One & One**

The One & One activity is a matching activity of 37 departments of POSCO E&C with 37 childcare centers in Incheon region. Since 2010, the employees have visited the childcare centers monthly to perform activities such as wall papering, floor paper replacement, room repairs, along with the arts and physical education and reading guides. In 2018, we developed specialized program for fulfilling educational desire of the students with the ChildFund Korea and began providing educational curriculum consulting, outside lecturers, and educational fund.

**3 Ggumnamu Scholarship**

The Ggumnamu Scholarship is a fund raised from the employees' Coin Jar Campaign, external lecturing activities, and ethical fund that has been used to the high school students since 2011. In 2017, the scholarship was provided to 35 students including high school students from low-income families and North Korean defectors in Incheon and Pohang regions.

**Culture Activity : Supporting Culture & Arts**

Culture and art are the key contents of modern creativity industry and important factors to determine the quality of life. POSCO E&C puts its efforts in developing performance arts and culture of local regions and expanding the residents' opportunities for culture activities.

**1 Making Beautiful Incheon Cultural Performance**

Various activities are performed including activation of parks in Songdo International City and cultural performances. This activities have lasted since 2016 in collaboration with the Incheon Facilities Corporation and the Salvation Army, and in 2017, five environmental improvement activities and three cultural performances were conducted. The culture performance held regularly in Songdo Central Park offered meaningful and joyful time to the Incheon citizens.

**2 Incheon Children Chorus Competition**

As Incheon's representative company, we began hosting the children chorus competition for the first in Incheon. This created opportunities to share children's musical talents and expanding chorus culture in Incheon. A total of 1,600 children in 57 teams participated in the 2nd competition held in 2017, and the 3rd competition will be held in November 2018.



**Overseas Social Contribution Activities**

POSCO E&C promotes overseas social contribution activities in entered countries annually to create shared value and execute strategic social contribution followed by the needs of project sites and local communities.

**Overseas Smile Activity : Medical Support**

In the developing countries where medical infrastructure is insufficient, there are many people who do not have access to basic medical services. The Overseas Smile Activity intends to provide basic medical services to the socially neglected groups. In April 2017, we performed medical support activities in Philippines with the medical team from the Inha University Hospital, and in August, we provided the Korean Medicine services in Myanmar with the Korean Medicine Service Team Abroad (KOMSTA).

Category	Korean Medicine Services	Hospital Medical Services
Institutions	KOMSTA	Inha University Hospital
Region	Yangon, Myanmar	Masinloc, Philippines
Services	Treatment (acupuncture, moxibustion, cupping, etc.) & Korean Medicines (granules, ointment etc.)	Training on sanitary and health including family medicine.
Beneficiaries	2,300 local residents	1,300 local residents

**Overseas Culture Activity : Culture Sharing Festivals**

POSCO E&C holds Culture Activities such as Korean tradition education and culture sharing festivals in the entered countries with the Happy Builder to take friendlier approach to these countries using outstanding cultural contents of Korea. In August 2017, we held the culture sharing event with the Korean Embassy in Myanmar. Korean culture education including traditional handicrafts and food were provided toward Yangon Foreign Language University students and the 'Golden Wave Festival' was held to share cultures of the two countries. In November 2017, we conducted another cultural exchange activity called 'Global Harmony' in Panama with the Korean Foundation for International Cultural Exchange (KOFICE), and this was the first overseas voluntary activity in Panama with cultural contents theme after 55 years of diplomatic relations between Korea and Panama.

**Overseas Hope Activity : Educational Supplies Donation**

We provide various educational supplies including PC, laptops, and beam projectors to support the talents in local communities overseas.

**Future Directions**

The social contribution activities of POSCO Family including POSCO E&C aims for social value creation. While focusing on solving social issues through supporting of socially neglected groups and shared growth with local communities, we will keep finding activities with our industrial nature. Based on this, we will contribute to growth of society members and improving quality of life.

**FOCUSED CASE**

## POSCO E&C's SOCIAL CONTRIBUTION AND SDGS

POSCO E&C conducts its own activities that can strengthen connection to core capacity and specialty and contribute to achieving the United Nation's Sustainable Development Goals (UN SDGs).

SDGs Goal	Approaches to SDGs Subjects	Connection to POSCO E&C's Social Contribution
	There are many cases of neglections of the diseases that can be easily cured. POSCO E&C plans to reduce these issues through active medical services in overseas countries.	<ul style="list-style-type: none"> <li>Overseas medical service with Inha Unviersity Hospital</li> <li>Overseas medical service of Korean Medicine with KOMSTA</li> </ul>
	Youth unemployment is an emerging issue in the Southeast Asia with rapid economic development. POSCO E&C conducts projects for nurturing overseas construction experts.	<ul style="list-style-type: none"> <li>Construction technician cultivation in Myanmar (beginning in August 2018, 60 participants)</li> </ul>
	Preventing fire by repairing deteriorated houses is very important in creating sustainable living spaces. Since 2013 POSCO E&C, using its industrial nature, has performed improvement activities of living environment for fire prevention toward fire vulnerable groups with the NFA.	<ul style="list-style-type: none"> <li>Domestic living area improvement activities for preventing fire</li> </ul>

# APPENDIX

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## FINANCIAL INFORMATION

### Summary of Consolidated Financial Statement

36th Fiscal Year, as of December 31, 2017  
 35th Fiscal Year, as of December 31, 2016  
 34th Fiscal Year, as of December 31, 2015

POSCO ENGINEERING & CONSTRUCTION, LTD and its subsidiaries

(Unit : KRW 1 million)

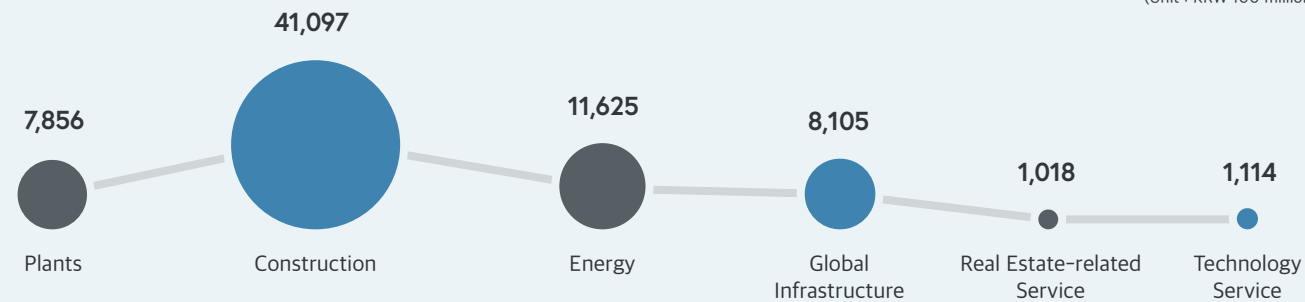
Category	36th Fiscal Year	35th Fiscal Year	34th Fiscal Year
[Current Assets]	4,435,136	5,651,494	5,973,501
- Quick Assets	3,734,255	4,696,630	5,229,099
- Inventories	700,881	954,864	744,402
[Noncurrent Assets]	2,798,341	2,172,020	2,270,568
- Investments	371,911	299,114	310,399
- Tangible Assets	215,755	229,069	250,310
- Intangible Assets	288,979	324,322	427,484
- Other Noncurrent Assets	1,921,696	1,319,515	1,282,375
Total Assets	7,233,477	7,823,514	8,244,069
[Current Liabilities]	3,982,056	4,686,845	3,993,520
[Noncurrent Liabilities]	579,490	555,684	911,387
Total Liabilities	4,561,546	5,242,529	4,904,907
[Issued Capital]	209,033	209,033	209,033
[Consolidated Capital Surplus]	1,066,753	1,119,293	1,121,177
[Consolidated Accumulated Other Comprehensive Income and Loss]	-29,375	-75,946	-14,635
[Consolidated Retained Earnings]	1,380,541	1,305,168	1,983,691
[Noncontrolling Interests]	44,979	23,437	39,896
Total Capital	2,671,931	2,580,985	3,339,162
Revenue	7,019,190	7,128,082	8,871,421
Operating Profits (Loss)	300,372	-509,017	138,905
Profit for the Period from Continuing Operations before Deducting Corporate Tax (Loss)	189,654	-777,956	-42,074
Net Profit for Continuing Operations (Loss)	80,315	-678,227	-82,515
Net Income (Loss)	80,315	-678,227	-82,515
Earnings per Share of Controlling Shareholders	81,891	-662,419	-74,226
Earnings per Share of Noncontrolling Shareholders	-1,576	-15,808	-8,289
Consolidated Earnings per Share (Loss)	1,959	-15,845	-1,962
Number of Companies Included in Consolidated	26	40	40

## PERFORMANCE DATA

## ECONOMIC PERFORMANCE

## 2017 Revenue by Business Division

(Unit : KRW 100 million)



## 2017 Revenue by Region

Region	Revenue (KRW 100 million)
Domestic	52,693
Southeast Asia	7,442
China	1,761
Overseas	6,163
Central & South America	6,163
Others	2,757

(Unit : KRW 100 million)

## R&amp;D Investment and Certification

Category	Unit	2015	2016	2017
R&D Investment Expense	KRW 100 million	437	165	278
R&D Investment to Revenue Ratio	%	0.67	0.30	0.43
No. of Professional Researchers	persons	65	70	69

## 2017 Local Purchase Amount in Major Sites

Category	Domestic	Overseas
Construction & Service	27,260	2,766
Equipment	2,475	358
Materials	11,421	414
Total	41,156	3,538

(Unit : KRW 100 million)

## Certifications

Category	Unit	2015	2016	2017
New Excellent Technology	cases	2	3	5
Green Technology	cases	1	-	6
New Patent Registration	cases	46	55	51
Accumulated Patent Registration	cases	419	474	525

\*The numbers of new/accumulated patent registration of 2015 and 2016 were corrected in accordance with the information recorded in the Korea Intellectual Property Rights Information Service (KIPRIS) of the Korean Intellectual Property Office (KIPO).

## Economic Value Distribution

Category	Total Wages	Total Purchase Amount	Donations & Social Contribution Expenditure	Dividends	Corporate Tax	Interests	Total Economic Value Distributed		
Distributed Values	5,424	52,369							
	Wages	5,050	Service Fee	40,485	39	-	1,093	567	59,492
	Retirement Pay	374	Materials Purchase Cost	11,884					
Recipients	Employees	Suppliers	Society	Investors	Government	Creditors			

(Unit : KRW 100 million)

## ENVIRONMENTAL PERFORMANCE

## Amount of Materials Used

Category	Unit	2015	2016	2017	
Non-renewable Materials	Steel	1,000 tons	275	259	272
	Cement	1,000 tons	133	197	120
	Ascon	1,000 tons	234	235	245
	Remicon	1,000 m <sup>3</sup>	2,463	2,994	3,360
	Sand	1,000 m <sup>3</sup>	97	74	27
	Gravel	1,000 m <sup>3</sup>	80	8,379	6,368

\*Data collected from domestic sites

## Amount of Energy Consumed by Site

Category	2015	2016	2017	
Pohang Head Office & Songdo Office, etc.	Fuel	19.38	18.07	17.71
	Electricity	115.25	114.00	126.18
	Steam	11.40	11.79	15.18
Sub-total	146.03	143.86	159.07	
Domestic Sites	Fuel	48.78	52.65	25.22
	Electricity	386.64	405.61	428.34
	Sub-total	435.42	458.27	453.56
Total Amount of Energy Consumed by Site	581.45	602.13	612.63	

(Unit : TJ)

## Amount of Water Resources Used

Category	Unit	2015	2016	2017	
Amount of Water Used	Municipal Water	tons	655,010	694,841	608,920
	Ground Water	tons	275,742	85,082	234,784
	Recycled Water (Ratio)	tons (%)	23,359(2.5)	36,584(4.5)	17,628(2.1)
	Total	tons	954,111	816,507	861,332

\*Date collected from domestic sites

## Amount of Greenhouse Gas (GHG) Emissions

Category	Unit	2015	2016	2017
GHG Emissions	tCO <sub>2</sub> e	31,614	30,530	30,483
Scope1	tCO <sub>2</sub> e	5,639	4,676	2,780
- Pohang Head Office, Songdo Office, etc.	tCO <sub>2</sub> e	1,139	1,060	1,040
- Domestic Construction Sites	tCO <sub>2</sub> e	4,500	3,616	1,740
Scope2	tCO <sub>2</sub> e	25,975	25,854	27,702
- Pohang Head Office, Songdo Office, etc.	tCO <sub>2</sub> e	5,988	5,930	6,687
- Domestic Construction Sites	tCO <sub>2</sub> e	19,987	19,924	21,015
Other Indirect GHG Emissions (Scope 3)	tCO <sub>2</sub> e	63,365	53,931	51,952
Emissions per Unit	tCO <sub>2</sub> e/KRW 1 billion	4.8363	5.5548	4.8252
- Scope1	tCO <sub>2</sub> e/KRW 1 billion	0.8626	0.8508	0.4401
- Scope2	tCO <sub>2</sub> e/KRW 1 billion	3.9736	4.7040	4.3850

\*Emissions per Unit = Amount of GHG Emissions / Revenue (Non-consolidated)

\*The Emissions per Unit is different from that of the previous year's report due to the change in reporting standard (consolidated → non-consolidated).

Wastewater Discharge		
2015	2016	2017
201,833	130,521	165,200

\*Data collected from domestic sites (Unit : tons)

No. of Violations to Environmental Laws and Regulations			
Category	2015	2016	2017
Monetary Sanctions	0	0	0
Non-monetary Sanctions	7	9	0

\*Data collected from domestic sites (Unit : cases)

Amount of Wastes Generation					
Category	Unit	2015	2016	2017	
Amount of Wastes Generation (by treatment method)	Recycling	tons	447,624	315,227	355,545
	Incineration	tons	8,116	15,120	6,455
	Landfill	tons	133,409	120,755	217,151
	Total	tons	589,149	451,102	579,151
Rate of Wastes Recycling	%	76	69.9	61.4	
Amount of Wastes Generation (by type)	Designated	tons	20	7	16
	Onsite	tons	8,676	11,399	3,431
	Construction	tons	580,453	439,696	575,703
	Total	tons	589,149	451,102	579,150
Cost of Wastes Treatment	KRW 1 million	11,596	9,978	14,800	

\*The amount of wastes generation is the amount treated through the waste treatment agency in domestic sites, reported to the Allbaro system of the Ministry of Environment (sites of separate placed orders excluded).

**Biodiversity Conservation**

POSCO E&C implements various activities for conserving biodiversity near the project sites. In the domestic sites, we conduct protection activities on wild animals including otters and oystercatchers and on plants including Ganghwa Maehwamareun Habitat. Moreover, we protect and aid in safe transferring of any wild animals and plants in need of protection.

**Voluntary Improvement Activities for Environmental Management at Sites**

We conduct voluntary improvement activities for environmental management at construction sites. In 2017, a total of 7,283 activities were conducted to improve the site environment. Starting in May 2018, we are gradually strengthening the management including reduction activities for fine dust from construction equipment.

No. of Suppliers Received the Environmental Impact Assessments		
2015	2016	2017
588	536	522

Suppliers Identified with Negative Environmental Impacts			
Category	2015	2016	2017
No. of Suppliers Identified with Negative Environmental Impacts	233	126	156
No. of Suppliers Improved/Discussed about Negative Environmental Impacts	23	126	156

**Social Impact Assessment of Suppliers**

In order to enhance sustainability of the suppliers, POSCO E&C conducts social impact assessment of suppliers on the certified status of ISO 14001, management standard of environmental pollutants prevention (wastes discharge, atmospheric emission, etc.), and implementation of environmental training. The results of the assessment are reflected on the comprehensive assessment of the suppliers.

**SOCIAL PERFORMANCE**

Employees						
Category	Unit	2015	2016	2017		
Employees	Total Employees	persons	3,921	3,364	3,987	
	Employees with Disabilities	persons			27	
	Rate of Employees with Disabilities	%			0.83	
Employees by Category	Employees	persons	3,878	3,330	3,952	
	By Employment	Full-time	persons	3,456	3,020	3,599
		Temporary or Part-time	persons	422	310	353
	By Gender	Male	persons	3,655	3,173	3,768
		Full-time	persons	3,246	2,875	3,429
		Temporary or Part-time	persons	409	298	339
		Female	persons	223	157	184
	By Age	Full-time	persons	210	145	170
		Temporary or Part-time	persons	13	12	14
		Under 30	persons	184	92	127
30 - 50		persons	3,115	2,751	3,296	
51 or Above		persons	579	487	529	
By Region		Korea	persons	3,234	2,968	3,568
	Southeast Asia	persons	152	109	177	
	China	persons	19	15	13	
	India/Pakistan	persons	5	6	19	
	Middle East/Africa	persons	99	124	82	
	North and Central America	persons	6	1	64	
	South America	persons	311	87	20	
	Europe/CIS	persons	34	10	3	
	Oceania	persons	18	10	6	
	Executives	persons	43	34	35	
Executives Details	By Gender	Male	persons	43	34	35
		Female	persons	-	-	-
	By Region	Korea	persons	35	29	32
Overseas		persons	8	5	3	

\*The data includes the number of employees of POSCO Engineering followed by the M&A, therefore, are different from the data of the business report.

Benefits System		
<p><b>Benefits System</b></p> <ul style="list-style-type: none"> <li>Children's school expenses</li> <li>Benefits card support</li> <li>Stable livelihood &amp; housing loans</li> <li>Maternity subsidy support</li> <li>Congratulatory &amp; condolatory money; funeral supplies</li> <li>Supports for leave due to work-related and non-work related or disease</li> <li>Support for indemnity health insurance</li> <li>Gifts for Family Month</li> </ul>	<p><b>Work System</b></p> <ul style="list-style-type: none"> <li>Flexible work schemes</li> <li>Partial day leave system</li> <li>Smart Work support</li> <li>Family care leave system</li> <li>Reduced work hours during early parenting period</li> <li>Fertility treatment leave</li> </ul>	<p><b>Other Systems</b></p> <ul style="list-style-type: none"> <li>Health check (including spouses)</li> <li>Recreational &amp; fitness facilities</li> <li>Lodging/taxi fares for overtime workers</li> <li>Daycare centers</li> <li>Small weddings support</li> <li>Social contribution activities</li> <li>Costs for family visits</li> <li>Infirmery, nursing areas</li> </ul>

**New Hires and Turnover**

Category	Unit	2015	2016	2017
New Hires	persons	80	35	668
- Male	persons	78	33	640
- Female	persons	2	2	28
- New Hires Rate	%	2.1	1.1	16.8
Turnover	persons	96	428	45
- Male	persons	94	358	43
- Female	persons	2	70	2
- Turnover Rate	%	2.5	12.9	1.1

\*The number of 'New Hires' include the newly added employees (580 persons) after the M&A with POSCO Engineering in February 2017.

**Parental Leave**

Category	2015	2016	2017
Employees Eligible for Parental Leave	20	12	30
Employees on Parental Leave	19	12	30
Male Employees on Parental Leave	17	11	10
Employees Staying 1 Year or Longer after Return-to-work from Parental Leave	17	11	11

**Employees Eligible for Collective Bargaining**

POSCO E&C established a smooth communication relationship between labor and management. In case of any significant changes in the corporate management, we share the information with our employees immediately.

Category	Unit	2015	2016	2017
No. of Employees Eligible for Labor Union Membership	persons	1,100	1,075	762
No. of Employees with Labor Union Membership	persons	2	2	2
Rate of Collective Bargaining Agreement	%	100	100	100

\*The members of Labor Union play roles as the representatives of the workers, and the collective bargaining agreed on through the union is applied to all employees of POSCO E&C.

\*\*The manager-level employees with job positions of 'manager' or higher and employees in departments or with job positions that work as managers are excluded from the eligibility for Labor Union membership.

**No. of Incidents of Discrimination and Corrective Actions**

2015	2016	2017
0	0	0

(Unit : cases)

**Rate of Regular Performance Appraisals**

Category	Unit	2015	2016	2017	
Rates by Genders	Male	%	96.7	97.7	99.3
	Female	%	91.6	92.4	89.5
Rates by Employment	Full-time	%	99.5	99.5	98.9
	Temporary/Part-time	%	73.1	77.2	98.4

**Talent Cultivation**

Category	Unit	2015	2016	2017
Training Hours per Employee	hours	38	63	46
Training Costs per Employee	KRW 10,000	40	55	59

**Employee Grievance Treatment**

POSCO E&C operates various channels to receive complaints including corruption and irregularities, violations related to fair trade, and employees' grievances and suggestions, and the identities of the whistleblowers are securely protected.

Category	Unit	2015	2016	2017
No. of Grievance Filed	cases	198	180	494
- Cyber Sinmungo	cases	3	2	3
- The Plus Gwangjang	cases	195	178	491
Avg. Days to Respond	days	1.9	1.1	1.7

\*The name of 'Moa-gwangjang' in the previous report was changed to 'The Plus' in 2017. We are striving to reflect grievances and suggestions of the employees by facilitating communication channels.

**Sexual Harassment Prevention**

POSCO E&C regulated the terms related to preventing sexual harassment in the 'Sexual Harassment Prevention Guidelines at Work' and enforces the employees to abide by the guideline. During the occurrences of issues of sexual harassment, personal identities of the victims are securely protected, and the perpetrators are referred to the personnel committee and are penalized through discipline, dismissal, or suspension.

Category	Unit	2015	2016	2017	
Disciplinary Actions for Sexual Harassment	cases	1	1	2	
Sexual Harassment Prevention Training	hours per employee	hours	1.37	1.47	1.96

**No. of Agreements Signed in Consideration of Human Rights**

Category	2015	2016	2017
No. of Significant Agreements Signed	85	69	84
No. of Significant Agreements Signed in Consideration of Human Rights (%)	6 (7.1)	34 (49.3)	37 (43.5)

\*When signing a purchase agreement with suppliers, we promote to include the terms regarding 'Protection of Human Rights' in the contract that reflects international standards such as the Universal Declaration of Human Rights and Human Rights Principles.

\*\*The data of 2015 and 2016 are different from those of the previous year's report due to the changes in the standard of data collection.

**Ethics and Compliance Training**

Category	Unit	2015	2016	2017	
Employees	persons	8,586	17,829	21,423	
Ethics/Fair Trade Training	Hours of Training	hours	8,629	17,829	27,774
	Practice Level Evaluation	offices/sites	126	126	121
Supplier Ethics Training	Trainees	persons	1,056	1,507	702
	Hours of Training	hours	1,056	1,507	702
	Sub-contracting Clean-up	sites	2	5	8

**Compliance**

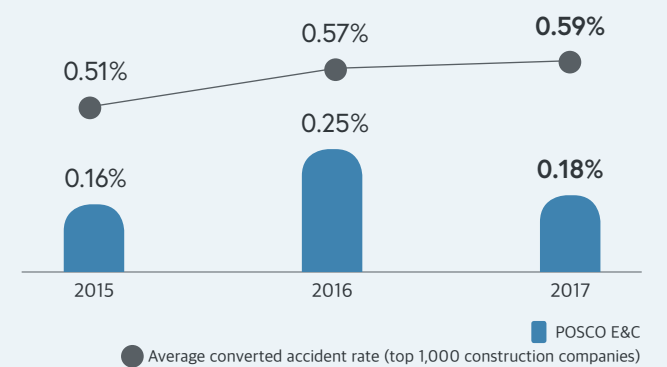
In 2017, POSCO E&C did not receive any monetary sanctions from violations to economic/social laws and regulations. However, there was 1 case of non-monetary sanction by the Fair Trade Commission.

**No. of Fatalities from Occupational Accidents and Diseases**

2015	2016	2017
5	6	2

(Unit : persons)

**Safety and Health**



**Cases of Violations to Regulations Related to Safety and Health of Products and Services**

In 2017, there was not any case of our products and services (building structures) violating regulations (Asbestos Safety Management Act, etc.) regarding safety and health of the customers.

**Cases of Breaches of Customer Privacy**

POSCO E&C protects personal information of its customers safely through the personal information protection system and ISO 27001 certification. In 2017, there was not any report regarding personal information in the VOCs and violations to regulations through breaches of customer privacy.

**Local Community**

Category	Unit	2015	2016	2017	
Employee Volunteer Activities	Hours per Employee	hours	32.1	29.0	24.6
	Total Hours	hours	126,791	119,129	114,784
Social Construction Investments	1% Sharing Activities of Employees	KRW million	6.4	5.7	4.4
	Total Amount of 1% Sharing Activities	KRW million	100	12.8	11.4

\*The hours of volunteer activities in 2016 is different from the previous report due to the change in the standard of data collection.



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\* <http://www.poscoenc.com/company/philosophy.asp>

\*\* [http://www.poscoenc.com/service/sustain\\_report.asp](http://www.poscoenc.com/service/sustain_report.asp)

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	412-2	Employee training on human rights policies or procedures	63~66	
GRI 412 : Human Rights Assessment	412-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	94	
GRI 413 : Local Communities	413-2	Operations with significant actual and potential negative impacts on local communities	-	*POSCO E&C could not find any projects that may have crucial, practical, potential, or negative impacts on local communities. However, we are conducted social contribution activities suitable for the community to offset potential negative impacts that may occur during business activities.
GRI 414 : Supplier Social Assessment	414-1	New suppliers that were screened using social criteria	91, 94	
	414-2	Negative social impacts in the supply chain and actions taken	91, 94	
GRI 416 : Customer Health and Safety	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	94	
GRI 418 : Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	94	
GRI 419 : Socioeconomic Compliance	419-1	Non-compliance with laws and regulations in the social and economic area	94	Business Report

# GLOBAL INITIATIVES

## UN GLOBAL COMPACT

In 2012, POSCO E&C joined the UN Global Compact and expressed our commitment to compliance with the Ten Principles in the four fields of human rights, labor, environment, and anti-corruption. We are committed to fulfilling our corporate social responsibility by reflecting international standards for sustainable management and by carrying out a variety of related activities.

Classification	Principle	Notable actions by POSCO E&C	Page	GRI Standards
Human rights	01. Businesses should support and respect the protection of internationally proclaimed human rights; and	<ul style="list-style-type: none"> <li>Observance of the Ten Principles of the UN Global Compact</li> <li>Observance of International Labor Organization (ILO) regulations</li> </ul>	63~66	412-2, 412-3, 406-1, 407-1, 408-1, 409-1, 414-1
	02. make sure that they are not complicit in human rights abuses.	<ul style="list-style-type: none"> <li>Sexual harassment prevention education</li> <li>Contractual provisions for human rights protections</li> <li>Monitoring of respect for human rights</li> </ul>	93~94	406-1, 410-1
Labor	03. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;	<ul style="list-style-type: none"> <li>Compliance with the Labor Standards Act</li> <li>Labor unions and labor-management councils</li> </ul>	71~74, 93	102-41, 402-1, 407-1
	04. the elimination of all forms of forced and compulsory labour;	<ul style="list-style-type: none"> <li>Compliance with laws prohibiting child labor and forced labor</li> </ul>	71~74	408-1, 409-1
	05. the effective abolition of child labour; and		71~74, 93	401-1, 404-1, 405-1, 405-2, 406-1
Environment	07. Businesses should support a precautionary approach to environmental challenges;	<ul style="list-style-type: none"> <li>Eco-friendly environmental management systems</li> <li>Environmental management in overseas projects</li> <li>Compliance with environmental laws and regulations</li> <li>Support with civil environmental complaints</li> </ul>	67~70, 90~91	102-11
	08. undertake initiatives to promote greater environmental responsibility; and	<ul style="list-style-type: none"> <li>Control of pollution and pollutants</li> <li>Ecosystem conservation activities</li> <li>Waste reuse and recycling</li> <li>GHG data assurance check</li> <li>Technical developments for climate change response</li> </ul>	67~70, 91~92	304-2, 304-3, 305-5, 306-1, 306-2
	09. encourage the development and diffusion of environmentally friendly technologies.	<ul style="list-style-type: none"> <li>Development of green construction methods and technologies</li> <li>Eco-friendly design</li> <li>Diffusion of environmental management capabilities to sub-contractors</li> </ul>	67~70	302-4, 302-5, 303-3, 305-5
Anti-corruption	10. Businesses should work against corruption in all its forms, including extortion and bribery.	<ul style="list-style-type: none"> <li>Programs on ethical practices</li> <li>Diffusion of ethical management education</li> <li>Strengthened anti-corruption activities overseas</li> </ul>	63~66, 94	205-1, 205-2, 205-3

## AWARDS & MEMBERSHIPS

Year	Award/Event	Organization
2017.May	1st at Apartment Sector in the 2017 Brand Customer Loyalty Index (BCLI)	Korea Customers Council, Brand Key
2017.June	Outstanding Prize at 2017 Korea Intelligent Awards (NEAT Tower, Songdo The Sharp Green Walk III)	IBS Korea
2017.July	Pohang City Mayor's Award for Volunteer Activities (Brazil CSP Business Operation) Excellence Prize at Contest for Best Practices of Safety & Health Activities in Construction Industry (Songdo Convensia Phase II Construction Site)	Pohang City Major KOSHA
2017.September	1st for 9 consecutive years in the Korea Standard Quality Excellence Index (KS-QEI) (Apartment Sector)	Korea Standards Association (KSA)
2017.November	Speaker of National Assembly Award at the 10th Contest for Best Practices of Construction Technology (Award of Construction Technology R&D Businessperson)	Korea Federation of Construction Contractors (KFCC)
	Excellence Award at Construction Sector in the BIM Awards 2017 (Haeundae LCT Combined Development Site)	
2017.December	Grand Prize at Smart Complex Sector in the 2017 2nd-Half Housing & Culture Awards of Hankyung.	MOLIT, buildingSMART KOREA Hankyung
	Outstanding Group Prize at PSS+ Sector in POSCO IP Festival Administrator of Korean Agency for Technology and Standards (KATS) Price at 2017 Good Design (Tea Cafe at Buldang G Well The Sharp)	POSCO MOTIE, KATS
	President of Korea Institute of Design Promotion (KIDP) Prize (3 including Beomeo Cathedral)	MOTIE, KATS
	Governmental Reward at the Housing Environment Improvement Activities for Fire Prevention (Minister's Prize of the Ministry of the Interior and Safety (MOIS))	MOIS

Memberships	UN Global Compact	Building SMART KOREA	Urban Design Institute of Korea	Construction Association of Korea	Architectural Institute of Korea	Society of Air-Conditioning and Refrigerating Engineers of Korea
	Korean Society of Civil Engineers	Maekyung Safety & Environment Institute	Korea Society of Construction Quality	Korean Society of Road Engineers	Korea Water Resources Association	Korea Engineering & Consulting Association
	Korea Atomic Industrial Forum	Korean Society for Railway	Council on Tall Buildings and Urban Habitat Korea	Korea Plant Industries Association	Korea Environmental Industry Association	International Contractors Association of Korea

\*A total of 84 memberships

# GHG EMISSIONS ASSURANCE STATEMENT

## Terms of Engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by POSCO Engineering & Construction, Ltd. (POSCO E&C) to provide independent assurance on its Greenhouse Gas (GHG) Inventory Report for the calendar year 2017 (the report) against GHG Target Management Scheme for quantification and reporting of GHG emissions in Korea using Specification with guidance for verification of greenhouse gas assertions. The report relates to direct GHG emissions and energy indirect GHG emissions.

## Management Responsibility

LRQA's responsibility is only to POSCO E&C. LRQA disclaims any liability or responsibility to others as explained in the end footnote. The management of POSCO E&C is responsible for preparing the report and for maintaining effective internal controls over all the data and information within the report. Ultimately, the report has been approved by, and remains the responsibility of POSCO E&C.

## LRQA's Approach

LRQA's assurance engagement has been carried out in accordance with our verification procedure using GHG Target Management Scheme in Korea: Specification with guidance for verification of greenhouse gas assertions to reasonable level of assurance.

The following tasks were undertaken as part of the evidence gathering process for this assurance engagement:

- Visiting sites and auditing management system to control the data and records regarding GHG emissions and energy uses.
- Interviewing the relevant persons responsible for managing and maintaining data and associated records.
- Reviewing the historical data and information back to source for the calendar year 2017.

## Level of Assurance & Materiality

The opinion expressed in this Assurance Statement has been formed on the basis of a reasonable level of assurance, and at the materiality of the professional judgement of the verifier and at the materiality level of 5.0%.

## LRQA's Opinion

Based on LRQA's approach, we believe that the report is prepared in accordance with GHG Target Management Scheme for quantification and reporting of GHG emissions in Korea and the GHG emissions data in the Table 1 is materially correct:

Table1. GHG emissions reported in the Report

Scope (as defined within GHG Target Management Scheme in Korea)	Year 2017
Direct GHG Emissions	2,780.29
Energy Indirect GHG Emissions	27,702.36
Total GHG Emissions	30,482.65

Data is presented in tonnes of CO<sub>2</sub> equivalent.

9th April 2018  
SANG-KEUN YOO

On behalf of Lloyd's Register Quality Assurance Ltd.  
17th Floor, Singsoong Building, 67 Yeouinaru-ro, Yeongdeungpo-gu, Seoul, 07327, Korea  
LRQA Reference : SEO6037695/1616060243734

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## THIRD-PARTY ASSURANCE STATEMENT

### Introduction

POSCO ENGINEERING & CONSTRUCTION Co., Ltd ("POSCO E&C") commissioned DNV GL Business Assurance Korea, Ltd. ("DNV GL"), part of DNV GL Group, to undertake independent assurance of POSCO E&C Sustainability Report 2017-18 (the "Report"). The directors of POSCO 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 POSCO 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 prepared in good faith.

### Scope of assurance

The scope of assurance includes a review of non-financial data and sustainability activities and performance data over the reporting period from 1<sup>st</sup> January to 31<sup>st</sup> December 2017 in the POSCO E&C Sustainability Report 2017-18 (Korean version). This also includes:

- Evaluation of the Report on the adherence to the reporting principles for defining report content and the reporting principles for defining report quality set forth in the Global Reporting Initiative (GRI) Sustainability Reporting Standards.
- Evaluation of the process for determining material topics for reporting and the management approach to material topics and the process for generating, gathering and managing the quantitative and qualitative data in the Report.

### Basis of our opinion

We've performed our work using DNV GL's assurance methodology VeriSustain™, which is based on our professional experience, international assurance best practice including International Standard on Assurance Engagements 3000 (ISAE 3000). We applied the limited level of assurance. The assurance was carried out from August till September 2018. The site visits were made to Songdo office of POSCO E&C in Korea. Assurance activities were conducted based on sampling as follows:

- 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 and reporting subsidiaries;
- conducted document reviews, data sampling and interrogation of supporting databases and associated reporting systems 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 POSCO E&C's subsidiaries, associated companies, suppliers, contractors and any third-parties. DNV GL did not interview external stakeholders as part of this Assurance Engagement. The audited consolidated financial statements, the announcement disclosed at the website of Korea Financial Supervisory Service (<http://dart.fss.or.kr>) and disclosures in POSCO E&C's website ([www.poscoenc.com](http://www.poscoenc.com)) are not included in the assurance scope. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. Economic performance based on the financial data is cross-checked with internal documents and the audited consolidated financial statements. 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 nor is prepared 'in accordance' with GRI Standards - Core option. Further opinions with regards to the adherence to the Principles are made below:

#### Stakeholder Inclusiveness

POSCO E&C has identified internal and external stakeholder groups such as Employees, Customers, Suppliers, Investors, Environment and Society. POSCO E&C conducts stakeholder engagement activities through various channels. The examples of approaches to engage with the selected stakeholders and relevant organizations are described in the Report. In addition, POSCO E&C presents the relevance of stakeholders with the selected material topics through the materiality assessment.

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

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

### Sustainability Context

The Report shows stakeholders the POSCO E&C's approach to material topics, its implementation system and goals, its main activities and efforts. In addition, the Report describes the key achievements in 2017, which helps the stakeholder understand the sustainability management of POSCO E&C. In particular, this Report provides interview summaries with executives with regards to material topics. Readers of the Report can measure the level of interest in the material topics among internal stakeholder, especially executives and have a better view on the management approach. In addition, POSCO E&C addresses corrective actions taken against the accident to prevent the recurrence and to improve its Health & Safety management system. Employees' commitment to the safety is also provided. POSCO E&C increases in applying new ICT technologies to improve the productivity.

### Materiality

POSCO E&C has conducted the materiality assessment to prepare the Report. The relevant 40 issues are selected by analysing the global sustainability initiatives and international standards. Since then, POSCO E&C has prioritized the issues to 13 important issues by reviewing peers' report and news articles and integrating the rating result by stakeholders. The 13 important issues selected from the materiality assessment were grouped into 8 final material topics. The assurance team reviewed the materiality assessment process and confirmed that the material topics prioritized from the process are addressed in the Report.

### Completeness

The Report has covered the material topics and sustainability performances of POSCO E&C for the reporting period. The reporting boundary is set up to 96 domestic projects including the headquarters. The assurance team has not noted any intentional omission of the performance results on material topics within the reporting boundary.

In addition, the evaluation of the adherence to the principles related to report quality is as follows.

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

The assurance team has sampled data and tested accuracy and reliability. The assurance team interviewed the data owners and reviewed the data gathering process with the supporting documents and records. The depth of data verification is limited to the aggregated data level. Based on the test, the intentional error or misstatement is not noted. The data owners were able to demonstrate to trace the origin of the data and to interpret the processed data in a reliable manner. The data was identifiable and traceable. In addition, the Report provides the last three-year performance on material topics, helping stakeholders understand the changes in organizational performance over the years.

### 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 did not provide any services to POSCO E&C that could compromise the independence or impartiality of our work.

September 2018

Seoul, Korea

Jang Sup Lee

Acting Country Representative DNV GL  
Business Assurance Korea, Ltd.



## HISTORY OF INNOVATION

1994 -  
2000

1994. 12.	Founded POSCO Engineering & Construction Co., Ltd. (POSEC)
1995. 08.	Developed MIDAS-BDS (Building Design System) program for structural analysis & design
1995. 09.	Won contract for ARCO special steel plant in Egypt (annual production 1.4 million tons)
1995. 10.	Started construction of Diamond Plaza in Ho Chi Minh City, Vietnam
1996. 04.	Started construction of POS Plaza in Shanghai, China
1996. 07.	Won contract for KOBRASCO plant in Brazil
1996. 10.	Acquired ISO 9001 certification
1997. 01.	Won contract for Posven HBI (hot-briquetted iron) plant project in Venezuela
1999. 12.	Won contract for Tavazon blast furnace in Iran (first overseas blast furnace project by a Korean construction company)
2000. 04.	Obtained ISO 14001 certification

2001 -  
2010

2001. 12.	Received order for stainless steel expansion project at Zhangjiagang Port in China
2002. 02.	Changed company name to POSCO E&C
2002. 03.	Announced the # (The Sharp) apartment brand
2003. 06.	Obtained OHSAS 18001 certification
2003. 10.	Held launch ceremony for Songdo International City
2005. 03.	Won contract for Hadeed CCL (color-coating line) in Saudi Arabia
2005. 06.	Started construction of '909 Kapiolani' condos in Hawaii
2006. 08.	Developed Splendora, first self-contained city in Vietnam
2006. 09.	Won contract for Ventanas coal-fired power plant in Chile (first Korean construction company to advance into Central/South America)
2007. 09.	Won contract for IISCO blast furnace in India (India's largest single plant)
2007. 12.	Won contract for new project of Asia Special Steel Co. in Japan
2008. 04.	Took over Daewoo Engineering
2009. 03.	Won contract for Noi Bai-Lao Cai A1 section highway in Vietnam
2009. 09.	Received order for Kallpa Combined Cycle Plant in Peru (first Korean construction company to enter Peru market)
2010. 03.	Won contract for high-rise financial complex in Cambodia (Vattanac Capital Tower)
2010. 05.	Won contract for highway construction in Uzbekistan
2010. 05.	Completed Songdo office and moved in
2010. 09.	Won contract for desalinated water storage and recovery facility in Abu Dhabi
2010. 10.	Started construction of Krakatau Steel integrated steelworks in Indonesia

2011 -  
2018

2011. 12.	Won contract for CSP integrated steelworks in Brazil, worth US \$4.43bn (largest order won by a Korean construction company for an overseas steelmaking plant)
2012. 02.	Ranked 1st in winning contracts in the domestic construction industry (KRW 14.4 trillion in 2011)
2012. 11.	Won contract for Krakow Waste-to-Energy Plant in Poland
2013. 04.	Received order for Nam Lik 1 Hydroelectric Power Plant in Laos
2015. 04.	Won contract for 101-story Haeundae LCT The Sharp
2015. 06.	Saudi PIF acquired 38% stake in POSCO E&C
2016. 02.	Won contract for Colon Combined Cycle Power Plant and LNG facility in Panama
2016. 07.	Rose to 3rd place in construction capability assessment
2016. 08.	Won contract for construction of Heavy Ion Accelerator Complex (KRW 291.9 billion)
2016. 11.	Won contract for Yeouido Parc 1 development project (KRW 1.12 trillion)
2017. 02.	Merged with POSCO Engineering
2017. 08.	Won contract for Matarbari coal-fired power plant in Bangladesh (KRW 9,500 billion)
2017. 11.	Won contract for JG SUMMIT PKG 1 Petrochemical Plant in Philippines (KRW 2,200 billion)
2018. 03.	Won contract for Vietnam's first petrochemical complex (KRW 7,500 billion)
2018. 07.	Obtained ISO 45001 for the first in Korean construction industry
2018. 07.	Won contract for Samcheok Thermal Power Plant in Korea



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