



Sustainability Report 2016-2017

# Energy for a Better World



## About this Report

POSCO ENERGY has been publishing Annual Sustainability Reports from 2012 to 2016 and developed the sixth report in 2018. In this report, 10 'sustainability material issues' were selected through the Materiality Analysis and relevant performances are described for easier understanding.

**Reporting Standard** This report is drawn up in accordance with the comprehensive reporting guidelines of the GRI (Global Reporting Initiative) G4, Electric Utilities Sector Disclosures (EUSD), ISO 26000 and principles of the UN Global Compact. It also contains financial information, applying Korea-International Financial Reporting Standards (K-IFRS).

**Reporting Scope** This report covers the performances of POSCO ENERGY's Seoul Headquarters, business sites in Incheon, Pohang and Gwangyang as well as a subsidiary (POSPower) and overseas business sites to some extent.

**Reporting Period** This report is prepared based on the data covering January 1, 2016 to December 31, 2017. It may use data from the last 3 years to analyze a quantitative data, and some of this information includes data up to June 2018.

**Reporting Verification** This report was verified by an independent assurance agency, Samil PricewaterhouseCoopers (PwC) to ensure accuracy and credibility of the reporting contents. The assurance on economic, social, and environmental performances of all business sites included in the report were reviewed based on the International Standard on Assurance Engagements (ISAE) 3000 and AccountAbility Assurance Standard (AA1000AS) Type II.

**Stakeholder Communication** This report is published in Korean and English. You can download from the POSCO ENERGY's website. For any inquiries or opinions, please contact us through the homepage, email, phone, and mails.

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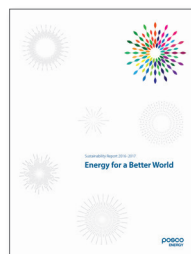
**Address** 16F POSCO Center, 440, Teheran-ro, Gangnam-gu, Seoul, Republic of Korea

**Tel** +82-2-3457-2114

**Reporting Inquiry** Management & Supporting Department (+82-2-3457-2295)

**Homepage** [www.poscoenergy.com](http://www.poscoenergy.com)

**Email** [sustainability@poscoenergy.com](mailto:sustainability@poscoenergy.com)



### Cover Story

Inspired by the symbol for POSCO ENERGY's CSR slogan "Energy for a Better World", it expresses clean and green energy. The heartwarming energy produced by POSCO ENERGY will make the world more sustainable and beautiful.



## Contents



### Overview

CEO Message	04
About POSCO ENERGY	06
Sustainability System	06
Sustainability Performance	07
Stakeholder Engagement	09
Risk Management	10
Materiality Analysis	12

### Materiality Issues with Sustainability in 2017 16

#### Economy

Responding to Policies and Regulations	17
Securing New Growth Engines	19
Securing Competitiveness for Price and Facility Operation	20
Promoting Business for New and Renewable Energy	23
Strengthening Financial Soundness	24

#### Society

Reinforcing Transparency and Independence of Governance	25
Business Ethics	26
Creating Good Working Environment	28
Cultivating Employee Competence	29

#### Environment

Responding to Climate Change	30
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### Activities & Performances 35

### Appendix 46

Independent Auditor's Report	47
Financial Statements	48
GRI G4 & ISO 26000 Index	53
Independent Assurance Report	58
UN Global Compact Index	60
Membership in Associations	61
Participants	61



# CEO MESSAGE

## **Dear Stakeholders of POSCO ENERGY,**

Recently, there have been considerable changes in policies in Korean energy industry. The Korean Government is transitioning to the paradigm of eco-friendly energy in various aspects by publicizing reexamination of Shin-Kori 5 and 6 constructions, expanding supply of new and renewable energy, and ceasing operations of decrepit coal-fired thermal power plants. Moreover, constant emergence of new power generators, slowdown in demands for electricity, and drastic decline in oil prices due to a global economic contraction have led POSCO ENERGY to net income deficit in 2016, for the first time since its foundation.

Even in such a difficult business environment, POSCO ENERGY gathered all efforts to recover from the crisis, and in 2017, it was able to not only turn to surplus, but also achieve operating income more than twice as the business plan. This report includes performances of all employees in 2016 and 2017 and the plans for 2018 to build a 'Global Eco-friendly Energy Company Focused on Gas & Power'.

In the Power Generation sector, which is our major business area, we overachieved our business goals through cost reduction and plant smartization. Our Fuel Cell Business exceeded our goals in utilization rate by constantly improving quality and operation technology. Moreover, based on the business developments of coal-fired power generation in Samcheok, new and renewable energy, and overseas Independent Power Producer (IPP) projects, we were able to set the basis for future sustainable growth. In January, we completed licensing of Samcheok Coal-fired Power Generation project and are about to begin the construction, while in Jeonnam, our onshore wind farm successfully began its official operation, and the offshore wind farm also acquired the project approval. In the overseas business sites, the Vietnam Quynh Lap II Project to build 1,200MW coal-fired power plant signed a Development Plan Agreement (DPA) with the Vietnam Electricity (EVN) and is in the progress to be approved next year after the feasibility study.

POSCO GROUP is pursuing a project of Liquefied Natural Gas (LNG) import and the first batch of products will be supplied to the power plants in the beginning of next year. This project will not only contribute to the cost competitiveness of Incheon Power Plant, but also be further expanded to trading and bunkering through LNG Terminal operation/leasing and an affiliate in Singapore. We plan to expand opportunities in new & renewable energy business using the existing projects including Jeonnam Onshore & Offshore Wind Farms, Gwangyang Floating Photovoltaic Systems, and photovoltaic systems on the roofs of business sites of POSCO GROUP and also develop new business in the overseas market.

“

POSCO ENERGY will strengthen the industrial ecosystem with business partners, contribute to job creation, and engage in solving environmental and safety issues in the community, thereby growing together with our stakeholders.

”

For the overseas IPP business, we plan to expand based on the eco-friendly thermal power generation in the target regions such as Botswana Coal-fired Power Plant, expected to be completed by 2022. We also intend to secure future growth engines by entering the energy platform projects including brokering power exchanges, smart grid and eco-friendly energy independent town.

The environmental issues are problems faced by all human beings, and everyone including the United Nations (UN) are endeavoring to solve them. POSCO ENERGY recognizes environmental and social impacts that may directly or indirectly influence its stakeholders when deciding on new investments. The Samcheok POSPOWER also promotes to build eco-friendly power plants by applying the world's best technology and equipment to produce highly economic electricity while minimizing environmental impacts.

POSCO GROUP set “With POSCO” as a new management vision and pledged to fulfill its responsibility as a corporate citizen. POSCO ENERGY, along with its suppliers, will strengthen the industrial ecosystem with business partners, put efforts in job creation, and engage in solving social issues in the communities in order to grow together with the stakeholders. Furthermore, under the creed that practicing sustainability is directly connected to company's profit, we will keep contributing to creating economic values as well as creating new shared values to help society.

I ask for your continuous interests and supports in our growth toward building a corporate history of 100 years with appreciation from all stakeholders.

Thank you.

October 2018  
President & CEO  
**Ki-hong Park**



## About POSCO ENERGY

Founded in November 1969, POSCO ENERGY began its first commercial operation as the only private thermal power plant in February 1972.

POSCO ENERGY supplies stable power to the Seoul Capital Area (SCA) and implements projects in new and renewable energy, fuel cell, and gas globally, thereby growing into a 'Global Eco-friendly Energy Company Focused on Gas & Power'. As of June 2018, the company operates three domestic power plants in Incheon, Gwangyang, and Pohang, and two overseas plants in Indonesia and Vietnam.

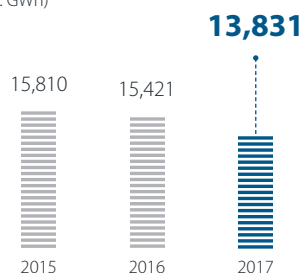
<b>Company</b>	POSCO ENERGY Co., Ltd.	<b>Power Generation Capacity</b>	Total : 5,488MW
<b>Head Office</b>	440, Teheran-ro, Gangnam-gu, Seoul, Korea		LNG Combined Cycle : 3,412MW
<b>Power Plants</b>	Incheon LNG Combined Cycle Power Plant : 314, Jungbong-daero 405beon-gil, Seo-gu, Incheon, Korea		Off-gas Combined Cycle : 574MW
	Gwangyang Off-gas Combined Cycle Power Plant : 1800, Jecheol-ro, Gwangyang-si, Jeollanam-do, Korea		Solid Refuse Fuel (SRF) : 24.8MW
	Pohang Off-gas Combined Cycle Power Plant : 6262, Donghaean-ro, Nam-gu, Pohang-si, Gyeongsangbuk-do, Korea		Photovoltaic : 14.5MW
	Indonesia Off-gas Power Plant : Cilegon, Indonesia		Wind Farm : 62.7MW (As of June 2018)
	Vietnam Coal-fired Thermal Power Plant : Quang Ninh, Vietnam		Overseas : 1,400MW
<b>No. of Employees</b>	832 persons	<b>Credit Ratings</b>	Corporate Bond : AA-; Corporate Bill : A1

As of December 2017

## Major Financial Performances

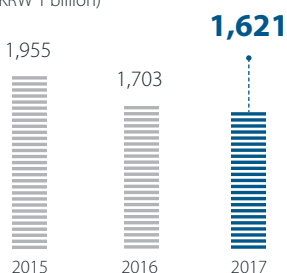
### Electricity Generated

(Unit : GWh)



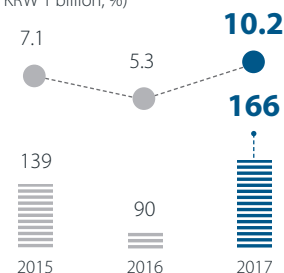
### Revenues

(Unit : KRW 1 billion)



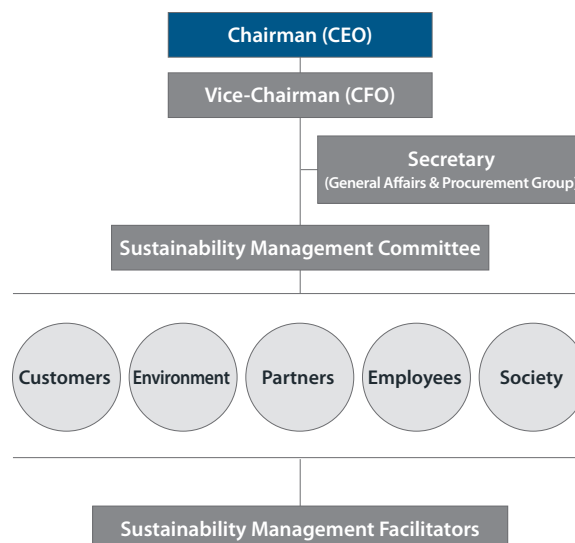
### Operating Profits (Rate)

(Unit : KRW 1 billion, %)



## Sustainability System

In 2011, POSCO ENERGY set strategies and action plans for sustainability management under the goal, Become a beloved company that balances economic, social, and environmental performance. The Sustainability Management Committee was established as a top decision-making body, under direct control of the CEO, for the biannual reporting and monitoring activities by the executives in the areas of environment, partners, employees, society and customers. The Sustainability Management Facilitators group, composed of senior-level technicians in sustainability issues, implements activities for improving work efficiency, securing execution capacity, and enhancing awareness. Moreover, this group communicates with stakeholders through various channels and strengthens its competences through guest lectures and CSV forums. In the second half of 2018, the company will strengthen its governance through the collaboration of the two groups in approval of sustainability report, review on sustainability strategy, and verification of non-financial risk factors.



## Sustainability Performance

Category	Indicators		Unit	2015	2016	2017
Economic	Fuel Consumption	LNG	Nm <sup>3</sup>	1,903,616,605*	1,826,905,941	1,595,670,062
		BFG	Nm <sup>3</sup>	7,369,677,830	7,621,717,399	7,918,242,651
		COG	Nm <sup>3</sup>	63,126,908	42,195,207	37,689,452
		FOG	Nm <sup>3</sup>	1,646,051,081*	1,621,842,610	1,290,360,141
	Power Generation & Transmission	Power Generation	MWh	15,810,302	15,421,058	13,830,854
		Power Transmission	MWh	15,560,261	15,078,768	13,509,264
	Power Generation Capacity (Domestic)	Total (in operation)	MW	4,025	4,049	4,067
		- LNG Combined Cycle	MW	3,412	3,412	3,412
		- Unit 3, 4	MW	900	900	900
		- Unit 5, 6	MW	1,252	1,252	1,252
		- Unit 7, 8, 9	MW	1,260	1,260	1,260
		- Off-gas Combined Cycle	MW	574	574	574
		- Gwangyang Unit 1, 2	MW	284	284	284
		- Pohang Unit 1, 2	MW	290	290	290
		- SRF	MW	24.8	24.8	24.8
		- Photovoltaic	MW	14.5	14.5	14.5
		- Wind Power	MW	-	24.0	42.0
	Power Generation Capacity (Overseas)	Total	MW	1,400	1,400	1,400
		- Indonesia Off-gas	MW	200	200	200
		- Vietnam Mong Duong Thermal Plant II	MW	1,200	1,200	1,200
	Governmental Subsidies		KRW 1 million	2,068	-	-
	Outage Rate	Unit 3, 4	%	0.02	0.07	-
		Unit 5, 6	%	0.21	3.04	0.23
		Unit 7, 8, 9	%	0.83	0.13	0.29
	R&D Human Resources and Investments	R&D Expenses	KRW 100 million	178	155	98
		R&D Expense to Revenue Ratio	%	0.91	0.91	0.60
	Corporate Ratings (Corporate Bond)	Korea Investors Service	Rating	AA(Stable)	AA-(Stable)	AA-(Stable)
		Korea Ratings	Rating	AA(Stable)	AA(Negative)	AA-(Stable)
		NICE Investors Service	Rating	AA(Stable)	AA-(Stable)	AA-(Stable)
	Rate of Mandatory Supply of Renewable Portfolio Standards (RPS)		%	3.0	3.5	4.0
	Distribution of Values to Stakeholders	Environmental	KRW 1 million	95,503	104,635	88,882
		Employees (wages, retirement pays, benefits)	KRW 1 million	105,687	104,603	91,509
		Suppliers (materials, etc.)	KRW 1 million	1,433,041	1,096,913	1,017,375
		Community (donations)	KRW 1 million	1,723	867	703
		Government (corporate tax, taxes and dues)	KRW 1 million	7,580	18,585	22,306

\*Errors in the previous reports were corrected.

Category	Indicators		Unit	2015	2016	2017
Environmental	Energy Consumption	Total	TJ	116,385	111,754	100,849
		- Direct Energy	TJ	115,513	110,985	99,987
		- Indirect Energy	TJ	872	769	862
	GHG Emissions	Total	1,000t CO <sub>2</sub>	12,440	12,163	11,323
		- Scope 1	1,000t CO <sub>2</sub>	12,398	12,126	11,282
		- Scope 2	1,000t CO <sub>2</sub>	42	37	41
	Water Consumption		Ton	2,680,236*	2,629,266	2,492,837
	Water Discharge		Ton	2,295,379	2,149,472	1,938,742
	Reuse of Water		%	24.0	21.6	20.4
	NOx Emissions		Ton	2,334.5	2,327.5	2,347.4
	Wastes Generation		Ton	2,271.1	1,100.5	1,563.0
	Wastes Recycling		Ton	1,397.6	404.5	285.7
	Environmental Investments		KRW 1 million	4,893	193	1,295
Social	Activities of Board of Directors	No. of Meetings	no.	11	7	8
		No. of Items Handled	cases	19	15	18
		Rate of Attendance	%	94	100	94
	Ethics Training	No. of Trainees (Total)**	persons	1,033	2,978	2,366
		- Internal	persons	243	2,978	2,366
		- External	persons	23	-	-
		- Others	persons	767	-	-
	No. of Employees	Total	persons	1,099	929	832
		- Male	persons	981	832	759
		- Female	persons	118	97	73
		- Full-time	persons	1,069	890	826
		- Temporary or Part-time	persons	30	39	6
		- General (Male)	persons	694	544	501
		- General (Female)	persons	109	81	71
		- Technicians (Male)	persons	265	264	254
		- Technicians (Female)	persons	1	1	-
	Turnover Rate		%	2.6	17.0	7.8
	Return-to-Work Rate after Parental Leave	Male	%	-	-	17
		Female	%	58	60	75
	Flexible Work Hours Rate		%	18.3	13.1	9.7
	Labor Union Membership Rate		%	69.2	67.6	74.6
	Occupational Accident Rate		%	-	-	0.24
	Total Training Hours		hours	88,253	66,665	57,641
	Total Training Costs		KRW 100 million	14	7	6
	Training of Equipment Operation Capacity Building	No. of Courses	no.	34	34	33
		No. of Lectures	no.	83	32	20
		Total No. of Trainees	persons	896	273	110
		Average No. of Trainees	persons	11	9	6
	P-GWP Index		points	65	70	73
	Mutual Growth Fund Investments		KRW 100 million	10	7	10
	Total Volunteer Hours		hours	26,644	25,710	21,671
	Volunteer Hours per Employee		hours	24.9	25.0	26.6
	Social Contribution Fund	Total	KRW 1 million	2,566	1,609	1,345
		- Donation by POSCO ENERGY	KRW 1 million	1,667	855	731
		- Fund for Nearby Power Plants	KRW 1 million	757	613	485
		- Employee 1% Sharing Fund	KRW 1 million	142	141	129

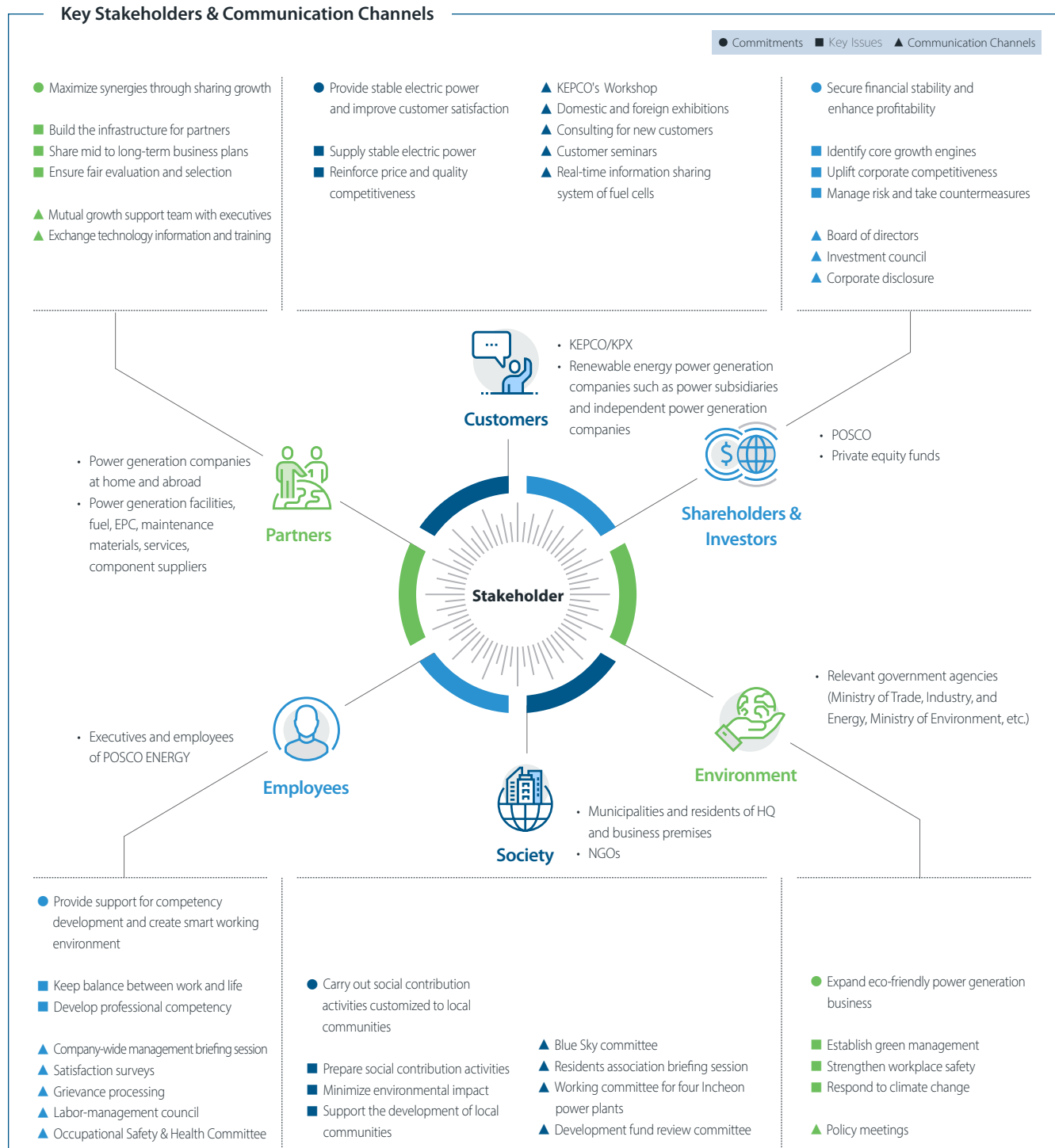
\*Errors in the previous reports were corrected.

\*\*Including overlapping persons



## Stakeholder Engagement

POSCO ENERGY defines its stakeholders into six groups – employees, partners, customers, shareholders & investors, environment, and society – and operates various communication channels tailored for each group to respond to their specific needs. Moreover, the company conducts online surveys to reflect opinions of various stakeholders on selecting the material issues and report them in the sustainability reports transparently.



## Risk Management

The global business environment is changing drastically, and the barriers are collapsing between the businesses. POSCO ENERGY intends to take systematic approach to its risk management by defining risks company-wide and monitoring management status to eventually become a sustainable company.

### Integrated Risk Management

POSCO ENERGY completed to identify company-wide risk factors in 2016 before establishing the integrated risk management system. Through the benchmarks of 29 of domestic/overseas major power companies and those outstanding in risk management, the company was able to identify 117 risk factors that are required to be managed according to industrial characteristics. Then, the company conducted in-depth interviews and surveys to a manager-/senior manager level group from the departments related to sustainability including planning, finance, business, environment, ethics, HR, and social contribution and came up with 59 risks of POSCO ENERGY. The company then categorized these 59 risks into 9 financial risks, 25 infrastructure risks, 14 market risks, and 11 reputation risks in accordance with the ISO 31000, and classified them with three levels – critical, moderate, and minor – after the analyses of each risk based on financial impacts and potentiality of occurrence. 17 risks that are top 30% in financial impacts and high potentiality of occurrence were identified as critical risks, 16 risks as moderate risks, and 26 risks as minor risks. Among the 17 critical risks that must be controlled were 5 financial risks including exchange rate fluctuation caused by changes in international situation, 6 infrastructure risks including quality issues due to decrease in transparent supplier selections, 4 market risks including limitations in securing business opportunity followed by domestic/overseas regulations of climate change response, and 2 reputation risks including complaints related to project operation in local communities. According to the analysis of the 17 critical risk factors by an outside assurance agency, the Korea Productivity Center (KPC) based on ISO 31000, DJSI Risk & Crisis Management, and ISO 14001, POSCO ENERGY properly manages the top management level of department head or higher in the aspects of awareness & reporting, response, monitoring, training, and goal management, in spite of some differences in each manual.

### ● Hedge by Currency

Currency	Amount		Hedge Ratio	
	2016	2017	2016	2017
USD (1,000)	59,787	75,589	100%	100%
EUR (1,000)	168,239	150,075	70%	75%
JPY (1 million)	18,727	16,232	36%	42%
USD Conversion Total	396,920	398,575	61%	68%

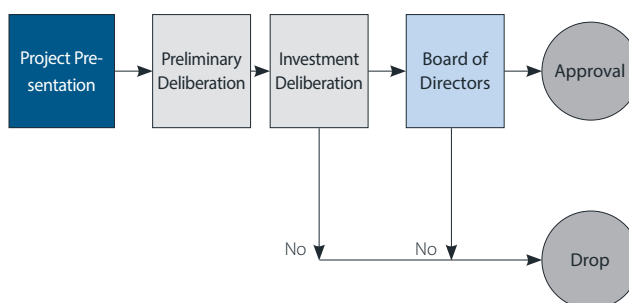
### Financial Risk Management

POSCO ENERGY manages risks effectively by operating systems in all financial areas including accounting, taxation, and funding. For the foreign currency loans, the company minimizes the risks in volatilities of exchange and interest rates through hedge trading using financial derivatives such as swap and forward contracts.

### Investment Risk Management

POSCO ENERGY invests in various projects of power generation and new and renewable energy to identify new growth engines. The ERM Group makes decisions on investment by pre-identifying risk factors through the investment deliberation process and discusses with the parent company, POSCO, to determine the impact on and synergy with financial soundness and strategic appropriateness to the group. The departments driving investment runs project presentations to share information with the ERM Group and other relevant departments and reflects their opinions to improve its plans. In addition, the top experts in – technology, laws, accounting, and finance – identify and evaluate potential risk factors through two processes of preliminary deliberation and investment deliberation and decide on the investment by integrating the results.

#### ● Investment Deliberation Process



The action plans are still reported for the risk factors found in the projects that have passed deliberation. The ERM Group conducts regular monitoring to minimize investment risks and manages the under-achieved projects found in the performance evaluation within a year after construction, until the goals are achieved through the corrective plans. In 2018, POSCO ENERGY plans to focus our investment capacity on the direct LNG import of Incheon Combined Cycle Power Plant 3 and building Samcheok Coal-fired Power Plant to eco-friendly.

### Tax Risk Minimization

POSCO ENERGY complies with the taxation policies and fulfills responsibilities for reporting and paying taxes. The company maintains relationship with the tax authorities in each region through regular or extraordinary communication and also provides evidentiary documents based on facts, if requested. Internally, the company established regulations including tax duty action guideline, tax payment operation code, and taxation duty manual to pay the taxes and protect profits of shareholders. Moreover, the company set principles to prevent potential risks in overall taxation activities and strengthened training toward relevant employees and suppliers.

### Non-financial Risk Management

The Corporate Audit Division manages non-business-related risks including ethics and fair trade besides playing roles of strategy and investment risks, financial risks such as exchange rate and funding, and compliance management of the Planning & Finance Office. Regarding the occurrences of disasters and crisis, the Safety & Disaster Prevention Section of Incheon Power Plant, the Engineering & Administration Section of Gwangyang/Pohang Power Plants, and the Project Support Group of Pohang Fuel Cell Manufacturing Plant centered on the Safety Innovation Group of the head office implement constant monitoring and actions to create safe work environment for employees. Each project site establishes emergency action plans and performs emergency training by scenario. All employees at the sites keep the card listed with tasks for emergency actions at all time as a preventive measure toward emergency situation. The Risk Top 10 System, which is a improvement activity on 10 tasks selected from the annual risk evaluation of facilities at power plants, has been implemented since 2010. This system is aimed to prevent disasters by identifying and improving risk factors through organic collaboration between the safety departments at each site and the Safety Innovation Group, and the best practices are presented at the Self-control Safety Committee every month. The company also acknowledges that the climate change response is an important issue. Therefore, POSCO ENERGY also acknowledges Environmental Policy TFT to read domestic/overseas trends, monitor the impacts, opportunities and risks to the company, and reflect them to strengthening Greenhouse Gas (GHG) management at sites and establishing business portfolio.

### Emergency Response System

As a company to manage the nation's key facilities, POSCO ENERGY, set its final goal to continuously create and maintain profits by securing business continuity even in the emergency situations.

Since 2017, the company has upgraded our emergency response system by assigning emergency response task managers to be prepared for emergencies including wars and for disasters including earthquake and fire.

In preparation for wars, POSCO ENERGY developed the war prepared-

ness plan for utility of human resources and supplies and conduct response/recovery training with national disaster preparedness training and civil defense training, under the goal, "to be equipped with preparedness for prompt recovery of damages in power plants and contribute to stabilizing lives of people", which as assigned by the government and local governments.

POSCO ENERGY believes that the emergency response system will increase our corporate values by minimizing interruption of products and services after any incidents and eventually enhance our reputation eventually by protecting the stakeholders.

First, the company boosts employees' values and awareness of safety by practicing safety education/training and promotion about disasters, thereby creating safety-prioritized corporate culture.

Second, the company implements the corporate disaster reduction activity plan to protect and restore the core assets including human resources/duties/facilities/equipment and key information/record.

Third, we run the Disaster Safety Operation Office to carry out duties such as gathering/distributing disaster information, situation management, and early action and command during disasters, along with the sharing of disaster management information with other institutions.

Fourth, the company conducts training of prompt action and recovery during disasters and implements prevention activities on vulnerable areas to prevent disasters or large accidents in the buildings and facilities.

## Materiality Analysis

POSCO ENERGY shares the activities and performances of sustainability in accordance with the Global Reporting Initiative (GRI) Guideline. The materiality analysis is conducted annually to decide on reporting subjects and contents. In July 2018, 10 issues that have strong impact on business and high interests in society were derived from the materiality analysis through the analysis of internal/external environment and stakeholder surveys.

### Materiality Assessment Process

1

#### Revising Issue Pool

In order to select issues in economic, environmental, and social areas of POSCO ENERGY, the company analyzed the sustainability standards including GRI G4 and ISO 26000, the issues selected by the benchmarked companies in the same field of business and the news articles related POSCO ENERGY. Moreover, the company also reflected important factors chosen from the contents of the board of directors and New Year's speech and inaugural speech of the CEO and came up with 29 issue pool.

2

#### Identifying External Issue

Global Initiatives	Issues in Energy Business
Checked reporting requirements of the standards including the GRI G4 Guideline and Standards, Electric Utilities Sector Disclosures (EUSD), ISO 26000, and UNGC, etc.	Analyzed sustainability issues reported by the domestic/overseas power corporations and private power generation companies in 2016 and 2017.
Keywords in Media	Stakeholder Surveys
Listed 2,777 on/offline articles related to POSCO ENERGY that were published from January 2016 to June 2018 by categorizing into economic, environmental, and social aspects.	Identified social concerns by conducting surveys to 262 persons from the investors, customers, environmental agencies local communities, and partners of POSCO ENERGY and the experts network of Samil Accounting Firm.

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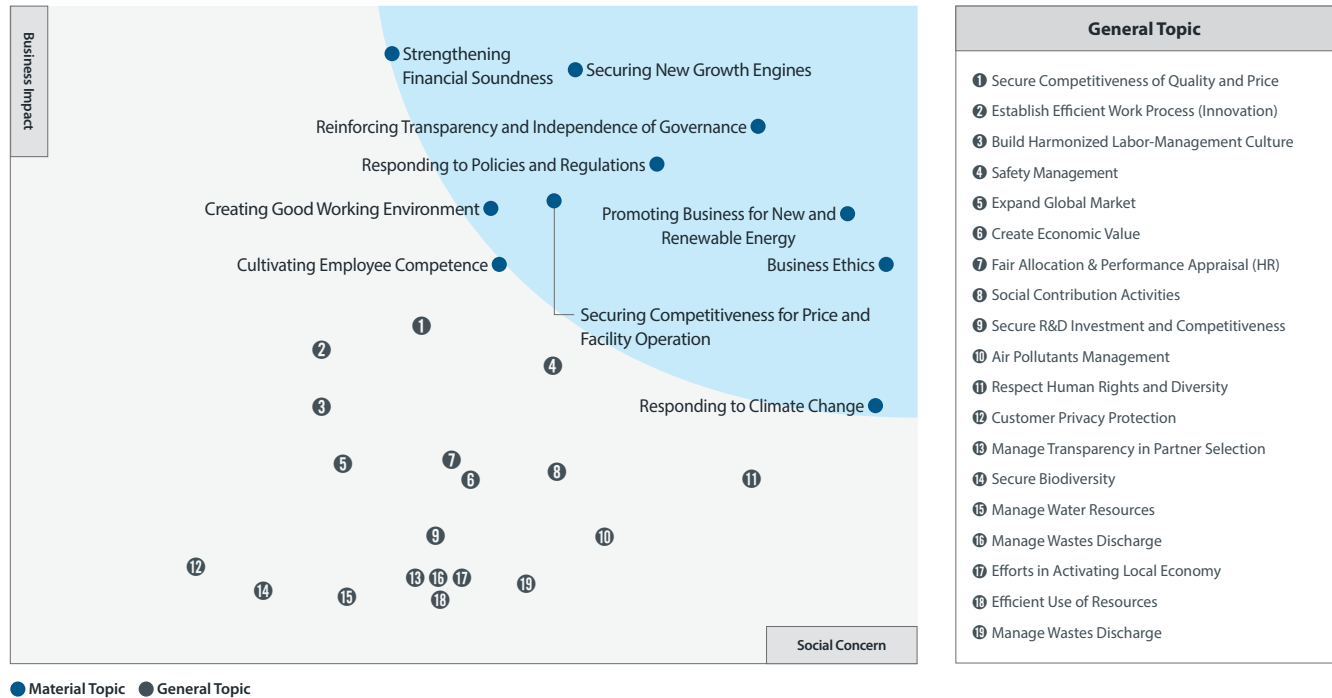
#### Identifying Internal Issue

Business Issues	Employee Surveys
Researched the sustainability issues included in the board meetings, company-wide steering committees attended by top management and managers, and CEO's New Year/inaugural speeches in the period between January 2016 and June 2018.	Identified the impact of sustainability issues on POSCO ENERGY's business through employee surveys.

## 4

## Materiality Matrix

The company formed a materiality analysis matrix based on the level of social concern and business impact to identify material issues.



## 5

## Selection of Reporting Issues

The company selected 10 material issues through the materiality analysis to report in the sustainability report. The material issues were approved for their validity by the top management. The material issues and reporting scope are as follows:

Sustainability Issue	Priority		Reporting Scope						Reported Pages
	Social Concerns	Business Impacts	Internal	External					
			Employees	Shareholders /Investors	Customers	Partners	Environment	Society	
Securing New Growth Engines	7	2		●	●	●	●		19
Reinforcing Transparency and Independence of Governance	4	3	●	●	●				25
Business Ethics	2	9	●	●	●	●	●	●	26
Promoting Business for New and Renewable Energy	3	8		●	●	●	●		23
Responding to Policies and Regulations	6	4			●	●	●		17
Strengthening Financial Soundness	23	1		●	●				24
Securing Competitiveness for Price and Facility Operation	10	5		●	●	●			20
Creating Good Working Environment	13	6	●			●			28
Cultivating Employee Competence	14	7	●	●					29
Responding to Climate Change	1	18			●	●	●	●	30

## Management Approach

Material Issues	Definition	Opportunity/Risk Factors of POSCO ENERGY
<b>Securing New Growth Engines</b>	Activity to develop new product and services based on human/intellectual competences besides the existing business model of a company	<ul style="list-style-type: none"> <li>Identifying new markets through business diversification has direct relation to revenue and can secure sustainable future growth engines.</li> <li>The market power can be weakened if the responses are not taken strategically to drastic changes in business environment including the 4th Industrial Revolution, convergence/integration between industries, and energy transition policy.</li> </ul>
<b>Reinforcing Transparency and Independence of Governance</b>	Activity of the board of directors to fulfill its responsibility of the top management and transparently disclose relevant information	<ul style="list-style-type: none"> <li>As a top decision-making body, the board of directors can maximize corporate values through transparent and responsible decision making.</li> <li>Regulations on governance is reinforced and public expectations toward social responsibility of board of directors.</li> </ul>
<b>Business Ethics</b>	Activity to strengthen authenticity of a company by pursuing transparent and reasonable work implementation including prevention of corruption and bribery	<ul style="list-style-type: none"> <li>Ethical decision making and business activities have direct/indirect impacts on enhancing corporate reputation and brand values.</li> </ul>
<b>Promoting Business for New and Renewable Energy</b>	Activity for transition to eco-friendly business model to reduce limited resources and minimize negative impacts on environment	<ul style="list-style-type: none"> <li>Transition to eco-friendly energy is a mega trend in the power generation industry and can create economic values by strengthening market power through preliminary implementation of business.</li> <li>Competition between businesses was intensified due to increase in rate of mandatory supply of new and renewable energy, and uncertainty of market is present due to high dependence on government policy.</li> </ul>
<b>Responding to Policies and Regulations</b>	Activity to take pre-emptive actions to future directions of the electricity industry to stably offer high-quality electricity to the public of a nation	<ul style="list-style-type: none"> <li>Forecasts and strategies to prospects of market and industry enable efficient distribution of financial/human resources.</li> <li>Changes in policies and regulations of electricity industry caused by climate change are predicted, and the roles of new and renewable energy and LNG power generation will become important.</li> </ul>
<b>Strengthening Financial Soundness</b>	Activity to use financial capital efficiently and secure smooth cash flow including adjustment of long-term bonds and inventories	<ul style="list-style-type: none"> <li>Sound financial structure provides stable foundation for business operation and financing and enhances investment value of a company.</li> <li>Deterioration of financial structure has negative impact on cash flow of a company and further becomes a factor to decrease investment value and credibility of a company.</li> </ul>
<b>Securing Competitiveness for Price and Facility Operation</b>	Activity to secure competitiveness of materials supply and to strengthen production efficiency through scientific technology application and R&D	<ul style="list-style-type: none"> <li>Securement of material supplier with high cost competitiveness and continuous improvement of facilities reduces power generation cost and enhance productivity.</li> <li>There is an impact on revenue unless quality and price competitiveness are not secured with marketization of new power generator.</li> </ul>
<b>Creating Good Working Environment</b>	Activity to enhance job satisfaction of employees	<ul style="list-style-type: none"> <li>Active communication with employees will enhance their trust and job satisfaction, thereby improving productivity.</li> <li>Followed by the increase in concerns about work-life balance, relevant activities and support systems of a company affects retaining of employees.</li> </ul>
<b>Cultivating Employee Competence</b>	Activity to offer employees opportunities for personal growth and job competence building	<ul style="list-style-type: none"> <li>HR development is directly connected to corporate competitiveness and its improvement of personal expertise enhances employee satisfaction.</li> <li>HR management is an important issue that decides on the existence of a company, and the company need to cultivate talents who can lead the future business in changing environment.</li> </ul>
<b>Responding to Climate Change</b>	Activity to respond to climate change through implementation of Emission Trading Scheme and investment in GHG reduction facilities and R&D	<ul style="list-style-type: none"> <li>R&amp;D and investment of climate change response can expand new business opportunities and enhance the image of eco-friendly company.</li> <li>Issues of environmental management in worksites have increased followed by the strengthened regulations of global climate change.</li> </ul>

\*Electric Utilities Sector Disclosures (EUSD)

GRI G4 Aspect	Key Performance Indicators	Major Activities	Department
Economic Performance	Revenue, Operating Profit	<ul style="list-style-type: none"> <li>Selected as pilot company for small-scale electricity market</li> <li>Promote direct LNG import</li> <li>Develop technology of virtual power plant (VPP) platform</li> </ul>	Gas & Renewable Energy Business Development Department
Governance	No. of Board Meetings, Attendance Rate	<ul style="list-style-type: none"> <li>Assign one non-executive auditor additionally for checking</li> </ul>	Corporate Strategy Group
Ethics and Integrity, Anti-corruption	No. of Ethical management Training	<ul style="list-style-type: none"> <li>Facilitate ethics training by job position</li> <li>Operate Clean POSCO System</li> <li>Surveys on Violations to Human Respect</li> <li>Run channels for consultation and reporting of sexual harassment</li> <li>Activities to eliminate harassment in the workplace</li> </ul>	General Management Audit Group
Economic Performance	Revenue, Operating Profit, Market Share, Mandatory Supply Ratio of RPS	<ul style="list-style-type: none"> <li>Operate 62.7MW Shinan Onshore Wind Farm in Jeonnam</li> <li>Acquire business permission and begin construction of 300MW Offshore Wind Farm</li> </ul>	Gas & Renewable Energy Business Development Department
Demand-side Management* Availability and Reliability*	Power Generation Amount, Power Transmission Amount, Power Generation Capacity	<ul style="list-style-type: none"> <li>Respond effectively to the mandatory supply system for renewable portfolio standards through in-house power generation and outsourcing for insufficient amount</li> </ul>	Power Policy Group
Economic Performance	Credit Rating, Debt Ratio, Current Ratio, Total Debt to Total Assets	<ul style="list-style-type: none"> <li>Risk management of currency fluctuation (USD hedge ratio : 100%)</li> <li>Operate investment deliberation process</li> </ul>	Finance Group, Enterprise Risk Management Group
System Efficiency*	Outage Rate	<ul style="list-style-type: none"> <li>Establish Singapore LNG Trading for direct import and trade of LNG</li> <li>QSS+ and My Machine activities</li> <li>Smartization of power plants</li> </ul>	Innovation & Supporting Group, Engineering & Administration Section, Power Policy Group, Gas & Renewable Energy Business Development Department
Employment	P-GWP Index, Turnover Rate	<ul style="list-style-type: none"> <li>Communication with employees by organizational unit</li> <li>Certification of family-friendly company</li> <li>Operate parental leave policy and flexible working hours system for self-development and parental support</li> </ul>	Human Resources Group
Training and Education	Training Hours, Training Costs	<ul style="list-style-type: none"> <li>Operate 1 to 1 mentoring programs and support academic courses</li> <li>Artificial intelligence (A.I.) training to all employees</li> <li>Overseas experience training</li> </ul>	Human Resources Group
Emission	Fuel Consumption Amount, GHG Reduction Amount, Environmental Investment Amount	<ul style="list-style-type: none"> <li>Implement the Emissions Trading Scheme</li> <li>100% compliance with environmental regulation</li> <li>Engineer the top-level facilities in Samcheok Power Plant to reduce environmental pollutants</li> <li>Disclose environmental performance through the third-party GHG verification</li> </ul>	Environment Policy TFT



# Materiality Issues with Sustainability in 2017

Responding to Policies and Regulations

Securing New Growth Engines

Securing Competitiveness for Price and Facility Operation

Promoting Business for New and Renewable Energy

Strengthening Financial Soundness

Reinforcing Transparency and Independence of Governance

Business Ethics

Creating Good Working Environment

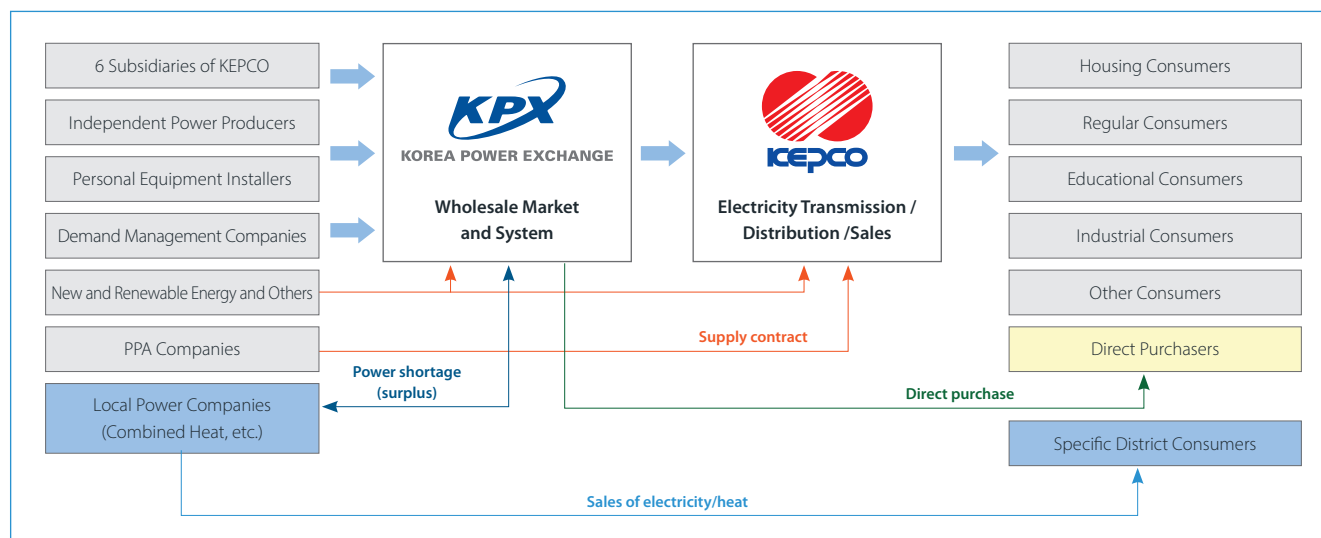
Cultivating Employee Competence

Responding to Climate Change





## Responding to Policies and Regulations



### Understanding Electricity Industry

According to the 8th Basic Plan for long-term power demand/supply announced by the Ministry of Trade, Industry and Energy (MOTIE) in 2017, the amount of electricity consumption in 2030 will be 579.5TWh and the maximum electricity will reach 100.5GW. With this plan, the government intends to secure economic feasibility and create safe and clean power generation sources while focusing on stable supply and demand of electricity.

#### Structure of Electricity Industry

In the current structure of Korean electricity industry, the power generation companies equipped with power generators produces electricity, and Korea Electric Power Corporation (KEPCO) sells electricity to regular customers through the power transmission/distribution network. KEPCO purchases electricity either from Korea Power Exchange (KPX) or directly from the power generation companies which include 6 subsidiaries of KEPCO and IPPs. Since its first commercial operation as the Korea's only Independent Power Producer in February 1972, POSCO ENERGY has enhanced the LNG Power Plant to satisfy the electricity stabilization policy of Korean Government, and as of the end of 2017, it holds about 10% of power generation facilities of Seoul Capital Area (SCA) and supplies balanced power to the region.

#### Power Exchange System

The System Marginal Price (SMP), which refers to the electricity price in the wholesale electricity market, is decided based on the power generator with the highest variable cost during the time. As the variable cost is mainly composed of fuel cost, it is often decided by the LNG Power

Plant unit which has higher fuel price than nuclear power or coal. Apart from the electricity market, the Vesting Contract (VC) approved by the government is a way of contracting between power producers and KEPCO. This is an agreement between the two parties about buying and selling of electricity in fixed prices during the agreed period. POSCO ENERGY signed and renews the VC for two off-gas combined cycle power plants in Gwangyang and Pohang in yearly basis.

### Electricity Industry Policy

#### Laws and Policy Framework

There are various laws related to the power generation companies such as POSCO ENERGY: Energy Act, Electric Utility Act, and Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy, etc. The government, in accordance with the Energy Act, announces the Energy Basic Plan every 5 years for 20 years. This plan is a blueprint of the energy industry of Korea and includes management/prospects of domestic/overseas energy supply and demand, securement of energy sources, plans for improving utility efficiency, and new and renewable energy policy. The Korea government set the 3rd Energy Basic Plan this year and plan to propose the mid- to long-term vision including the policy task of energy conversion. The Electric Utility Act is about general regulations in regards to the electricity industry covering from power generation to sales including contents related to permission to electricity projects, regulations of electricity supply and quality, measures to stable electricity supply, and formation of electricity market. In accordance with this act, the Korea Power Exchange (KPX) and the Electricity Regulatory Commission (KOREC) operate the electricity

market. The Ministry of Trade, Industry and Energy (MOTIE) formulates the Basic Plans for long-term power demand/supply every 2 years for 15-year period based on the Electric Utility Act, and the 8th Basic Plan includes: forecast and management of electricity supply and demand; power generation facilities plans; harmony of economic and environmental dispatches of power; plans for expanding dispersed generation; and power transmission/transformation facility plans. Lastly, the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy provides the Renewable Portfolio Standards (RPS), emissions allocation, and Emissions Trading Scheme. Other laws directly/indirectly related to POSCO ENERGY are the Energy Use Rationalization Act for enhancing reasonable/efficient use of energy and the Urban Gas Business Act regarding supply and demand of LNG.

### Renewable Portfolio Standards

The Renewable Portfolio Standards (RPS) of Korea enforces power generation businesses with 500MW or higher capacity to supply certain rate of their total power generation with new and renewable energy. As shown in the table below, the mandatory supply amounts are set for each year, and in 2018, 5% of previous year's total power generation amount must be supplied. There are two ways to supply new & renewable energy: self-production and outsourcing. POSCO ENERGY fulfilled the amount of mandatory self-supply in 2016 and 2017 through its own facilities of photovoltaic power generation and fuel cell facilities.

#### ● Annual Goals for Mandatory Supply of RPS

Year	2017	2018	2019	2020	2021	2022	2023	2030
Mandatory Supply Rate(%)	4.0	5.0	6.0	7.0	8.0	9.0	10.0	10.0

\*Source : Enforcement Decree of the Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy

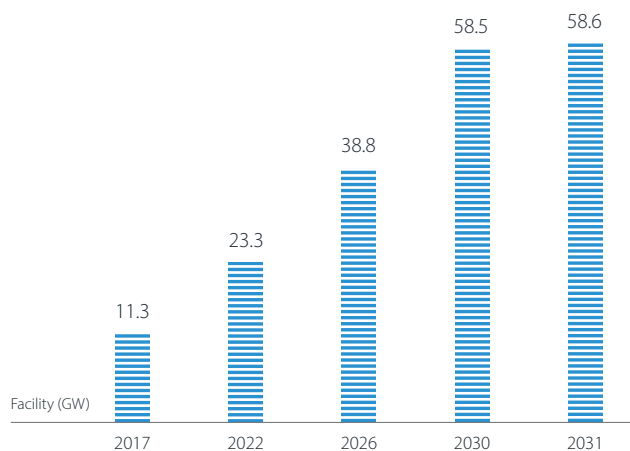
## Prospects for Electricity Industry

### Prospects by Power Source

According to the 8th Basic Plan for Electricity Supply and Demand, the capacity ratios of each power source by 2031 are expected to be: 12% nuclear power; 23% coal; 27% LNG; and 34% new and renewable energy. Followed by the public concerns on safety of nuclear plants, social issues related to high-density fine dust and fulfillment to GHG reduction goals, the importance of new and renewable energy and LNG power generation will be raised. In the global market, the portion of new and renewable energy will also increase to respond to climate change issues despite some differences in each country. This trend is expected to accelerate due to the decrease in the cost of new and renewable energy

power generation, and the United States will secure the cost competitiveness of new and renewable energy in 2022, while the United Kingdom in 2025.

#### ● Trends of Increase in Capacity of New and Renewable Energy Facilities



\*Source : The 8th Basic Plan for Electricity Supply and Demand

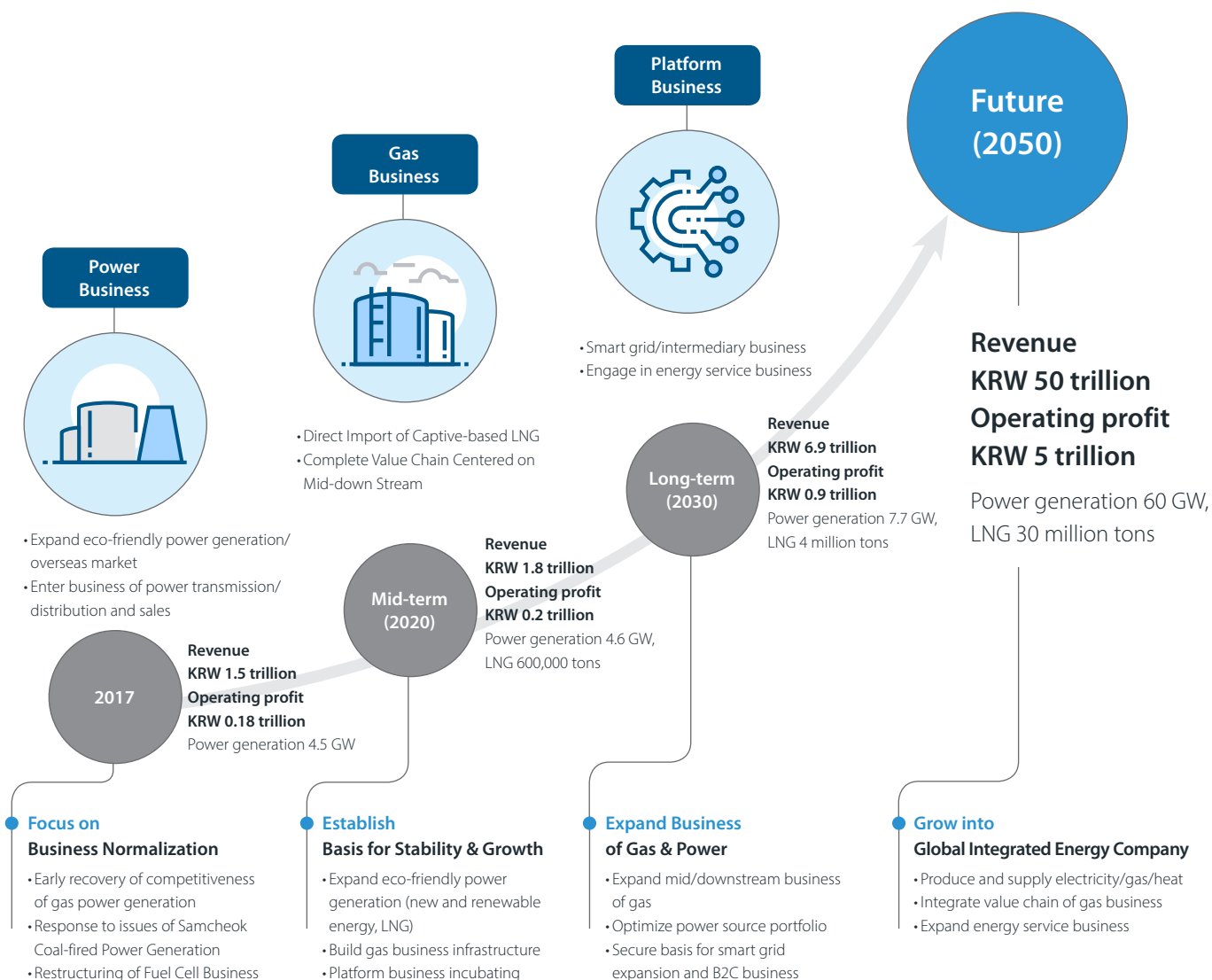
### Energy Transition and New Industry

The Korean government formulated the 'Energy Transition Roadmap' and to facilitate cultivation of future energy industry. The energy transition refers to changing the consumption structure of energy by efficiently using safer and cleaner fuels than coal. The government established the Internet of Energy (IoE) system in the overall electricity chain and plans to create new energy services through the big data platform. In addition, the government announced that the new energy business will be continuously developed in connection with job creation and industrial innovation. The new energy business refers to a new type of business that is converged with new technologies including information communication technology. The main new businesses in the electricity industry include generation and sales of new and renewable energy power, Energy Storage System (ESS), energy prosumers, Electric Vehicles (EV) and EV charging infrastructure. Once the new industry is developed, the electricity market will become a two-sided market which enables consumers to produce and sell the electricity with the generation equipment for batteries and new and renewable energy. In alignment with this government policy, POSCO ENERGY set the energy solution business as the new growth engine and is developing VPP platform technology including pilot project for power trading.

## Securing New Growth Engines

### Mid- and Long-term Strategy of POSCO ENERGY

3 Core Biz. Concentrated Cultivation, Growth to Global Top Eco-friendly Energy Company



POSCO GROUP considers non-ferrous metals and energy business as important growth engines. POSCO ENERGY plays a key role in preparing for the group's 50-year future and focuses on its capacity to cultivate the 3 Core Business: power, gas, and platform.

For the power business, the company plans to expand eco-friendly power generation and overseas market and entering power transmission/distribution and sales, thereby expanding the power generation business to the capacity of 60GW by 2050. With the captive demands, POSCO ENERGY will lead the gas business of the group and is expanding the business from LNG power generation and off-gas power generation to 'Gas to Power'. Lastly, in the platform business, the company entered the energy new business worth KRW 42 trillion after selected as the pilot company for small-scale electricity market in October 2016 and will grow into the global top eco-friendly energy company generating revenue of KRW 50 trillion and operating profit of KRW 5 trillion in 2050 by engaging in the businesses of smart grid, electricity mediation, and energy service.

## Securing Competitiveness for Price and Facility Operation

### Securing Stability in Facility Operation

#### Stable Fuel Supply

As the fuel cost takes the majority of the prime cost of power generation, stable supply of fuel has significant impact on profits and balanced operation of facilities. POSCO ENERGY signed a long-term supply agreement with the Korea Gas Corporation (KOGAS) to secure stable supply of LNG used in Incheon Power Plant and to improve profitability through direct import at the same time. In addition, for the Samcheok Coal-fired Thermal Power Plant, the company plans to retain global sourcing capability by utilizing the POSCO GROUP's trading company, POSCO DAEWOO, and procure economic and stable materials through the overseas coal mines invested by POSCO.

#### Zero Outage (Trouble Free)

POSCO ENERGY prevents unexpected failures and eliminates waste factors through monitoring activities including the Quick Six Sigma Plus (QSS+) and My Machine & Safety (My M&S) in order to maintain optimized condition of the facilities. The company also takes focused management on the vulnerable factors through the regularly planned prevention maintenance, Vibration Monitoring System (VMS), and online inspection system for high-voltage motors to control outage. The total maintenances are conducted once a year in the off-gas power plants including one in Gwangyang which achieved zero outage for three years (as of October 2018) and biennially in Incheon Power Plant to prevent failures caused by damages and to fortify the facilities. POSCO ENERGY will expand the smart power plant implemented in Incheon Power Plant to all domestic/overseas sites and operate based on big data to achieve the top-level efficiency and zero outage.

#### ● Facility Fortification for Natural Disaster Preparedness

- Solve the causes of vibration in gas compressor weight balancing
- Replace corroded HRSG tubes and test performances
- Establish systems for off-gas heat reduction
- Enhance output through fogging system for Summer

### Strengthening Operation Capacity

LNG Power Plant requires sophisticated technology for operation due to the nature of peaking power generation that frequently operates and stops to respond to peak demands, so POSCO ENERGY continuously strives for technological capability building. Based on the 48-year-long experience in power plant operation, the company retains Korea's top-level experts and expertise in operation and maintenance. We now conduct tailored technique training to accomplish nurturing of global-level technicians. By utilizing the terminated facilities, we provide juniors training and seminars to realize expertise exchange through learning and organic collaboration in operation, technology and maintenance areas.



#### Engineers

Strengthen job competence for cultivating performance-based power generation



#### Technical Experts

Operate practical training system to nurture field O&M experts



#### Training Infrastructure

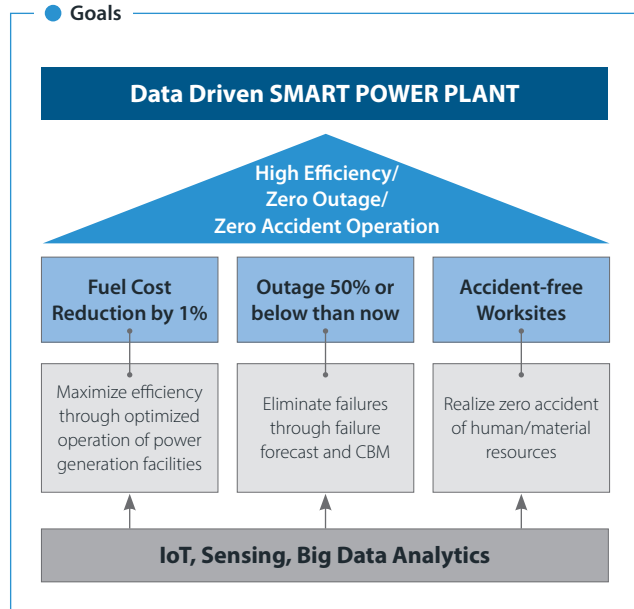
Strengthen infrastructure for systematic technology training

### High-Efficiency Electricity Production

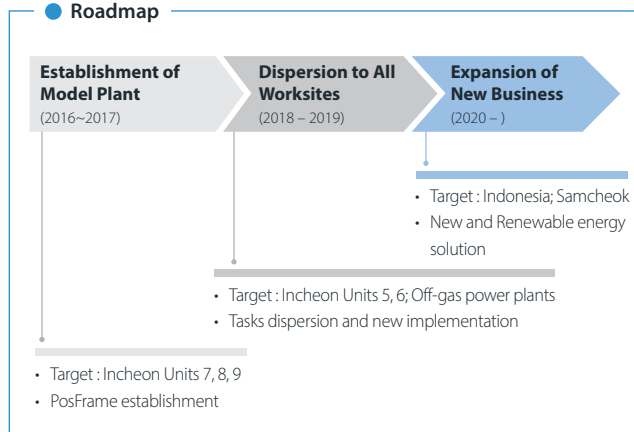
#### Smartization of Power Plants

In alignment with the transition to the 4th Industrial Revolution, POSCO ENERGY is implementing smartization of power plants through operation based on big data under the goal, 'High Efficiency, Zero Outage, Zero Accident'. The three steps of tasks will be taken sequentially to change from experience-based to big data-based operation. The smart power plants will enable us to reduce fuel costs by maximizing efficiency through optimized operation, decrease failures by 50% by implementing failure forecasts and condition-based maintenance (CBM), and realize accident-free worksites. As a means of setting directions and converging capacities for worksite smartization, POSCO ENERGY, POSCO, POSCO E&C and POSCO ICT agreed to establish the Smart Solution Council (SSC) and develop the Group's integrated platform, PosFrame, in 2016. As the first step, 5 pilot tasks were performed at units 7, 8 and 9 in Incheon Power Plant and generated financial performance worth KRW 1.7 billion in the second-half of 2016. In the second step in 2017, 13 additional tasks were performed at the same units and applied to units 5 and 6 and off-gas power plants and achieved KRW 4.4 billion.

### ● Goals



### ● Roadmap



The company is currently executing jump-up of third step that expands smartization to all worksites and comprehensively manages completed units with the focus on strengthening A.I. and smart safety. As of June 2018, POSCO ENERGY is developing a system that analyzes, predicts, and controls performance of power generation at Incheon Units 7, 8 and 9. POSCO ENERGY plans to develop a total of 11 applications by continuously conducting tasks for efficiency improvement and constantly monitoring the improved facilities. When the smartization of power plants in all worksites are completed in 2019, the company will extend the scope to overseas and new businesses from 2020.

### ● Tasks and Applications

Category	2016		2017		Total	
No. of Tasks	5	No. of Apps	13	No. of Apps	18	No. of Apps
- Efficiency Improvement	3	3	6	5	9	8
- Failure Forecasts	2	1	5	3	7	4
- Safety	0	0	2	0	2	0

### Improving Profitability

The heat capacity of off-gas which is used as fuels in Gwangyang/ Pohang Power Plants changes drastically depending on the conditions of furnace. Therefore, maintaining the heat capacity is very important for stable operation of gas turbines. In general, Coke Oven Gas (COG) is added when the heat capacity of Blast Furnace Gas (BFG) is lower than standard, and N<sub>2</sub> which as no heat capacity is added for the opposite case. In order to achieve more efficient process, POSCO ENERGY dualized the heat capacity controlling by developing the fuel blending equipment to mix BFGs with different heat capacities and the COG/ N<sub>2</sub> inlet system, along with the existing facilities. In 2017, the company newly introduced a heat capacity measurement system using an optical component analyzer with high-speed measurement and improved the problems in controlling excessive heat capacity of the existing facilities. In addition, the company enhanced power generation output by optimizing air compressor's Inlet Guide Vane (IGV) opening as My M&S task in 2016 and conducted the 'margin review of operation design in winter' as Smart task 2017. As a result of this optimization of maximum power generation output, POSCO ENERGY was able to improve power generation in the scope of -3~15°C in air temperature, thereby enhancing profitability of off-gas power plants.

### ● Average Rate of Operation

(Unit : %)

Worksites	2016	2017
Incheon Power Plant	48.2	45.6
Gwangyang Power Plant	90.7	93.9
Pohang Power Plant	92.4	84.0
Overall Average	54.4	51.9

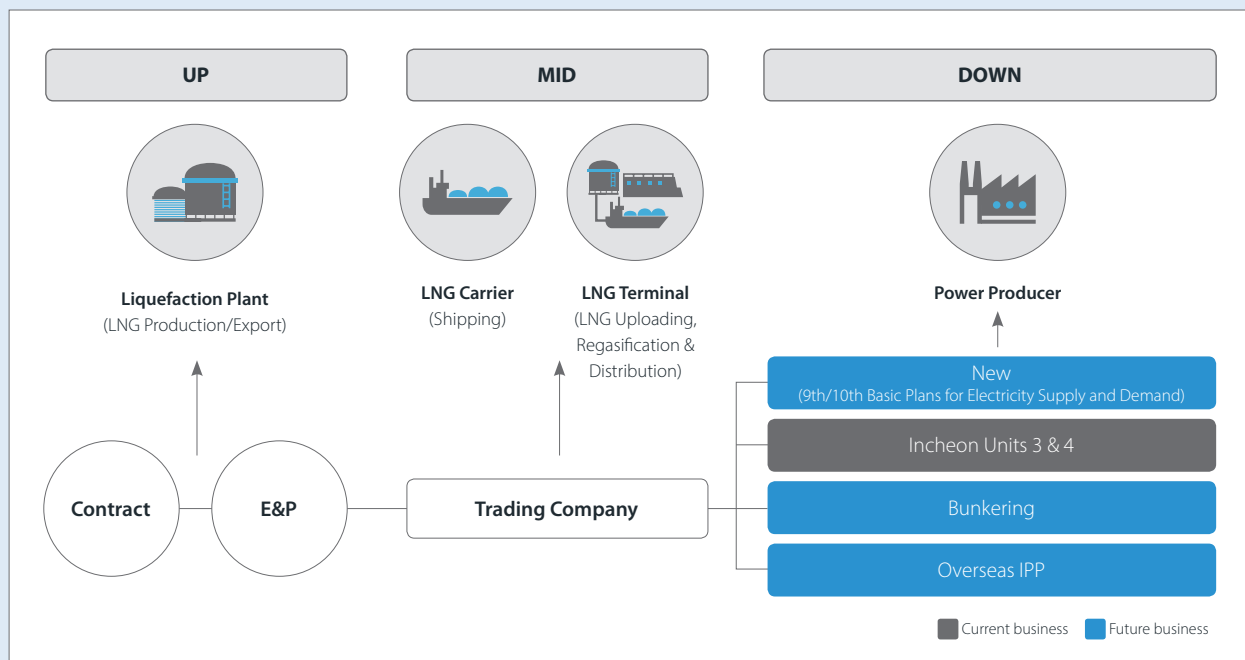
\*The average rate of operation was calculated through weighted average in consideration of capacities of each worksite.

## SPECIAL REPORT 1

## Direct LNG Import and Terminal Business

As the first IPP in Korea, POSCO ENERGY has O&M capacity built from its experience in LNG business since 1969. Based on this capacity, the company began businesses in coal-fired thermal power plants and new and renewable energy internationally and is now building foundation for stable entry to gas business which is a new growth engine of both POSCO ENERGY and POSCO GROUP.

In the global market, LNG can be secured in low price as it is expected to have oversupply of about 70 million tons by 2021 due to the increased supply of shale gases by the United States. To take advantage of this situation, the company signed a contract for direct LNG import for the Incheon Combined Cycle Power Plant whose fuel purchase contract with KOGAS will terminate in 2018. The company expects that the directly imported LNG, which will take effect in early 2019, will contribute to enhancing profitability by reducing prime costs, and the company will expand it to other power plants for higher profitability. POSCO ENERGY plans to boost a synergy of the downstream business with stable and prompt entry to market based on demands for captives used in power plants and the new midstream business including domestic terminal operation/leasing (i.e. Gwangyang LNG Terminal), trading through Singapore branch established in last May, and bunkering. As the POSCO GROUP aims to not only integrate midstream and downstream businesses, but also invest in shares of overseas gas fields and terminals to retain low-price LNG, POSCO ENERGY will play an important role in completing integration of gas business value chains in the upstream industry.



### Establishment of POSCO SINGAPORE LNG TRADING PTE. LTD.

In June 2018, POSCO ENERGY established the LNG trading firm in Singapore with POSCO and POSCO DAEWOO to respond to the increase in LNG demands within the group and the needs for overseas trading and direct imports. POSCO holds 50% of the shares, while POSCO ENERGY and POSCO DAEWOO each owns 25%. This is aimed to enhance synergy through the integration of gas business value chain of the POSCO GROUP.

## Promoting Business for New and Renewable Energy

In the electricity business, which is one of the 3 core business, POSCO ENERGY is taking new changes and challenges to secure future growth engine based on eco-friendly energy business by diversifying the existing business portfolio with high portion of LNG power generation.

### Photovoltaic Power Generation

POSCO ENERGY built a 14.5MW photovoltaic power generation complex in the abandoned salt pond near Palgeum-myeon, Shinan-gun, Jeollanam-do and produce electricity. By using the disused area for photovoltaic power generation, the company was able to minimize environmental damages and produce eco-friendly energy. Moreover, POSCO ENERGY executed 2.8MW photovoltaic power generation using the roof of factory of affiliates 50MW off-shore photovoltaic power generation in Dongho Bay in Gwangyang, and photovoltaic power generation using salt-affected land and is pursuing active response to the RPS and securement of stable profits.

### Wind Power Generation

POSCO ENERGY is implementing on-/off-shore wind power generation business in Shinan-gun, Jeollanam-do. For the on-shore wind power generation business, the company began construction of 62.7MW wind farm in February 2015 near Jaeundo and started operation in May 2018. For the off-shore wind power generation business, the company is pursuing 300MW wind farm near 2.5 km west of Jaeundo after building off-shore meteorological tower in 2013, conducting preparatory feasibility service in June 2014, completing actual project feasibility service in August 2017, and acquiring approval for power generation project in September 2017. POSCO ENERGY plans to continue business of domestic wind power generation based on shared growth with local residents and actively engage in accomplishing the Renewable Energy 3020 of the government.

### SRF Power Plant

POSCO ENERGY runs a Solid Refuse Fuel (SRF) power plant which enables recycling daily wastes and convert them to energy. The SRF power plant was built in Busan in 2013 as Korea's first and largest scale now produces 25MW of electricity by treating 900 tons of wastes generated in Busan daily for about 50,000 households to use. This amount is equivalent to replacing 75 million Nm<sup>3</sup> of LNG annually, along with the effect of about 160,000 tons of CO<sub>2</sub> reduction. The existing daily wastes went through incineration or landfill for treatment, thereby causing high environmental pollution. However, the SRF power plant divides/identifies inflammable and noninflammable wastes and burns the inflammable

ones only to convert them to fuels for sales. In addition, the steam generated from the process has been supplied to the sewage sludge drying system of the Busan Environmental Corporation and created KRW 4.2 billion every year. BUSAN E&C that operates the SRF power plant is promoting the expansion of steam supply to New International City and Eco-Delta City of Busan.

The Busan SRF Power Plant takes stringent measures to treat key air pollutants (including dioxin, NOx, SOx, HCl and dust) under the level of legal standards. Moreover, the plant was rewarded the Minister of Environment's Award in November 2016 for its contribution to the green growth of Korea's environment/energy industries for replacing coal fuels, reducing GHG, and solving issues of insufficient area for landfill due increase in wastes.

### Sewage Heat Energy Utilization

Tancheon Sewage Treatment Center located in Seoul processes and discharges 1.1 million tons of sewage into the Han River every day, which maintains a temperature of 12°C, even in the winter time. POSCO ENERGY collects and recovers the heat energy generated from sewage water through heat pumps, and then supplies heating energy to nearby local district heating corporations. This facility produces 200,000 Gcal of heat energy, enough to cover 20,000 households a year. This also replaces the use of 17 million Nm<sup>3</sup> of LNG on an annual basis, reducing GHG emissions by 47,000 tons.

## Strengthening Financial Soundness

### Financial Status

In 2017, both advanced countries and emerging countries achieved win-win growth of 3% through the strengthened economic recovery and increase in global trade followed by the supporting policies of advanced countries. Although the domestic economy had slowdown, the increase in exports caused by recovery of global economy led to 3.1% growth rate which is a little higher than the previous year.

In the electricity market, the position of LNG generators was weakened due to its low competitiveness for price as the new introduction of large-scale power generation, while the electricity sales prices lowered down followed by increase in the reserve margin. Because of deteriorated condition of electricity market and falling in oil cost, POSCO ENERGY's revenue as of 2017 recorded KRW 1,621.3 billion which is KRW 81.5 billion lower than that of 2016; however, its operating profit reached KRW 166.2 billion as of 2017 which is increased by KRW 76.2 billion compared to 2016-end through stable electricity supply and various improvement activities.

In accordance with the consolidated financial statement, the total assets as of 2017-end is KRW 5.0233 trillion which is slightly higher than that of 2016, the total liabilities are KRW 3.2946 trillion, and debt-to-equity ratio is 190% which decreased by 45%p compared to the previous year. Since 2015 when the large-scale investment had ended, POSCO ENERGY has been focusing on enhancing financial soundness. For instance, the company issued new shares worth KRW 245 billion to reduce debt-to-equity ratio in February 2017.

In the first-half of 2018, economic uncertainty expanded internationally including United States-China trade war, Brexit termination, and Turkish Lira collapse, and the global contraction is accelerating as the countries worldwide are increasing base rates and cutting scale of Quantitative Easing (QE). The Korean economy is also predicted to have low growth rate of 2% as foreign currency crisis due to European economy recession, CNY fluctuation increase, and acceleration of base interest increase in the United States led reductions in construction/facility investment and employment. Even though there were concerns in the electricity market regarding electricity supply and demand due to the impacts of the record-breaking heat and the energy transition policy (nuclear power phase-out), the company was able to maintain 10% of reserve margin by activating demand response (DR) market.

### Credit Rating

In 2017, domestic credit rating companies graded POSCO ENERGY's credit rating to AA- (Stable) which is relatively higher than the average of domestic IPPs in consideration with the stable profit structure and trends for improving financial structure by evaluating that the usage

### Credit Rating

Category		2016	2017
Korea Investors Service	Corporate bond	AA-(Stable)	AA-(Stable)
	Commercial paper	A1	A1
Korea Ratings	Corporate bond	AA(Negative)	AA-(Stable)
	Commercial paper	A1	A1
NICE Investors Service	Corporate bond	AA-(Stable)	AA-(Stable)
	Commercial paper	A1	A1

rate of electricity produced by POSCO ENERGY were maintained at solid level which is attributed to preemptive maintenance of nuclear power plants and increase in demands for electricity, even with the large-scale base power generation entered the market.

### Transparent Disclosure

POSCO ENERGY fulfills disclosure activities related to its major management status. In accordance with the Act on External Audit of Stock Companies, Capital Markets Act, and Fair Trade Act, POSCO ENERGY made a total of 13 disclosures in 2016 and 22 in 2017 through the Data Analysis, Retrieval, and Transfer System (DART) of the Financial Supervisory Service (FSS). The company continuously maintains communications with the stakeholders including investors.



## Reinforcing Transparency and Independence of Governance

POSCO ENERGY practices responsible and substantial management to meet stakeholders' expectations. Based on this principle, the Board of Directors (BOD) determines key issues while supervising the performance of the management. It is also fully committed to increasing the values and benefits for stakeholders.

### Composition of the BOD

As the highest decision-making authority, the Board of Directors (BOD) consists of 3 internal directors, 3 non-executive directors, and 2 auditors. Internal directors and non-executive directors who have the expertise in overall business management among those recommended by the shareholders are appointed at the BOD meeting while a financial expert is appointed as the auditor through a BOD resolution. The appointed directors are in charge of making major decisions regarding company management, and the auditor supervises the performance the directors. The members of the BOD shall be evaluated and remunerated according to the internal policy and merit-based compensation system.

#### ● Board of Directors

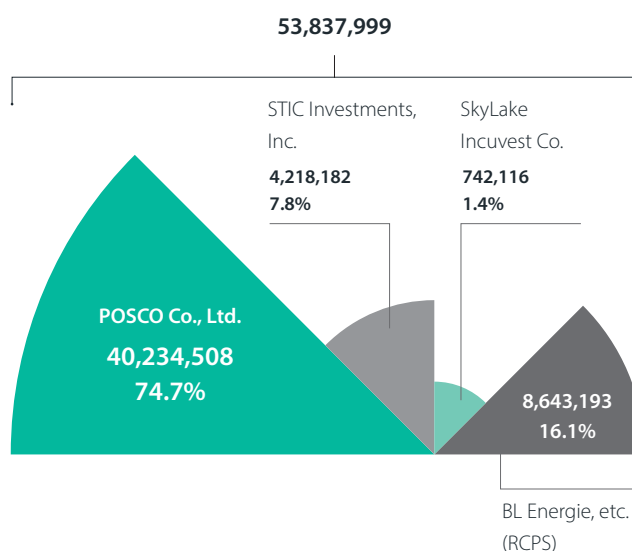
Classification	Name	Position
CEO	Park, Ki-Hong	President and CEO
Internal Directors	Shin, Chang-Dong	Head of Business Development Div.
	Jeong, Ki-Seop	Head of Corporate Planning Div.
	Yu, Seong	Head of Technology & Investment Div. of POSCO
Non-executive Directors	Lee, Jeon-Hyeok	Head of Domestic Business Management Div. of POSCO
	Do, Yong-Hwan	Founder and Chairman of STIC Investments
	Lee, Jo-Young	Head of Corporate Audit Div.
Standing Auditor	Lee, Jo-Young	Head of Corporate Audit Div.
Non-executive Auditor	Min, Hyun-Ki	President of SkyLake Investment

### Operation of the BOD

The BOD is operated through general or extraordinary meetings, and the CEO appointed by the BOD is responsible as the chairperson for the meetings. BOD meetings can be called by the chairperson, and the resolution can be made by having more than half of the BOD members in attendance and a majority vote. It is indicated in the corporate by-laws that any BOD members who have a special stake in the company

cannot exercise their voting rights at the relevant meetings. The board meetings were held 7 times in 2016 and 8 times in 2017, and a total of 26 items were approved including entry to domestic/overseas power generation business, corporate social responsibility, and risk management. The BOD of POSCO ENERGY will fully reflect and strike an appropriate balance among various opinions from stakeholders to become a continuously growing company. The attendance rates of board members were 100% in 2016 and 94% in 2017.

#### ● Shareholder Status



### Independence of Auditors

In 2018, a non-executive auditor was nominated additionally in the general shareholders' meeting to strengthen supervising duty of the auditors.

### Performance Appraisal Process of BOD

The remunerations for directors and auditors are provided in accordance with the remuneration maximum limits approved at the shareholders meeting. Their performances are monitored fairly and reliably based on the qualitative/quantitative performance management goals established in the beginning of the year and are evaluated at the end of the year in accordance with the guidelines of POSCO.

## Business Ethics

### Ethical Management

POSCO ENERGY prioritizes ethics in corporate management and conducts various training and activities to internalize ethical management culture that emphasizes basics and principles. The Corporate Audit Division is run directly under CEO to highlight the top management's will to practice ethical management, and the General Management Audit Group directs the ethical management and fair trade. POSCO complies with the code of ethics set by POSCO 2003, and all executives and employees fully comply with the "One Strike Out" system to eradicate four unethical behaviors; bribery, embezzlement, sexual harassment, and information fabrication. In addition, the company performs various activities to fundamentally improve daily processes and systems that are more vulnerable to ethical risks and operates system that all employees led by the executives participate in to implement the ethical management in the organization. POSCO ENERGY endeavors to cultivate ethical awareness of employees including global staffs in the overseas worksites by strengthening ethics training. Since, the Indonesia Off-gas Power Plant has held the pledge announcement every year since 2016 regarding compliance with the guidelines to the 8 principles of customer respect, investor protection, happy workplace, shared growth management, environmental management, corporate citizen, human rights respect, and ethical management according to the global ethical codes established by POSCO in 2015. The chief supervisor of Indonesia Power Plant implements ethics training quarterly as a means for standardizing global-level of ethical management.

#### Ethics Training by Job Level

The company performs tailored ethics training for each job position and department to internalize ethical awareness. By quarterly, ethics training hosted by the leaders and the leader level ethics meetings hosted by the standing auditor are carried out to highlight the self-initiatives of the managers. Through the ethics level assessments, those organizations with relatively low level receive strengthened ethics training to cultivate their ethical standard. The standing auditor also visits subsidiaries and overseas offices, thereby facilitating training for ethical awareness building.

#### Ethics Sessions for Executives and Department Heads

POSCO ENERGY conducts activities for enhancing ethical awareness by assessing ethical standards of the executives and department heads, providing feedback on the analysis of ethical risks, and conducting customized training. This is to improve ethical awareness of the manager-levels and preemptively prevent potential ethical risks.

#### Clean POSCO System

POSCO ENERGY records all data of the group in regard to solicitation to operate system for creating 'solicitation-free' corporate culture. By pro-

viding justification to refuse and psychological burden to request, the company expect the solicitation to disappear. The Clean POSCO System is operated to create transparent culture and protect good employees by making employees to register any solicitation case with the spirit of whistle blower and exempting them from any trouble caused in the future. The registration is eligible for every employee in the process of recommendation or solicitation. In 2016 and 2017, 16 recommendations and 4 solicitations were reported through the system and none of them were led to corruption as the General Management Audit Group monitored all of them.

#### No. of Registrations of Recommendation and Solicitation

2016	2017	2018 (1st-half)	Total
16 cases	4 cases	0 cases	20 cases

#### Surveys on Violations to Human Rights Respect

POSCO GROUP conducts surveys on violations to human rights respect to standardize the culture of respecting human beings. Through the survey, strict disciplinary actions are taken to any violators among suppliers, stakeholders and employees.

#### Sexual Harassment Prevention Channels

POSCO ENERGY reorganized consultation/reporting channels for prompt actions to sexual harassment at work and strives to strengthen personnel actions and secure fairness for violations. The company improved prevention activities including in-site sexual harassment prevention education, operation of grievance committees by council, and counseling of outside experts and the consultation process for reporting and counseling about sexual harassment. POSCO ENERGY has conducted on/offline education on preventing sexual harassment for 2.5 hours per employee annually.

#### Activities for Eliminating Workplace Harassment

The company set guidelines to create an organization 'free from harassment through abuse of authority'. Ethical training by worksite/job position/department is conducted regarding preventing workplace harassment. POSCO ENERGY also runs consultation and reporting center and strengthen personnel actions to prevent secondary damages at the same time.

## Fair Trade

POSCO ENERGY runs internal policies and programs to build a culture to voluntarily uphold fair trade. The company promotes fair and free competition to achieve sound economic growth and improve the market's functions.

### Fair Trade Compliance Program

POSCO ENERGY has implemented the Fair Trade Compliance Program since 2009 when the CEO announced the introduction of voluntary fair trade compliance. The company provides employees various training to improve their awareness of fair trade. The General Affairs & Procurement Group which is most related to fair trade, is offered with various training to aid adaptation in the field. Moreover, the company distributes compliance manuals to enhance employees' awareness and assign the standing auditor as the supervisor of fair trade compliance to emphasize its will to practice fair trade. In the company-wide compliance council, the issues of fair trade are shared to standardize fair trade culture in the company, and consulting of Fair Trade Act are also offered to prevent potential risks.

### Agreement of Fair Trade and Shared Growth

Though POSCO ENERGY is not one of companies in the Win-Win Growth Index, the company signed agreement of 'Fair Trade and Win-Win Growth Agreement of Large Conglomerates and SMEs' with about 270 primary suppliers voluntarily and expanded the scope of agreement to the secondary suppliers, thereby contributing to dispersion of shared growth.

## Business and Human Rights

In accordance with POSCO GROUP's Code of Ethics, POSCO ENERGY respects and advocates the globally recognized international standards on human rights including the Universal Declaration of Human Rights, United Nations Guiding Principles on Business and Human Rights, the 10 Principles of the United Nations Global Compact, and the OECD Guidelines for Multinational Enterprises. The company takes prompt actions to the risk factors identified through the counseling/reporting system for protecting human rights in the organization. Moreover, the company operates online reporting system such as Cyber Sinmungo to enable both employees and outside stakeholders to file reports anonymously and solves grievances related to human rights, ethics, shared growth, fair trade and sexual harassment.

### ● Performance and Plan

Introduction of CP and operational principles	<ul style="list-style-type: none"> <li>• Proclaim CEO's commitment in company-wide meetings.</li> <li>• Report the CP operation plan to the BOD meetings.</li> <li>• Complete the company-wide commitment on fair trade compliance.</li> </ul>
Support from top management	<ul style="list-style-type: none"> <li>• Post on EP about duties and roles of CP officers.</li> <li>• Organize CP officers and operate the CP Committee.</li> </ul>
CP manuals	<ul style="list-style-type: none"> <li>• Update the CP manual and distribute it to divisions with high risks of legal violation.</li> <li>• Continuously share information related to CP (Fair Trade Act, fair trade trends, educational data) on EP information board</li> </ul>
Pre-monitoring system	<ul style="list-style-type: none"> <li>• Conduct Identification activities for risk factors using CP checklists.</li> <li>• Hold briefing sessions about online/offline reporting system and continue monitoring activities.</li> <li>• Prepare internal audit policies for protecting whistleblowers and improve the reporting system.</li> </ul>
Training program	<ul style="list-style-type: none"> <li>• Operate fair trade training for executives and executive meetings with group subsidiaries or partners</li> <li>• Offer online training for all employees. (new recruits)</li> <li>• Invite a guest lecturer to give training to divisions with high risk of legal violation.</li> <li>• Offer external training for employees whose duties are related to fair trade (Corporate Disclosure System, Fair Subcontract Transactions Act, Fair Trade Act, etc.).</li> <li>• Participate in CP seminars and fair trade compliance forums.</li> <li>• Run professional training programs in cooperation with lawyers specialized in the Fair Trade Act.</li> </ul>
Incentive and discipline system	<ul style="list-style-type: none"> <li>• Offer rewards for exemplary employees with best practices (rewards for outstanding departments or persons)</li> <li>• Take disciplinary actions to violators through regular monitoring of legal violations</li> </ul>
Effectiveness evaluation and improvement of CP	<ul style="list-style-type: none"> <li>• Assess employees' satisfaction and understanding of offline training.</li> <li>• Analyze problems and causes through surveys designed to evaluate all employees' understanding of CP.</li> <li>• Prepare a CP practice examination report.</li> <li>• Report CP results to executives' meetings or to the BOD.</li> </ul>

## Creating Good Working Environment

### Communication with Employees

Creating a good working environment for employees is important to realize corporate vision and become a great company. Open communication and proactive cooperation are the keys to transform a company into a Great Work Place (GWP) with its long-term competitiveness. POSCO ENERGY operates various programs to embed smooth communication and cooperation into the organizational culture.

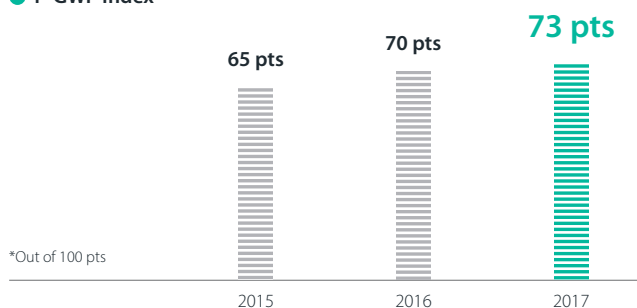
The CEO holds small-scale meetings with all employees to offer opportunities to deliver their proposals directly to the top management. Other activities include the Pub Day to communicate while having chickens and beer and sports competition.

The Indonesia Power Plant performs various activities including workplace councils, invitational meetings for the married, employee birthday parties, organizational facilitation, sports competition, and Korean culture experience for excellent employees.

### Satisfaction Enhancement

Since 2011, POSCO ENERGY has measured the POSCO Great Work Place (P-GWP) index for all executives and employees. Every year, the company conducts surveys and interviews on all employees and measure P-GWP index by several criteria including worksite, position, yearly experience, and gender. Then, the company reflects the results on improving system to create 'good workplace to work for' and setting directions toward happy management. POSCO ENERGY believes that the happiness and job satisfaction of employees are the pillars of the competitiveness. Therefore, POSCO ENERGY is committed to "solidifying trust in organization and management", "instilling pride in the job and company" and "mutual respect and understanding among employees."

#### ● P-GWP Index



### Thanks Sharing Campaign

Designed to "Share the Warmth, Be thankful, and Love together", the "Happy Energy, Thanks Sharing Campaign" has been organized to spread a positive mindset throughout the company. Since 2013, POSCO ENERGY has performed daily broadcasting service on thanks sharing, and about 500 persons including CEO, employees, families, and partner

employees have made appearance. In May 2017, the company held the special program to celebrate its 1,000th anniversary.

### Employee Welfare for Work-Life Balance

After acquiring the "Best Family-Friendly Management Certificate" by the Ministry of Gender Equality and Family (MOGEF) in 2012 as the first private power generation company in Korea, POSCO ENERGY received re-certifications in 2015 and 2017. POSCO ENERGY runs a flexible working hours scheme to support employees' capacity building, childcare and education. Employees can get to work between 7 am and 11 am and control their working hours as long as they work 8 hours per day and 40 hours per week. Every second and fourth Wednesdays are 'Family Day' which encourages employees to spend time with their family by getting off work one hour early. To support childbirth and childcare of the employees, the company operates 2-year maximum parental leave and reduced working hour scheme and also provides congratulatory pay for child birth, pregnant women care programs, paid parental leave for spouses, and an in-company childcare center.

POSCO ENERGY encourages male employees to use parental leave, and 8 employees from 2016 and 1 employee from 2017 have been on leave. The self-development leave scheme is also provided to supports acquiring academic degree and overseas language study. POSCO ENERGY support the employees to find the right balance between work and family by offering a "psychotherapy center" and "family counseling program". Aside from these programs, the company also provides employees with a variety of benefits such as holiday accommodation, school expenses, medical expenses, and partner's health check-up support.

In accordance with the 52-hour work week scheme started in July 2018, POSCO ENERGY notifies employees to get off work after working hour through broadcasts, and for those who inevitably does overtime, the company allows them use the overtime as time-offs whenever needed through the working hour saving system.

## Cultivating Employee Competence

### Recruitment and Improvement of Competence

POSCO ENERGY implements a nondiscriminatory open recruitment to ensure equal opportunity based on competency. The company runs various programs to cultivate 'world-best experts', 'trusted talent', and 'ethical talents' such as basic training programs customized to different positions and leadership training to understand the common values of the POSCO GROUP, job competency programs to learn problem solving skills, and language learning and overseas study programs.

The company also started the one-on-one mentoring program to foster experts, develop career, and help newcomers adapt to the company. It has been expanded to accommodate junior-level employees employees and offered a platform to develop their career and share distress. In addition, POSCO ENERGY runs field combined program that provides full scholarships for domestic graduate schools to enable employees to apply the knowledge learned in the practical jobs and improve their performances.

#### Job Competency Programs

- A.I. Training  
(Target : executives, managers/regular positions, engineers, 2017 – 2018)
- QSS + Facilitator Training  
(Target : technicians, 2017 – 2018)
- Machinery Vibration & Noise Expertise Training  
(Target : engineers, technicians, 2016)
- Power Generation Protective Relay Expertise Training  
(Target : engineers, technicians, 2016)
- Measurement Control Expertise Training  
(Target : engineers, technicians, 2017)
- Occupational Safety & Health Training  
(Target : safety supervisors, annually)
- Hazardous Chemical Substances Safety Training  
(Target : environmental supervisors, annually)

### Educational Program Using MOOC

In the 4th Industrial Revolution, smart capacity is required to plan new strategy and pursue business. As the first in the POSCO GROUP, POSCO ENERGY has operated the training program utilizing the Massive Open Online Courses (MOOC) which is offered by domestic/overseas universities and professional institutions to enable selection of education by employees' needs since March 2018. The MOOC courses at POSCO ENERGY is categorized into mandatory and selective courses and the curriculum is formed for employees to perform self-driven learning regarding new technology and smart technologies (IoT, Big Data, A.I.)

#### ● Curriculum

##### 64 Courses in 2018

14 Academic Degree/Experts Courses	Rewards	<ul style="list-style-type: none"> <li>• Benefits for academic degree/experts (PCP level)</li> <li>• High reward pay related to duty</li> </ul>
Selective/Rewards Courses (30 selective courses in technology /office work)		
Regular Courses (1 mandatory + 2 selective courses out of 17)	Mandatory	<ul style="list-style-type: none"> <li>• 3 courses by job position (MBO approved)</li> <li>• Basic/mandatory courses (within 1 year) including technicians</li> </ul>
Basic/Mandatory Courses (all employees)		

### Overseas Experience Training

POSCO ENERGY selects 40 excellent employees for overseas training twice a year in countries where the company already has worksites such as China, Japan, and Vietnam.

## Responding to Climate Change

### Environmental Policies and Regulations

In accordance with the Framework Act on Low Carbon, Green Growth and the Act on the Allocation and Trading of Greenhouse Gas Emissions, power generation businesses are subject to GHG allowances and shall release GHG emissions within their allowances. If there is any allowance left over, they can sell their emission permits. They may also buy emission allowances from other companies if they need more GHG allowances. For responding to climate change according to the national goal of reducing GHG by 2030, POSCO ENERGY established the Environment Policy TFT and systematically approaches to the Emissions Trading Scheme including policy responses, emissions management, and purchasing of insufficient GHG allowances. The LNG Combined Cycle Power Plant consumes lower amount of energy through the high-efficiency power generator using steam turbines by collecting heat from gas turbines. In 2017, the amounts of energy consumption was 100,849TJ, GHG emissions was 11,322,524tCO<sub>2</sub>, GHG emission base unit was 0.69CO<sub>2</sub>/MWh, and direct emissions from fuel combustion consumes 99.6%.

#### Environmental Management Policy

As a world-renowned energy company, POSCO ENERGY understands the environment as the key element for management strategy. We will secure sound environment management based on the development of technologies and communications. We will also practice the following commitments to lead low carbon green growth.

- Secure global leadership by setting up an environmental management system based on ISO14001 and pursue sustainability management.
- Comply with environmental laws and regulations and improve the environment continually throughout the entire production process.
- Strive to reduce environmental pollutants by applying clean production processes and optimum prevention technologies.
- Run a monitoring system to regularly evaluate environmental performance.
- Reduce GHG emissions by using clean energy and employing green technologies to lead low carbon green growth.
- Ensure management transparency by disclosing the environmental management performance and fulfill social responsibilities.

### Implementation Strategies

According to the allowances by business type announced by the Ministry of Environment this year, the allowance for the energy sector including POSCO ENERGY is 228,061,000KAU. The company needs highly strategic management to restrict its GHG emissions. The company is taking various measures to respond to climate change: improve the efficiency of power generation facilities, establish the greenhouse gas inventory that lists emission amounts by source, and continue expanding new and renewable energy business. The Environment Policy TFT is in charge of the management of carbon emissions through the Emissions Trading Scheme.

### Environmental Management System

POSCO ENERGY set execution strategies for environmental management based on corporate vision and mission and promote Green System, Green Operation, Green Business, and Green Communication. There are environmental organizations at each worksite, and at the head office, the company have the Environment Policy TFT. The main roles of the TFT include responding to the amendments of environmental regulations, analyzing impacts on the company, and revising execution plans at each worksite according to the changes. Moreover, the Environment Policy TFT is in charge of taking actions on environmental inspections and sharing information with stakeholders.

#### Environmental Management Strategies



## ISO Certification and Maintenance



Certificate of ISO 14001:2015

POSCO ENERGY has been operating its environmental management system based on the international standard, ISO 14001 since 2011 in order to secure environmental soundness and lead the low-carbon green growth. The company identifies necessary improvements through internal assessment and post-assessment of the professional institutions and take actions to constantly improve our environmental performance. The company also participate in the environmental examination

for partners' business premises to manage group-wide risks. As part of these efforts, the company carries out an environmental impact assessment by business characteristics, and a theme-based inspection based on key issues with high risks. The results are reported to the POSCO Environmental Management Committee and reflected in the fields immediately if any resolution measures are required.

The worksites in Incheon, Gwangyang and Pohang acquired ISO 14001 certification and went through renewals in accordance with the revision to ISO 14001:2015 in December 2017. The company evaluated the impact of revisions on its overall production activities and supplemented the management system for environmental risks. Moreover, the company improved the communication system with the stakeholders related to environment to pursue our continuous development into eco-friendly company.

## Enhancement of the GHG Management System

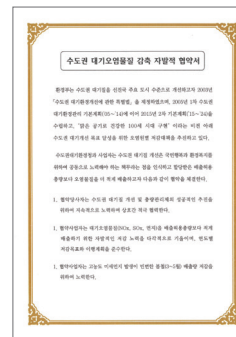
POSCO ENERGY has established a systematic air environment management system to monitor and manage air pollutant emissions and also prevent excessive emissions of the air pollutants. Moreover, the company built the GHG inventory system to estimate and report the amount of GHG emissions from the headquarters and business premises based on the 'Guidelines on GHG/Energy Target Management Operation and Others'. The Enterprise Resource Planning (ERP) system is operated for managing the implementation status of GHG emissions and Renewable Portfolio Standards, and the important information for the management's decision making is offered through the Enterprise Information System (EIS).

## Air Quality Control

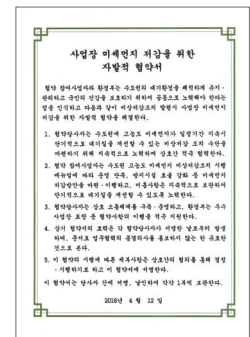
POSCO ENERGY has established a Tele-Monitoring System (TMS) to au-

tomatically measure air pollutant emissions and manage the emission of air pollutants including NOx and SOx under our standards that are stricter than the legal standard. To minimize air pollution, the company installed various air pollution control equipment including low NOx burners, Selective Catalytic Reduction (SCR), and electric precipitators. The company also strive to maintain good air quality around our business sites: the company uses an air quality monitoring system (CleanSYS) to monitor air pollutants in the air 24 hours a day and delivers the relevant data to the Korea Environment Corporation on a real-time basis. In particular, the LNG power plant in Incheon was included among the companies in the Total Air Pollutant Load Management System which began to improve the air quality of Seoul Metropolitan Area to the standard of advanced countries, and continuous efforts to reduce pollutants are taken since 2008.

In April 2018, POSCO ENERGY signed a 'Voluntary Agreement for Reducing Fine Dust at Worksites' with the MOE to cooperate in maintaining clean atmosphere of the Seoul Metropolitan Area, thereby protecting the public health. Furthermore, in May, the company signed a 'Voluntary Agreement for Reducing Air Pollutants in Seoul Metropolitan Area' with the Metropolitan Air Quality Management Office and agreed on emitting less pollutants that the NOx allowance for 3 year period to fulfill its role as a corporate citizen to take lead in happiness of the public and environmental welfare.



Voluntary Agreement for Reducing Air Pollutants in Seoul Metropolitan Area



Voluntary Agreement for Reducing Fine Dust at Worksites

## Water Quality Control

POSCO ENERGY fully recognizes the global concern over water scarcity and strives to reduce the risk of water shortage by reusing water. The company uses water in the steam production and facility operation. Gwangyang Power Plant uses both water supply and industrial water, while other worksites uses 100% water supply as the water source. POSCO ENERGY consistently engages in the reuse and recycling of water to reduce water consumption. The company has adopted a water control standard stricter than the legal mandatory standard for water pollutants discharged from business site. POSCO ENERGY also carries



out regular check-up to measure the amount of pollutants and find any abnormalities in discharge/pollutant prevention systems on a real-time basis. Therefore, the company can quickly identify and take actions to any problems in water pollutant indices including chemical oxygen demand (COD), suspended solid (SS), and hydrogen exponent (pH). For the wastewater, the company reuses the water with extremely low pollution and treat the rest in much lower level than legal standard and discharge them to ocean. At its off-gas combined cycle power plants in Pohang and Gwangyang, discharged water is transferred to the wastewater treatment facility of POSCO and then collectively treated with wastewater from the steel mill. The fuel cell plant in Pohang does not produce any wastewater.

### ● Water Consumption

(Unit : ton)

Worksites	2015	2016	2017
LNG Combined Cycle Power Plant	831,193	912,227	784,429
Gwangyang Off-gas Power Plant	742,159	584,574	612,841
Pohang Off-gas Power Plant	1,042,641	1,075,527	1,015,295
Pohang Fuel Cell Plant	64,243	56,938	80,272
<b>Total</b>	<b>2,680,236</b>	<b>2,629,266</b>	<b>2,492,837</b>

## Waste Control

There are several types of waste generated in power plants: general waste such as sludge from wastewater, waste synthetic resins, and waste adsorbents, as well as designated wastes including liquid waste oil and solid waste oil. By introducing the "Allbaro System" operated by the Korea Environment Corporation, POSCO ENERGY transparently manages the entire waste treatment process from generation, storage, transfer to final disposal. The company also minimizes the amount of waste discharge by conserving resources and increasing recycling. The wastes are treated legally through the outsourcing agency, and the waste paper and scrap iron are recycled through the professional company.

## Chemical Substance Control

At our power plants, we use chemical substances to produce purified water for our facilities and to control air and water pollutants. The com-

pany manages chemicals in compliance with all relevant laws and regulations including the Chemicals Control Act, and Occupational Safety and Health Act. POSCO ENERGY also strives to prevent any chemical incidents from occurring. The company regularly conducts training sessions to make sure that the workers are fully capable of handling toxic chemical leaks in a safe way.

## Biodiversity Conservation

POSCO ENERGY's policies for diversity are indicated in the code of ethics. To minimize environmental impact on the on-/off-shore ecosystems near the power plants, the company performs environmental impact assessments thoroughly before/after the construction to preserve surrounded ecosystem and improve the environment continuously.



## SPECIAL REPORT 2

## Samcheok Coal-fired Thermal Power Plant

In July 2012, POSPOWER submitted the letter of intent to the Korea Power Exchange (KPX) for the construction of two units of coal-fired thermal power plants with the capacity of 2,100MW in total (1,050MW each). This was reflected on the 6th Basic Plans for Electricity Supply and Demand in February 2013, and POSPOWER received a permission for the power generation project in July 2013. The company completed licensing and fishery compensation agreement in December 2016, signed an agreement of community shared growth collaboration with Samcheok City in April 2017, and finalized the agreement for using sea area in October 2017. In accordance with the energy transition policy of the government, the environmental impact assessment was delayed, but discussion about the assessment was agreed upon in December 2017 with the relentless efforts of the employees and construction attraction activities of Samcheok residents. In January 2018, plans for power source development and construction were finally approved by the government.

### Project Finance (PF) Contract

In January 2018, right after the approval from the government, POSCO ENERGY negotiated with the financial investors and financial firms including KDB Infra regarding the sales of shares. In April, the KDB Bank began attracting investors. On May 18th, the company received the line of credit (LOC) from the preliminary financial firms, and on May 28th, the company set the distribution of financing amount. Finally on June 7th, the company completed financial contract worth KRW 3.9 trillion.

### Engineering Procurement Construction (EPC) Contract

In July 2018, POSCO ENERGY signed EPC contracts with Doosan Heavy Industries (KRW 1.8 trillion) and POSCO E&C (KRW 1.7 trillion) for building Samcheok Coal-fired Thermal Power Plant eco-friendly and this project of high-end technology is expected to be completed by 2024.

#### ● Project Milestone

Category		2014	2015	2016	2017	2018	2019	2020	2021
Permission	Environmental Impact Assessment	Kick-off Apr.	1st Draft Feb. Final Draft Jul.		Agreement Sep.				
	Approval of Implementation Plan				Aug. Jan.				
	Approval of Construction Plan				Oct. Jan.				
Power Plant Construction		2018	2019	2020	2021	2022	2023	2024	
		Civil Works Kick-off Aug.	Steel Frames Incoming Dec.	Pressure Valve Installation Sep.	Connect Electricity Dec.	First Ignition Jul.	Unit 1 Completion Nov.	Unit 2 Completion Apr.	
Power Transmission Line Construction		Path Selection Committee Formation Feb.	Path Selection Completion Nov. (Environmental Impact Assessment Plan)		Construction Kick-off Apr.		Construction Complete Feb.		

### Preparation for Eco-Friendly Power Plant

Samcheok Coal-fired Thermal Power Plant introduced the global top-level of environmental pollutant prevention facilities to pre-emptively eliminate various environmental pollutants including SOx, NOx, and dusts.

POSCO ENERGY applied the wet-type limestone-gypsum process for SOx to discharge in 15 ppm, which is about 60% of the approved standard (25 ppm) set by the Clean Air Conservation Act. This technology enables to eliminate SOx and recycle gypsum which is a by-product created from the process.

The low NOx burner is used to reduce NOx generated during the combustion of coals. Then, the company treats NOx through the selective catalytic reduction (SCR) which is installed behind the boiler. The SCR is a means to eliminate NOx by adding ammonia as catalyst to enable the emission of NOx in density of 10 ppm or lower, which is about 66% of the emission allowance (15ppm) set by the Clean Air Conservation Act.

Coals used as fuel are transported from loading zones to power plants through the sealed cylindrical conveyor belts. After transported to the power plants, coals are stored in indoor silos. These processes prevent any dust scattering during transportation and storage. Coal ashes created by burning of the coals are also carried through the cylindrical conveyor belts to nearby cement factory to be used as fuel. Thus, POSCO ENERGY is able to prevent dust scattering generated from the others' outdoor storages in the power plants.

At Samcheok Power Plant, the ultra-low-temperature dust collectors are used to eliminate 99.963% or more fine dusts, created from coal combustion, and extra-small amount of dust scattering. Most of other existing power plants are located in the west coast and the fine dusts created from the plants are spread to the Seoul Metropolitan Area, which causes damages to the residents. However, Samcheok Power Plant is located in the east coast and the pollutants emitted through chimneys are blown away towards East Sea by westerlies, thereby preventing damages to the residents from pollutants.



Aeroview Image of Samcheok Power Plant

### Reduction Measures of Pollutants by Environmental Factor

#### Air quality

Dust proof cover	Preventing soil runoff and dust scattering
Sprinkler truck	Preventing the dust scattering and re-suspended dust
Wind screen	Preventing of dust scattering outside operating section
Woad flusher facilities	Preventing dust scattering, cleaning and facilities for washing equipment

#### Water quality(Ocean)

Grit chamber	Discharge after precipitation suspended-load
Wastewater treatment facilities	Discharge after recycling and purification
Portable toilet	Commitment process of the designated company
Storage facilities for used oil	Whole commitment process after pickup and storage

#### Noise·Vibration

Soundproof	Preventing of noise diffusion as perforating operation
Rotary drilling rig	Exclusion of occurrence noise vibration
Portable soundproof air dome	Decrease noise by 10%, occurrence circle of influence by 100m
Blasting cover	Preventing of noise diffusion and scattering rocks

#### Soil

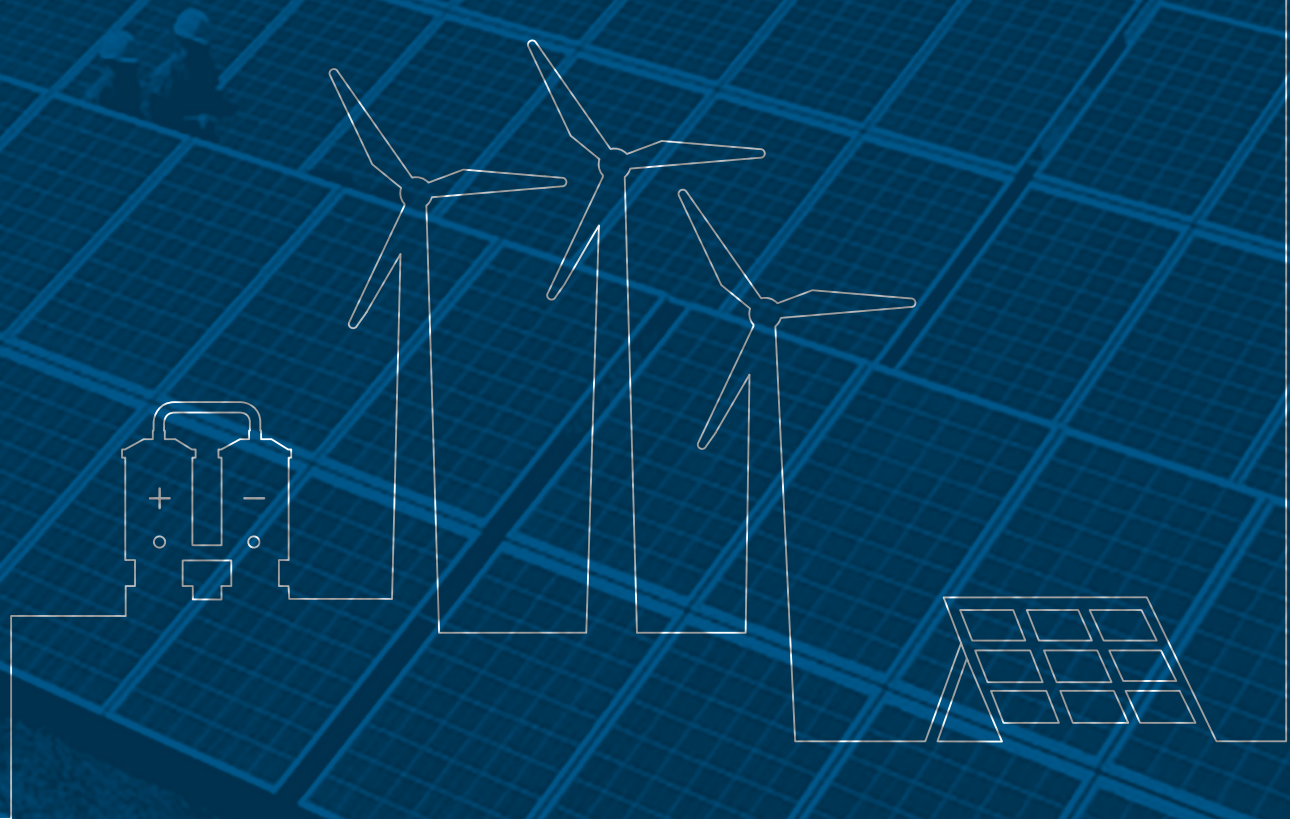
Designation for maintenance area	Operating and designation for Maintenance area of construction machinery
Prevention of leakage from a sewer pipe	Implementation pre-inspection(preventing the soil pollution)
Disposal of construction waste	Professional service treatment after separate stocking
Usage of the surplus soil	Usage of rock's dotted side, slope face of the planting area

#### Waste

Yard for construction waste	High-level repository	Recycling bin	Portable toilet
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# Activities & Performances



## Economy

### Overseas Business

POSCO ENERGY plans to expand IPP business focused on clean thermal power generation towards the strategic countries with the group's assets and network by completing constructions of Botswana Power Plant and Quynh Lap III Power Plant and pursuing new gas combined cycle power generation business.

The overseas IPP business will not only proliferate lives of the local residents, but also create jobs by building power plants in electricity-vulnerable countries. Indonesia Power Plant contributed to the local economy by procuring materials in the region: USD 634,284 in 2016; USD 221,334 in 2017; and USD 394,838 in first-half of 2018.

#### Vietnam Quynh Lap II Coal-fired Thermal Power Plant

Following the construction of Mong Duong II Coal-fired Thermal Power Plant in Vietnam, POSCO ENERGY is working to establish the second coal-fired thermal power plant in Vietnam. The company will carry out Quynh Lap II Coal-fired Thermal Power Plant project that will construct a coal-fired thermal power plant with a capacity of 1,200MW in the South-east Special Economic Zone in Nghệ An Province, situated 270km south from Hanoi. POSCO ENERGY earned the license for power generation project in May 2017. This project is in the process of feasibility study and is expected to begin in 2022. The company plans to consolidate our status in the Vietnamese market by successfully executing this project.

#### Vietnam Mong Duong II Coal-fired Thermal Power Plant

POSCO ENERGY has built and operates a coal-fired thermal power plant with a 1,200MW capacity in Quang Ninh province, North Vietnam. It is Vietnam's first IPP in the coal-fired power plant field, and the power plant is being jointly operated by POSCO ENERGY and AES (the U.S.) for 25 years before transferring its operation rights to the Vietnamese Government. The plant was completed in April 2015, which is five months ahead of schedule. It is the first coal-fired thermal power plant that POSCO ENERGY has built outside Korea, and it accounts for 2.7% of Vietnam's total electric power capacity.

#### Entered the Botswana IPP Market

POSCO ENERGY has been selected as the co-licenser of the project for Morupule B Phase II Units 5 and 6 Project (300MW) in the Republic of Botswana, South Africa with a Japanese company named Marubeni. This project is in the process of completing the key negotiations and planned to begin in 2018 until 2022. Morupule B Project will serve as a foothold in the South African power generation market for POSCO ENERGY by supply 30% or more electricity of Botswana through the eco-friendly circulating fluidized bed combustion boiler.

### Indonesia Off-gas Combined Cycle Power Plant

This project is the first overseas power generation project for POSCO ENERGY. This power plant was built in Cilegon, Indonesia with the capacity of 200MW (100MW x 2 units) in January 2014. Now this plant supplies 200,000kWh (amount for approx. 600,000 households annually) of electricity. As of June 2018, 12 out of 20 site managers are Indonesians.

### Fuel Cell Business

Since 2007, POSCO ENERGY has promoted fuel cell business which is an eco-friendly, high-efficiency dispersed power generation source that does not require power transmission lines. The company began operating a fuel cell production plant with the production capacity of 50MW fuel cell in Pohang, Gyeongbuk Province and became a company to provide a total solution of fuel cell by securing capacity for self-implementation of overall value chain ranging from technology development, manufacturing, installation/construction to maintenance. In 2003, POSCO selected the fuel cell business as the future growth engine for the group's sustainability, and since then, the group has invested in more than KRW 700 billion for securing original technology, developing commercial technology, and establishing production facilities. Accordingly, the company started the operation of a fuel cell production plant in 2009, established the world's largest fuel cell power generation complex in Hwasung, Gyeonggi Province in 2013, and accomplished the full localization of fuel cell as the first company in Korea in 2016. As of the first-half of 2018, POSCO ENERGY had supplied fuel cell power plant (facilities) with a capacity of 171.8MW at 22 sites, which takes about 60% or more of market share in Korea, thereby maintaining the leading position in the industry.

### Eco-friendly Energy Source

Fuel cell is a means of future power generation that produces electricity and heat through the electric chemical reaction of hydrogen and oxygen, without combustion process. As it directly converts chemical energy to electric power, it not only has low energy loss but also does not create environmental pollutions including air pollutants and noises. Moreover, it has high spatial efficiency, which enables its installation in the center of cities where real estate prices are expensive. Unlike renewable energy that inevitably has high volatility due to its dependence on the natural environment including solar energy and wind, fuel cell is an energy source that enables stable power generation everyday without being influenced by external factors. Nowadays when the fine dust is an emerging social issue, fuel cell provides indirect solution as it has an effect of cleaning the atmosphere by purifying outside air to put in the system, while the other energy sources either generates fine dust or are irrelevant to reducing fine dust. Fuel cell eliminates fine dust through



the purification system when the air is inhaled in order to maintain its performance. Then, the air is emitted after creating electricity through the electric chemical reaction; therefore, fuel cell power generation contributes to reducing fine dust in the atmosphere. POSCO ENERGY will continue its efforts to consolidate fuel cell's position as an eco-friendly, high-efficiency dispersed energy source in the trends of paradigm shifts from the traditional power generation system through large-scale power plants and ultra-high power transmission lines to the dispersed, eco-friendly power generation system.

### Quality Competitiveness

POSCO ENERGY concentrates on securing quality competitiveness for market expansion and capacity building of fuel cell business. In order to do so, the company assigned the researchers at fields to carry out quality assurance and corrective actions. The company expects that this will enable the researchers to build data and experience from the actual operation of plants and will also aid them with process establishment and intensive training courses, thereby nurturing them to core talents in the fuel cell industry.

In addition, re-certification of ISO 9001:2015, along with the rearranging of internal work standard system, will be executed for systemizing and sophisticating the quality management. Based on the principle of quality prioritization, the company will continuously improve the work standard and establish new standards for localized processes after re-certification, and further upgrade the level of company-wide quality management. Our development in quality competitiveness can be confirmed through the quality indices including annual operation rate, failure rate, and life cycle. As the technology of long-life fuel cell has passed approval stage for commercialization, the company plans to continue securing long-term sustainability of the fuel-cell business by strengthening quality competitiveness.

### Winning Orders/Sales

POSCO ENERGY conducts order and sales activities in accordance with the principles of selection and concentration to secure sustainability of the fuel cell business. In 2016, the company established a 20MW fuel cell power plant at Noeul Park, in Seoul. As the first large-scale fuel cell power plant in the center of a city, this project proved that the fuel cell is an eco-friendly power source that can be stably installed and operated in the congested area. At the second-half of 2018, a fuel cell power plant with a capacity of 10MW will be built ordered by CGN in Yeosu and this is the 4th introduction of fuel cell by CGN. CGN has chosen the fuel cell of POSCO ENERGY after integrated analyses of policies, markets, product performance, and operation experience, and the two parties reached a successful agreement to maximize mutual profits. The company believes that this project with CGN will be a basis for enhancing sustainability of the overall industry.

### ● Key Performance

- 20MW Plant in Noeul Park in Mapo-gu in 2016 – The first city-type dispersed power source
- 10MW Plant at CGN in Yulchon, Yeosu in 2018 – Mutual contract between manufacturer & power



Noeul Fuel Cell Power Plant

### Policies and Schemes

Following the technological development of new and renewable energy, the paradigm of the energy industry is shifting to eco-friendly and dispersed energies. As an energy source with stability and credibility, fuel cell is recognized as an effective countermeasure for potential systematic issues that can be caused by the increased portion of new and renewable energy. R&D and demonstration of future technologies using fuel cell including Power to Gas (P2G) are actively carried out. In such environment, the fuel cell businesses including POSCO ENERGY agreed on that improving competence in the private sector and continuous support and interest of the government are necessary. Therefore, the Fuel Cell Industry Development Association was founded in 2016 as a communication channel to converge everyone's idea. This organization conducts various activities to establish schemes and improve regulations under the integrated goal of sustainability of fuel cell industry. In 2017, the organization began the National Assembly Fuel Cell Forums with 40 members and held diverse debate sessions as a means of finding solution for future fuel cell industry.

## Society

### Safety & Health

POSCO ENERGY strives to standardize safety and health into the corporate culture by changing the awareness and actions of all employees including CEO and suppliers. The safety and health management systems are operated at every worksite and the standards of safety and health management are improved constantly.

The company holds the disaster-free/accident-free safety conference with the suppliers to provide training for preventing safety accidents and implement the labor-management combined safety campaigns at power plants more than twice a year to continuously strengthen safety activities at worksites. As other means to increase employees' awareness of safety, improvement activities including Near-Miss activity and Risk Top 10 System as well as legal/internal training and private-public-military joint fire training are conducted. Since 2015, the company has been engaging in social contribution activities ran by collaboration between the private and public sectors to spread awareness of safety to both employees and society. POSCO ENERGY signs a memorandum of understanding (MOU) annually with the Ministry of Interior and Safety (MOIS) to carry out safety support for socially vulnerable groups, promotion of safety experience training by life cycle, mutual promotions on contents for safety and culture activities and safety grievance channel. In particular, the company conducts daily safety inspection to energy vulnerable groups and daily safety training at the local childcare centers in the communities nearby power plants.

#### ● Major Safety Activities at Worksites

- **Preliminary Response to Risk Factors including Natural Disaster and Gas Leak**
  - Create safe worksite through management of KOSHA and PSM
  - Safety patrol at facilities and regular management of risks
- **Accident-free Worksite Creation through Self-driven Safety Activities**
  - Safety mind level-up of employees and standardization of voluntary safety management
  - Enhance management level for disaster preparedness

#### Change Management of Safety & Health Awareness

To create safety work environment, executives and employees conduct various change management activities. An executive in charge sends out safety letters monthly to employees and host the voluntary safety meetings. Moreover, constant inspections are conducted through feedback on monthly safety reports, thereby showing concerns and leadership. Employees take self-driven safety activities, while the suppliers also comply with the same work standard to practice daily safety management.

### Self-directed Safety Spread Activities

The Self-directed Safety Spread (SSS) activity has been implemented since April 2016. CEO of POSCO ENERGY delivered the message through video clip to request employees at fields for early adoption of safety activities as the beginning, and various activities were done with the practical measures of basic practice, safety mind level-up, and enhancing safety competence. POSCO ENERGY provides safety training to the worksite supervisors on the isolation locking system (ILS) and the tool box meeting (TBM) and lead them share with other employees. In 2017, field-based, future preparedness, safety competence, and employee health were set as the 4 strategies, and the Safety First Day was held in February for settling SSS Activities. During the event, best practices of safety and health were presented to safety managers of each worksite and supplier. In 2016, the company shared a safety video to employees, and in the second-half of 2018, the company will produce new videos for the visitors.

### Safety & Health Management System

Our domestic worksites in Incheon, Pohang, and Gwangyang has acquired KOSHA 18001, while the Indonesia worksite received OHSAS 18001, and all worksites operate the Plan-Do-Check-Action (PDCA) process systematically. The process safety management (PSM) system guided by the Occupational Safety and Health Act is also run to prevent crucial industrial accidents. In accordance with the Occupational Safety and Health Act, POSCO ENERGY operates the Occupational Safety & Health Committees, composed of same numbers of labor and management as members, to document contents about safety and health at worksites and to apply relevant programs on all employees. The company conducts additional training to all employees for compliance with the 12 action tasks of the PSM. In addition, the company improves its voluntary safety inspections through the cross checking of safety managers from different worksites. Through these activities, Incheon Worksite earned the P level, which is the highest, and all other domestic worksites received S level for excellent standard for safety management system.

### Safety Management of Partners

POSCO ENERGY was selected as the best company for shared collaboration program hosted by the Ministry of Employment and Labor (MOEL). The company ensure that the suppliers keep the same level as POSCO ENERGY in our worksites, and outside of ENERGY, the company aids them with risk assessment, goal planning, and process safety management to secure internal management capacity.

### Health Management for Employees

POSCO ENERGY runs a program that encourages all employees to exercise and stretch once a day and invites experts to prevent musculoskeletal disorders. The company also applies the Material Safety Data

Sheet (MSDS) for managing chemical substances and strives to ensure employment safety and health through various activities including enforcing all employees including 746 engineers for mandatory use of personal protection equipment and training. Furthermore, the company conducts 3W Campaign. Since 2017, the company has encouraged drinking 2L or more Water, 30 minutes or longer daily Walking, and Well-being through low-salt diet, and as of June 2018, 202 employees participated in daily walking through the mobile application.

### Zero Accident of Human/Facility Resources

The zero-accident campaign is participated by all employees to prevent occupational accident within a certain period. If the aimed period of zero accident is achieved, the KOSHA provides a certification. In May 2016, Gwangyang Power Plant accomplished 3 multiple numbers (1,871 days) of zero accident of human resources, while Pohang Power Plant and Busan SRF Power Plant achieved 2 for human resources in August and 1 for facility resources in May, respectively. The fuel cell power plant achieved 4 multiple numbers in July 2018, Samcheok Power Plant achieved 1 multiple number on June 7th, 2018 for the first IPP. Incheon Power Plant is soon to reach the 2 multiple numbers for zero accident, and Indonesia not only achieved zero outage for 2 consecutive years since August 9, 2016, but also received certification for 1.2 million hours of zero accident from the Indonesian Government since its first operation in March 2014. Vietnam Mong Duong II Power Plant was recognized for its accident-/disaster-free operation and received the Power Utilities of the Year-Vietnam in 2016 Asian Power Award, which is the most honorable award in the Asian power generation industry.

## Supply Chain

### Transparent Transaction

POSCO ENERGY adopts a transparent procedure from selecting, contracting and paying on purchase, to assessing partners to create a fair and transparent transaction culture.

### 100% Cash Payment on Purchase

To facilitate smooth financial flows for SMEs, POSCO ENERGY pays for the purchases from SMEs in cash, and these payments are made twice a week. The payment is completed no later than five days after the products are received.

### Fair Selection and Evaluation of Partners

POSCO ENERGY abides by the standards for selecting and evaluating suppliers in accordance with the work principles. Through the Supplier Relationship Management (SRM) system of POSCO GROUP, the company enhances fairness of the assessment of suppliers. During the regis-

tration and assessment of the suppliers, the company encourages them to fulfill social responsibilities in the areas of environment and safety to extend the scope to SRM of the suppliers. For the suppliers who comply with the system voluntarily, the company offers incentives as its efforts to strengthen competitiveness of the outstanding suppliers. In the period from 2016 to 2017, POSCO ENERGY conducted the SRM assessment to 36 suppliers (3 excluded from 39 for overlap), while allowing appeals and opinions before final decisions. As a result, 7 suppliers were evaluated as excellent (90 points or higher), 28 as good (70 points or higher), and 4 as poor (lower than 70 points). Starting in 2018, the plans for supplier assessment management are renewed in accordance with the reorganization of the Sourcing Group (SG). The supplier assessment management that used to be conducted twice a year for the SPOT contracts (purchase order amount of KRW 100 million or higher) – that fulfilled certain condition and were only applied to the regular suppliers – is now conducted once a year toward the strategic SG in order to realize optimized supplier pool through the In & Out management of the suppliers.

#### SG Assessment (80 points or higher)

- Maintain SG for 80 points or higher
- Conduct supplier optimization and provide incentives including best supplier awards for 90 points or higher

#### SG Assessment (lower than 80 points)

- Suppliers lower than 80 points will be selected as contract discontinuing company, but those with possibilities for improvement will remain as potential suppliers

### Transparent Contracting

POSCO ENERGY utilizes the e-Procurement system to secure transparency in the contracting process. In addition, the executive in charge of purchasing supervises and runs the Subcontracting Deliberation Committee when needed to self-evaluate the compliance with the Subcontractor Act. This process is constantly improved in order to ensure fair and transparent contracts.

### Improved Operation of Bidding System

To prevent decrease in suppliers' profitability and supply quality due to excessive bidding competition, POSCO ENERGY adopted the raw price limit system and market price competition instead of the lowest price. The company will drive suppliers to bid with proper margins, thereby contributing to its win-win growth.

## Various Support Programs for Partners

As a member of the POSCO GROUP, POSCO ENERGY runs win-win growth programs in a variety of areas, contributing to the POSCO GROUP's mutual growth ecosystem.

### Benefit Sharing System

POSCO ENERGY operates the Benefit Sharing System to cooperate with the SMEs in conducting joint projects including new technology development and localization and to share financial profits. In conjunction with the Ministry of Trade, Industry and Energy, the company donated investment funds and provides payments for prototypes and cash compensation to those performed joint tasks with the highest implementation rate in POSCO GROUP, thereby leading the shared growth culture.

### Win-Win Support Team

POSCO ENERGY leverages the abundant experience and the knowhow of its executives by organizing a Win-Win Growth Support Team to help partners complete the projects in which they are engaged. By launching projects under the control of an executive in charge, the company offer practical supports to the partners for office innovation and site improvement and also expands scope of the activities to ethical training and appreciation sharing.

### Support for Industry Innovation Campaign 3.0

POSCO ENERGY has annually donated KRW 100 million to the fund for "Industry Innovation Campaign 3.0" organized by the Ministry of Trade, Industry and Energy until 2017. The fund was used in supporting the secondary or lower partners for management consulting and equipment purchases, thereby strengthening their competitiveness. A partner of POSCO ENERGY was nominated as the most outstanding company for its improvement performance among the participants in the Industry Innovation Campaign for the past 5 years and had a chance to have a visiting ceremony from the Deputy Minister of the Ministry of Trade, Industry and Energy.

## Employee Satisfaction

### Good Labor-Management Relationship

POSCO ENERGY conducts collective bargaining with the labor union regularly and reflects opinions from the labor union and Labor-Management Council regarding important decision-making and labor conditions that may affect employees' working condition directly. The company separately holds monthly meetings to review any grievances and concerns for intimate communication of labor-management. The Labor-Management Councils and Grievance Resolution Committees at each worksite discuss about all issues requiring cooperation of la-

bor-management including workers' grievances, salary system, and working environment. The Grievance Resolution Committee ensures confidentiality, systematically resolves issues through department heads' consultation with the employees, and arranges resolution of those issues that cannot be settled right away through the Labor-Management Council.

### Fair Evaluation and Compensation

POSCO ENERGY offers fair evaluations and compensation to help employees attain their full potential. Regardless of their gender, employees will be treated equally through independent and objective evaluations and fair compensation. The company annually selects excellent employees who contributed to its development in line with the vision and core values, and present the POSCO ENERGY Award for model employee.

## Customer Satisfaction

### Strengthening Communication with Customers

POSCO ENERGY has established the Fuel cell Real-time Information Sharing System (RIS), a communication channel that enhances service reliability, customer satisfaction, and convenience. RIS enables customers to check the real-time operation status by facility, operation data, and various reports, as well as the status of acceptance and process of customer requests.

The company also operates the RIS system, which incorporates a data protection function that keeps customers' facility data confidential. POSCO ENERGY always strives to respond to customers' requests through the customer surveys and further improve their satisfaction.

### Enhancing Customer Trust and Satisfaction

In line with customers' demand for a greater variety of training, POSCO ENERGY has been expanding the customized technology seminars for our customers. These seminars enable us to provide customers with much-needed technical knowledge, such as the operation and control of fuel cell systems. The company offers technology training to the customers every year for strengthening communication and plans to reinforce training quality by developing more various programs. The customer survey result in 2017 was 93.5.

#### ● Performance of Technology Training to Customers

Category	2016	2017	2018	Total
No. of Training	15 cases	9 cases	4 cases	28 cases

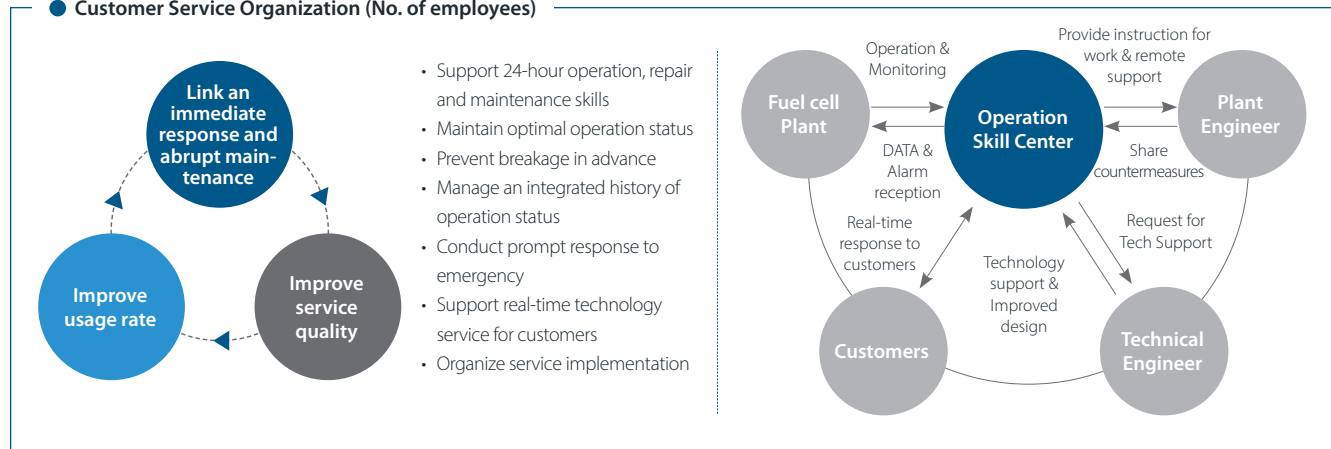


## Strengthening Technology Support to Customer

POSCO ENERGY has operated the 24-hour Korea Technical Assistance Center (KTAC) within the Pohang Fuel Cell Manufacturing Plant and trained technical experts specializing in operation skills in cooperation with the program developer. To enhance technical support for customers, the company founded the Operation Skill Center in 2015. As the customer interests in operation technology has increased, the

researchers of operation inspection were integrated into the service organization through the restructuring in 2018, thereby strengthening the technical support for operation. The Operation Skill Center will advance the company's endeavors to sustain optimal fuel cell operation and maximize customer satisfaction by sharing facility operation and supporting technologies.

### Customer Service Organization (No. of employees)



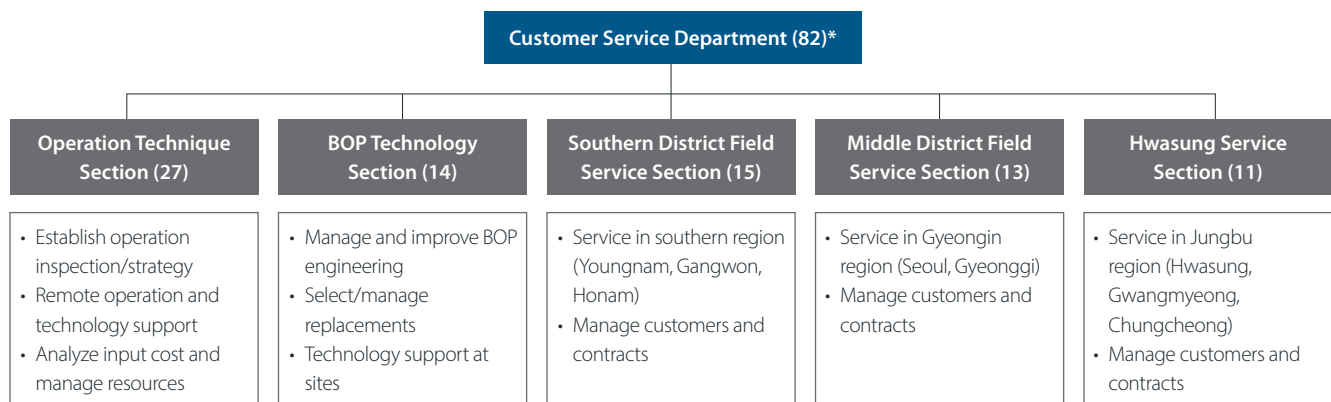
## Customized Regional Services

To offer customized services, POSCO ENERGY operates customer service centers in 3 districts: Gyeongin, Jungbu, and Nambu regions, to respond to customers quickly. This district-based service system allows us to focus on stable fuel cell operation and improvement on operation rate, while promptly answering customers' requests. The company will review the possibility to assign resources in the southwest region once the Yeosu CGN Phase 4 (10MW) is completed.

## Establishing Precise Specification of Product

POSCO ENERGY secured technologies for product engineering and operation inspection through internalization of original technology and established precise specification of product by deriving optimized operation condition. Moreover, the company is contributing to product quality enhancement by constantly updating the standards for construction, test operation, maintenance, and operation.

### Customer Service Organization (No. of employees)



\*Head of department and temporary employees included.

## Social Contribution

### Implementation Strategies

Capitalizing on our expertise, POSCO ENERGY decided on "Energy for a Better World" as its social contribution motto. This expresses its drive to bring light and energy to places in the world that need energy. Our on-going social contribution activities are set along on two axes: representative programs for neighbors that need energy and the volunteer work carried out by executives and employees.

#### ● Social Contribution Motto



#### ● Implementation Strategies

##### Motto

Energy for a Better World

##### Representative Programs

###### Energy Dream

- Improve energy efficiency for aged houses and install solar power generators.
- Provide electric safety inspections and draw energy murals.

###### Community Child Center

- Dispatching university student volunteer corps. for study mentoring
- Improving the environment of community child centers

##### Volunteer Work by Executives and Employees

###### BEST Activities

Basic	Entertaining	Strategic	Together
<b>Sharing Saturday</b> Volunteer work on Sharing Saturday by division	<b>Family Volunteer Work</b> Volunteer work with family by division	<b>Energy Volunteer Work</b> Volunteer work related to the energy industry	<b>POSCO Group Volunteer Work</b> United volunteer work by POSCO GROUP

##### 1% Sharing

Raise social contribution fund through donation of 1% of salary, and the company's matching grants

### Energy Dream

Since 2012, POSCO ENERGY has been implementing the "Energy Dream" project to realize energy welfare of the energy-vulnerable groups, estimated to be about 1.78 million households. The term, "Energy Dream" has an ambiguous meaning of the energy-vulnerable groups' living in a bright, warm, and safe place and having "Dreams" through various supports by "Giving (the same sound with Dream in Korean)" energy.

#### ● Major Programs

Category		Details	Project Areas
Warmer	Improve energy efficiency	Replace double pane windows and aged boilers, provide insulation work and floor work	Incheon, Pohang, Gwangyang, Samcheok
Cleaner	Install solar power generators	Install solar power generators	Gwangyang, Samcheok
Safer	Conduct electric inspections	Replace LED lights and aged electrical facilities, inspect electric safety	Incheon, Pohang, Gwangyang
Brighter	Draw murals	Create murals with the them of "Light" in schools and towns	Incheon, Pohang, Gwangyang

### Community Child Center that Brightens the World

Since 2013, POSCO ENERGY has been continually offering support for 10 community children centers located about 10km away from the LNG Combined Cycled Power Plant in Seo-gu, Incheon. Major activities include the university student volunteer group's learning and special activities as mentors.

#### ● Key activities

Category	Details
Mentoring of "Energy of Hope", University Student's Volunteer Group	Provide regular lecture and extracurricular activities once a week.
Safety awareness education	Organize fire safety training and excursion to disaster experience center for safety awareness.
Improved the environment of child centers	Support heating and cooling costs, education materials and equipment, furniture made by the executives and employees.
Culture & arts programs	Run the experience program to enable children to have fun while reading books and listening to music

## Volunteer Activities

POSCO ENERGY contributes to local communities in four different types. Our year-long volunteer service called “BEST Volunteer Activities” are composed of: Sharing Saturday (Basic), company-wide monthly volunteer activities conducted by small-groups in conjunction with volunteer organizations. Themed volunteer activities (Entertaining) where employees’ families and university students participate. Energy volunteer activities (Strategic) realize energy welfare and family volunteer activities (Together) carried out with POSCO GROUP. Through these programs, POSCO ENERGY’s executives and employees engaged in an average of 26.6 hours of volunteer activities in 2017.

### 1% Sharing

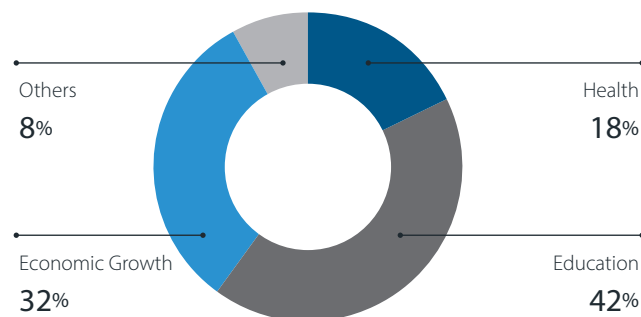
The 1% Sharing Fund is raised by the 1% Sharing Campaign, first initiated by POSCO ENERGY executives in 2011, and is further expanding due to the growing participation of the employees. The company also donates a matching grant equivalent to the employees’ subscriptions to the 1% Sharing Fund at the end of the year, and it has created a corporate culture of sharing. In the hope of creating a healthier, brighter, and unified world, POSCO ENERGY operates the three businesses. The fund is used to help pay for the medical fees for children suffering from childhood cancer, mural paintings in business premises, and partner institutions joining the Sharing Saturday program. All projects that use funds from the 1% Sharing shall be reviewed and transparently spent by the Workers’ Council.

## Contribution to Local Communities

POSCO ENERGY believes that a company’s growth should bring better quality of life to local residents and activate their economy. Throughout our business sites in Incheon, Gwangyang, Pohang, Samcheok, and overseas, the company not only offers new job opportunities and convenient facilities, but also makes donations to Cheongna Culture Center, run a youth table tennis club, employ graduates from Samcheok High School, and other local talents through scholarships.

Indonesia Power Plant performs talent sharing in the vulnerable areas by improving living environment and inspecting electric facilities. In March 2018, Indonesia Power Plant visited temples, childcare centers, and schools to conduct maintenance and painting of the buildings, replaces lights and inspected deteriorated electric facilities, and provides gift boxes with bread and milk. Since February 2016, the Korean language classes are run to share Korean language, culture and food with local residents, and the number of these activities were increased due to high interest and participation of the residents. In Vietnam, health, education, and economic growth are set as major projects for social contribution, and in 2017, USD 110,000 worth of donation was contributed to the community through the collaboration with local health center, Quang Ninh Fund for Children, and NGOs.

### 2017 Social Contribution of Vietnam Power Plant



## Innovation

### Achieving High Profit through POSTIM

POSCO ENERGY takes intensive execution of the POSCO Total Innovation Methodology (POSTIM) for company-wide innovation in the crisis of falling of LNG Power Plant operations due to the oversupply of electricity. POSTIM plays an important role for crisis recovery as an innovation model of POSCO GROUP.

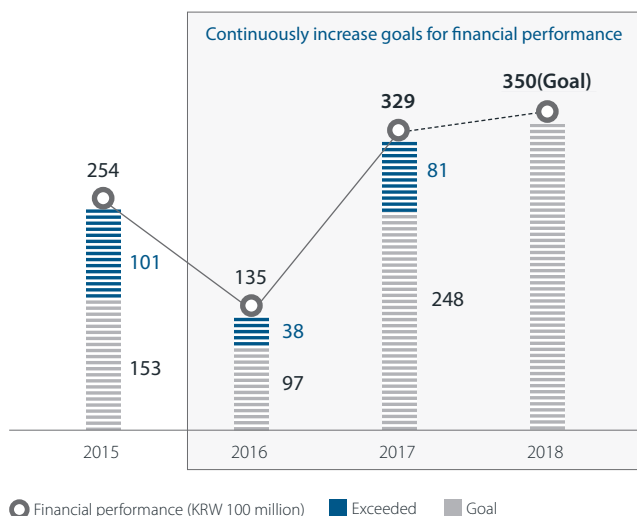
**Increase work execution with POSTIM,  
a practical means of realizing goals**



### KRW 32.9 billion generated by PSS+

The POSCO Six Sigma Plus (PSS+) is a unique way of work of POSCO that identifies projects and focus on creating performance with the goal of profit improvement. POSCO ENERGY was not only able to enhance profit through PSS+, but it also is accelerating on building virtuous cycle of 'project execution - differentiated performance - unexpected compensation'.

### Performance of Innovation Activities



In addition, through the On-line Idea activity with all employees and the Off-line Idea activity centered on executives and leader-levels, the company is creating high-performance projects.

POSCO operates the POSCO Certified Professional (PCP) system to execute these high-performance projects. The PCP system enables employees to be promoted to management-level if their capacity, performance and contribution are outstanding. A total of 8 PCPs have been selected and each PCP handles projects making KRW 1 billion or higher annually.

### Dual Ladder System for Human Resources Cultivation



### QSS+ Activities to Improve Performance and Safety

The Quality Stability Safety Plus (QSS+) activities refer to maintenance and constant improvement of facilities and equipment. POSCO ENERGY implements daily improvement activities focused on goals of each business. The Power Plant Operation Division purses cost reduction and facility stability, the Fuel Cell Business Division focuses on quality improvement.

### Rate of Daily Improvement Activities 2017 : 100%

Category	Incheon	Gwang-yang	Pohang	PT. KPE	Total
5S	5	0	24	45	74
My Machine (Jump-up)	16(16)	0(2)	6	28	50
My M&S	3	2	1	0	6

Moreover, to promote self-driven improvement activities at sites, POSCO ENERGY operated QSS+ Improvement Leadership Courses since 2013, and a total of 181 persons have completed the courses. QSS+ improvement leader execute corrective action tasks through benchmarks of POSCO GROUP and best practices in Japan, thereby creating great performance.

### Improvement Activities in Working Method

POSCO ENERGY promotes improvement activities in working methods to enable employees to focus on more valuable work. To improve the culture of orders, reports, and meetings, the company conducted analysis of 8 pilot departments for 6 weeks for voluntary guidelines of plan-compliance-evaluation. As the result showed improved effect, the company plans to expand the scope to company-wide.

### Innovation Support for Subsidiaries

POSCO ENERGY provides support for the innovation activities of subsidiaries and affiliates. The company offered customized consulting for innovation at Busan SRF Power Plant to identify improvement tasks and conducts innovation training to managers and resident employees in Indonesia Plant on field inspection of facilities.

### IP Festival for Innovation

POSCO ENERGY held the IP (Innovation POSCO) Festival and rewarded best practices in order to emphasize the commitment to innovation. The company will proactively cope with external changes through innovation and grow to become a global integrated energy company.

## Information Protection

### ISMS Certification

Certification of the Information Security Management System (ISMS), run by the Ministry of Science, ICT, and Future Planning, is a system that

checks compatibility of a system that establishes, manages, and operates to protect key intellectual properties from cyber attacks. Although the objects of mandatory certifications are the industries of Information and Communications Technology (ICT) and securities, POSCO ENERGY voluntarily acquired the ISMS certification in 2015 to protect information of power plants which can be considered as important protection facility of a country and fuel cell sector which has a leading technology development. To obtain the certification, the company organized a task force team for 5 months from January 2015 to conduct self-checkups for 104 items and assessment criteria, and improved vulnerable areas. The company also revised the internal data protection guidelines according to the relevant laws and regulations. Owing to the ISMS certification, the company was able to reinforce security awareness of POSCO ENERGY and partners on security issues and take the measures to protect intellectual properties. Based on these activities, the company was able to prepare for potential accidents of information breach and hacking and did not have any case of information breaches between 2016 and June 2018.

### Information Protection Activities

In order to enhance employees' awareness of information security, POSCO ENERGY shares important matters related to information protection including regular changing of password on bulletin boards and intranet pop-ups through the Information Campaigns held twice a month.

If there is any major incident or precedent related to information protection, the company shares this information to employees right away to prevent incidents of information breach.

POSCO ENERGY encourages employees to voluntarily comply with the procedures for entering and leaving the office by wearing identity cards at all time, as a means to strengthen our security level. In addition, the company established security gates in the head office to prevent any strangers to enter the offices secretly when the employees enter or leave, thereby preventing breaches of managerial or business information and financial losses through theft.

### Mandatory Guidelines for Information Protection

01. Change PC passwords every 60 days

02. Do not leave any documents on desks or printers.

03. Lock drawers or cabinets before leaving.

04. Turn off the power supply before leaving

05. Assign security levels of documents and limit illegal dispatch.

06. Get supervisors' approval for taking laptops out of the office.

07. Delete and report any email or SMS phishing instantly.

08. Do not access to harmful websites (P2P, stock exchange, etc.)

09. Do not use unauthorized devices (USB, WiFi, etc.)

10. Wear ID cards exposed and do not let any strangers to enter.



# Appendix

Independent Auditor's Report

Financial Statements

GRI G4 & ISO 26000 Index

Independent Assurance Report

UN Global Compact Index

Membership in Associations

Participants

# Independent Auditor's Report

## The Board of Directors and Shareholders POSCO ENERGY Co., Ltd.:

We have audited the accompanying consolidated financial statements of POSCO ENERGY Co., Ltd. and its subsidiaries (the "Group"), which comprise the consolidated statements of financial position as at December 31, 2017 and 2016, the consolidated statements of comprehensive income, changes in equity and cash flows for the years then ended, and notes, comprising a summary of significant accounting policies and other explanatory information.

### Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Korean international Financial Reporting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

### Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with Korean Standards on Auditing. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Group as of December 31, 2017 and 2016 and its consolidated financial performance and its consolidated cash flows for the years then ended in accordance with Korean International Financial Reporting Standards.

### Other Matters

The procedures and practices utilized in the Republic of Korea to audit such the consolidated financial statements may differ from those generally accepted and applied in other countries. Accordingly, this report and the accompanying separate financial statements are for use by those knowledgeable about Korean auditing standards and their application in practice.

*KPMG Samjong Accounting Corp.*

KPMG Samjong Accounting Corp.  
Seoul, Korea  
March 4, 2018

This report is effective as of March 4, 2018, the audit report date. Certain subsequent events or circumstances, which may occur between the audit report date and the time of reading this report, could have a material impact on the accompanying consolidated financial statements and notes thereto. Accordingly, the readers of the audit report should understand that the above audit report has not been updated to reflect the impact of such subsequent events or circumstances, if any.

## Financial Statements

### Consolidated Statement of Financial Position (KRW)

19 th For the period that ended on December 31, 2017

18 th For the period that ended on December 31, 2016

17 th For the period that ended on December 31, 2015

Classification	19th	18th	17th
<b>Assets</b>			
I. Current assets	1,139,655,130,291	827,231,236,928	771,726,815,088
1. Cash and cash equivalents	494,132,909,485	263,382,828,151	161,514,293,975
2. Trade and notes receivable, net	234,965,815,868	218,042,541,728	163,514,156,561
3. Other financial assets, net	90,487,853,547	61,051,919,895	32,345,779,774
4. Inventories	255,919,955,063	231,019,082,489	244,178,256,696
5. Other current assets	64,138,983,468	48,946,331,287	79,222,755,537
6. Current income tax assets	9,612,860	1,772,000,380	141,453,350
7. Assets held for sale	-	3,016,532,998	90,810,119,195
II. Non-current assets	3,883,737,958,745	4,100,628,522,784	4,314,484,849,950
1. Long-term trade and notes receivable, net	237,983,134,292	292,106,187,630	305,213,733,365
2. Other financial assets	45,535,262,171	32,375,630,847	46,743,619,629
3. Investments in associates	163,219,843,464	188,562,273,903	170,849,448,882
4. Property, plant and equipment, net	2,698,739,631,893	2,836,046,356,927	3,032,439,857,165
5. Intangible assets	593,033,960,842	598,569,349,327	616,338,095,925
6. Other non-current assets	51,005,727,946	52,881,448,200	41,500,076,180
7. Deferred tax assets	94,220,398,137	100,087,275,950	101,400,018,804
<b>Total assets</b>	<b>5,023,393,089,036</b>	<b>4,927,859,759,712</b>	<b>5,086,211,665,038</b>
<b>Liabilities</b>			
I. Current liabilities	822,345,978,437	980,807,380,671	769,199,471,836
1. Trade and notes payable	133,674,201,912	121,310,949,449	134,324,289,555
2. Short-term borrowings	120,000,000,000	50,000,000,000	-
3. Current portion of long-term bonds and long-term borrowing	389,135,469,067	666,647,838,043	427,067,704,771
4. Convertible bonds	-	-	1,167,972,607
5. Current portion of other liability	103,167,680,273	98,159,636,655	111,034,908,413
6. Current income tax liability	16,439,035,771	8,279,959,298	1,820,746,182
7. Current portion of provisions	24,621,007,903	25,285,676,440	21,923,332,652
8. Other financial liabilities	26,664,344,741	1,532,664,127	-
9. Other current liabilities	8,644,238,770	9,590,656,659	7,765,066,182
10. Liabilities of disposal group held for sale	-	-	64,095,451,474
II. Non-current liabilities	2,472,275,591,326	2,478,505,921,614	2,737,865,244,987
1. Long-term borrowings	930,547,891,716	970,601,925,455	1,032,959,560,017
2. Bonds	1,227,959,153,494	1,247,633,835,768	1,486,531,578,382
3. Other financial liabilities	10,503,705,025	24,529,296,328	31,226,430,076
4. Net defined benefit liabilities	839,039,730	7,544,744,269	4,432,755,947
5. Long-term provisions	157,461,308,435	87,826,614,554	41,638,477,824
6. Deferred tax liabilities	138,070,158,177	137,155,513,950	134,854,733,847
7. Non-current portion of other liabilities	6,894,334,749	3,213,991,290	6,221,708,894
<b>Total liabilities</b>	<b>3,294,621,569,763</b>	<b>3,459,313,302,285</b>	<b>3,507,064,716,823</b>
<b>Equities</b>			
I. Equity attributable to owners of the controlling company	1,715,425,025,694	1,454,287,038,825	1,552,016,664,623
1. Share capital	269,189,995,000	225,974,030,000	225,974,030,000
2. Hybrid bonds	498,468,200,000	498,468,200,000	498,468,200,000
3. Capital surplus	567,816,941,889	367,600,251,307	368,039,198,437
4. Capital adjustments	(216,864,557)	(216,864,557)	(5,322,133,824)
5. Accumulated other comprehensive loss	(29,075,451,318)	(1,408,422,054)	(19,149,843,916)
6. Retained earnings	409,242,204,680	363,869,844,129	484,007,213,926
II. Non-controlling interests	13,346,493,579	14,259,418,602	27,130,283,592
<b>Total equities</b>	<b>1,728,771,519,273</b>	<b>1,468,546,457,427</b>	<b>1,579,146,948,215</b>
<b>Total liabilities and equity</b>	<b>5,023,393,089,036</b>	<b>4,927,859,759,712</b>	<b>5,086,211,665,038</b>



## Consolidated Statement of Comprehensive Income (KRW)

19 th From January 1, 2017 to December 31, 2017

18 th From January 1, 2016 to December 31, 2016

17 th From January 1, 2015 to December 31, 2015

Classification	19th	18th	17th
I. Revenue	1,621,325,224,062	1,702,837,972,114	1,954,753,354,983
II. Cost of sales	1,390,162,190,139	1,521,455,455,580	1,707,059,630,581
III. Gross profit	231,163,033,923	181,382,516,534	247,693,724,402
IV. Selling, general, and administrative expenses	64,947,777,545	91,357,214,781	108,719,059,316
V. Operating profit (loss)	166,215,256,378	90,025,301,753	138,974,665,086
VI. Gain (loss) from equity method in associates	20,186,170,200	33,445,145,426	26,083,954,167
1. Gain from equity method in associates	20,794,637,749	34,340,828,762	26,614,061,101
2. Loss from equity method in associates	(608,467,549)	(895,683,336)	530,106,934
VII. Financial income (expense)	(81,250,404,790)	(127,764,040,981)	(128,922,920,582)
1. Financial income	37,310,194,886	22,382,985,395	43,592,754,700
2. Financial costs	(118,560,599,676)	(150,147,026,376)	172,515,675,282
VIII. Other non-operating income (expense)	(3,155,790,262)	(77,028,026,974)	8,266,619,176
1. Other non-operating income	3,933,666,579	3,074,207,591	28,020,046,332
2. Other non-operating expenses	(7,089,456,841)	(80,102,234,565)	19,753,427,156
IX. Profit before income taxes (loss)	101,995,231,526	(81,321,620,776)	44,402,317,847
X. Income tax benefit (income)	31,608,048,462	19,305,345,328	(4,665,424,049)
XI. Profit for the period (loss)	70,387,183,064	(100,626,966,104)	49,067,741,896
XII. Other comprehensive income (loss)	(28,814,149,447)	19,556,915,824	(3,209,970,303)
1. Item that will not be reclassified subsequently to profit or loss	521,378,019	2,195,613,077	(142,499,408)
(1) Remeasurement of net defined benefit liabilities	521,378,019	2,195,613,077	(142,499,408)
2. Item that may be reclassified subsequently to profit or loss	(29,335,527,466)	17,361,302,747	(3,067,470,895)
(1) Net changes in fair value of available-for-sale financial assets	802,368,741	8,356,950	(16,575,871,981)
(2) Change of equity from equity method	(13,862,127,195)	12,809,634,195	6,803,896,709
(3) Change of earned surplus from equity method	(97,535,999)		
(4) Foreign currency translation differences	(16,178,233,013)	4,543,311,602	6,704,504,377
XIII. Total current comprehensive income for the period	41,573,033,617	(81,070,050,280)	45,857,771,593
XIV. Profit for the period	70,387,183,064	(100,626,966,104)	49,067,741,896
1. Owners of the controlling company	69,130,740,329	(102,044,368,799)	49,259,412,248
2. Non-controlling interests	1,256,442,735	1,417,402,695	(191,670,352)
XV. Total current comprehensive income attributable	41,573,033,617	(81,070,050,280)	45,857,771,593
1. Owners of the controlling company	41,923,502,664	(82,546,105,616)	45,325,440,754
2. Non-controlling interests	(350,469,047)	1,476,055,336	532,330,839
XVI. Earnings per share			
1. Basic earnings per share (loss)	1,123	(2,633)	684
2. Diluted earnings per share (loss)	967	(2,633)	684

## Consolidated Statement of Changes in Equity (KRW)

19 th From January 1, 2017 to December 31, 2017

18 th From January 1, 2016 to December 31, 2016

17 th From January 1, 2015 to December 31, 2015

Classification	Equity Attributable to Owners of the Parent							Non-controlling interests	Total equity
	Share capital	Hybrid bonds	Capital surplus	Capital adjustments	Accumulated other comprehensive loss	Retained earnings	Total		
Jan. 1, 2015 (beginning, the year before previous period)	225,974,030,000	498,468,200,000	364,942,405,688	(5,198,776,050)	(15,361,148,192)	457,630,921,476	1,526,455,632,922	39,845,806,722	1,566,301,439,644
Current comprehensive income									
Profit for the period	-	-	-	-	-	49,259,412,248	49,259,412,248	(191,670,352)	49,067,741,896
Remeasurement of net defined benefit plan	-	-	-	-	-	(145,275,770)	(145,275,770)	2,776,362	(142,499,408)
Net changes in fair value of available-for-sale financial assets	-	-	-	-	(16,575,871,981)	-	(16,575,871,981)	-	(16,575,871,981)
Change of equity from equity method	-	-	-	-	6,803,896,709	-	6,803,896,709	-	6,803,896,709
Foreign currency translation difference	-	-	-	-	5,983,279,548	-	5,983,279,548	721,224,829	6,704,504,377
Total Comprehensive income	-	-	-	-	(3,788,695,724)	49,114,136,478	45,325,440,754	532,330,839	45,857,771,593
Transactions with shareholders:									
Hybrid bond dividends	-	-	-	-	-	(24,186,999,992)	(24,186,999,992)	-	(24,186,999,992)
Changes in ownership interests in subsidiaries	-	-	-	-	-	1,452,387,865	1,452,387,865	(13,247,853,969)	(11,795,466,104)
Others	-	-	3,096,792,749	(123,357,774)	-	(3,231,901)	2,970,203,074	-	2,970,203,074
Dec. 31, 2015 (end, the year before previous period)	225,974,030,000	498,468,200,000	368,039,198,437	(5,322,133,824)	(19,149,843,916)	484,007,213,926	1,552,016,664,623	27,130,283,592	1,579,146,948,215
Jan. 1, 2016 (beginning, previous period)	225,974,030,000	498,468,200,000	368,039,198,437	(5,322,133,824)	(19,149,843,916)	484,007,213,926	1,552,016,664,623	27,130,283,592	1,579,146,948,215
Total comprehensive income (expense):									
Net profit (loss)	-	-	-	-	-	(102,044,368,799)	(102,044,368,799)	1,417,402,695	(100,626,966,104)
Remeasurement of net defined benefit liabilities	-	-	-	-	-	2,195,788,451	2,195,788,451	(175,374)	2,195,613,077
Net changes in fair value of available-for-sale securities	-	-	-	-	8,356,950	-	8,356,950	-	8,356,950
Change of equity from equity method	-	-	(438,947,130)	-	13,248,581,325	-	12,809,634,195	-	12,809,634,195
Foreign currency translation difference	-	-	-	-	4,484,483,587	-	4,484,483,587	58,828,015	4,543,311,602
Transactions with shareholders:									
Hybrid bond dividends	-	-	-	-	-	(24,253,265,745)	(24,253,265,745)	-	(24,253,265,745)
Incorporation of new consolidation and change of range	-	-	-	-	-	-	-	(9,617,280,380)	(9,617,280,380)
Others	-	-	-	5,105,269,267	-	3,964,476,296	9,069,745,563	(4,729,639,946)	4,340,105,617
Dec. 31, 2016 (end, previous period)	225,974,030,000	498,468,200,000	367,600,251,307	(216,864,557)	(1,408,422,054)	363,869,844,129	1,454,287,038,825	14,259,418,602	1,468,546,457,427
Jan. 1, 2017 (the beginning period)	225,974,030,000	498,468,200,000	367,600,251,307	(216,864,557)	(1,408,422,054)	363,869,844,129	1,454,287,038,825	14,259,418,602	1,468,546,457,427
Total comprehensive income (expense):									
Net profit (loss)	-	-	-	-	-	69,130,740,329	69,130,740,329	1,256,442,735	70,387,183,064
Remeasurement of net defined benefit liabilities	-	-	-	-	-	526,156,213	526,156,213	(4,778,194)	521,378,019
Net changes in fair value of available-for-sale securities	-	-	-	-	802,368,741	-	802,368,741	-	802,368,741
Change of equity from equity method	-	-	31,171,385	-	(13,893,298,580)	-	(13,862,127,195)	-	(13,862,127,195)
Change of earned surplus from equity method	-	-	-	-	-	(97,535,999)	(97,535,999)	-	(97,535,999)
Foreign currency translation difference	-	-	-	-	(14,576,099,425)	-	(14,576,099,425)	(1,602,133,588)	(16,178,233,013)
Transactions with shareholders:									
Capital increase with consideration	43,215,965,000	-	200,185,519,197	-	-	-	243,401,484,197	-	243,401,484,197
Hybrid bond dividends	-	-	-	-	-	(24,186,999,992)	(24,186,999,992)	-	(24,186,999,992)
Dividends payable	-	-	-	-	-	-	-	(562,455,976)	(562,455,976)
Dec. 31, 2017 (the end period)	269,189,995,000	498,468,200,000	567,816,941,889	(216,864,557)	(29,075,451,318)	409,242,204,680	1,715,425,025,694	13,346,493,579	1,728,771,519,273

## Consolidated Cash Flow Statement (KRW)

19 th From January 1, 2017 to December 31, 2017

18 th From January 1, 2016 to December 31, 2016

17 th From January 1, 2015 to December 31, 2015

Classification	19th	18th	17th
I. Cash flows from operating activities	298,481,540,889	215,211,246,039	58,307,248,654
1. Cash flows from operating activities	366,555,797,579	279,281,323,722	154,207,016,461
A. Profit for the period (loss)	70,387,183,064	(100,626,966,104)	49,067,741,896
B. Adjustment for:	336,113,207,116	448,199,726,378	307,942,052,967
- Depreciation	162,143,587,097	168,952,112,455	163,637,841,082
- Intangible asset amortization	7,931,571,468	9,030,489,257	7,670,572,681
- Contribution to Provisions	60,584,665,939	51,848,849,564	18,804,091,379
- Bad debt expense (purchase return)	(1,268,166,765)	1,080,633,444	2,494,082,190
- Loss from valuation of inventories	7,630,755,071	21,848,646,562	3,688,076,665
- Retirement benefits	4,511,353,075	9,046,724,729	9,597,807,708
- Interest expense	88,881,753,992	104,635,242,646	95,502,912,518
- Loss on foreign currency translation	2,427,502,490	14,626,784,915	24,791,938,786
- Loss on derivative valuation	17,419,959,497	8,247,767,438	10,025,888,512
- Loss on derivative transactions	1,912,853,359	3,101,513,058	7,580,175,112
- Impairment loss on available-for-sale securities	1,800,417,360	-	-
- Loss on disposition of investment in associates	129,366,904	87,680,000	123,878,531
- Impaired loss on investment assets	-	9,487,973,288	16,657,232,731
- Loss on disposition of tangible assets	891,758,467	1,767,946,774	2,045,553,969
- Impairment loss on tangible assets	927,275,820	64,004,555,651	-
- Expenses on assets not in use	3,829,695,954	1,114,190,109	4,418,972,699
- Loss on disposition of intangible assets	53,241,818	307,492,499	1,842,194
- Impairment loss on intangible assets	-	8,455,474,329	7,339,985,009
- Loss on disposition of receivables	-	-	163,534,323
- Other amortization expenses	483,397,583	56,000,000	399,757,255
- Loss from equity method in associates	608,467,549	895,683,336	530,106,934
- Others	272,237,189	217,180,362	6,774,976,937
- Income tax expenses (benefit)	31,608,048,462	19,305,345,328	(4,665,424,049)
- Interest income	(7,379,983,511)	(2,347,571,111)	(3,818,609,704)
- Dividend income	(33,030,600)	(11,115,280)	(24,414,790)
- Gains on foreign currency translation	(23,223,285,762)	(2,415,393,782)	(11,228,823,369)
- Gains on derivative valuations	(2,283,702,838)	(6,349,235,562)	(16,854,938,772)
- Gains on derivative transactions	(1,142,661,406)	(2,823,432,541)	(4,187,345,329)
- Gain on disposition of tangible assets	(764,808,471)	(964,551,443)	(4,268,125,771)
- Gain on disposition of intangible assets	-	-	(2,136,363)
- Purchase return on impairment loss of intangible assets	(950,000,000)	(115,137,544)	-
- Gain on disposition of investment in subsidiaries and associates	(94,424,876)	-	(2,643,295,000)
- Gains from equity method in associates	(20,794,637,749)	(34,340,828,762)	(26,614,061,101)
- Gain on financing guarantee	-	(228,732,285)	-
- Gain on disposition of assets for sales	-	(96,044,776)	-
- Gains from assets contributed	-	(226,516,280)	-

Classification	19th	18th	17th
C. Changes in assets and liabilities resulting from operations	(39,944,592,601)	(68,291,436,552)	(202,802,778,402)
2. Interest received	5,948,440,959	2,279,492,363	3,940,553,174
3. Dividend received	30,831,428,635	28,564,059,830	24,414,790
4. Interest paid	(86,815,966,665)	(87,835,995,432)	(95,967,147,988)
5. Income taxes paid	(18,038,159,619)	(7,077,634,444)	(3,897,587,783)
II. Cash flows from investing activities	(43,923,092,599)	(33,796,363,128)	(177,178,108,196)
1. Disposition of short-term financial instruments	21,382,867,225	12,420,000,000	58,356,079,236
2. Decrease in long-term financial instruments	279,666,192	-	-
3. Decrease in deposits for rent	1,217,270,652	5,282,057,354	590,799,508
4. Disposition of tangible assets	966,242,528	2,517,638,866	5,158,204,430
5. Disposition of other intangible assets	181,818,182	423,308,501	63,636,363
6. Disposition of estimated assets of sale	-	18,062,417,410	-
7. Disposition of investment in associates	1,124	-	-
8. Disposition of available assets for sale	-	44,779,439	-
9. Net cash outflows from the acquisition of subsidiaries	-	-	(3,292,809,432)
10. Increase in short term financial instruments	(26,274,607,666)	(34,381,587,969)	(45,652,049,788)
11. Increase in long-term financial instruments	(19,825,825,895)	(103,687,577)	(9,177,947,686)
12. Increase in investment in associates	-	(200,000,000)	(27,229,987,841)
13. Increase in guarantee deposits	(839,212,892)	(1,154,588,943)	(874,930,960)
14. Acquisition of tangible assets	(21,011,312,049)	(35,995,295,526)	(154,468,893,730)
15. Acquisition of other intangible assets	-	(711,404,683)	(650,208,296)
III. Cash flows from financing activities	(21,507,731,125)	(78,388,390,182)	56,088,558,153
1. Increase in short-term borrowings	320,000,000,000	50,000,000,000	150,000,000,000
2. Increase in bond payable	219,384,840,000	18,329,188	299,062,342,621
3. Increase in long-term borrowings	98,485,000,000	285,000,000,000	2,989,404,421
4. Capital increase with consideration	243,401,484,197	-	-
5. Increase in rent deposit	215,000,000	-	-
6. Increase in current portion of long-term liabilities	-	-	15,300,000,000
7. Repayment of preference shares loan	(279,435,916,891)	-	-
8. Repayment of short-term borrowings	(250,000,000,000)	-	(150,000,000,000)
9. Repayment of current portion of long-term liabilities	(338,918,743,725)	(368,321,188,171)	(195,361,225,373)
10. Repayment of long-term borrowings	-	(15,225,150,000)	(18,289,693,788)
11. Decrease in rent deposit	(636,250,000)	-	-
12. Payment of hybrid bond dividends	(24,183,120,540)	(24,378,038,348)	(24,124,613,690)
13. Provision of dividends	(562,455,976)	-	-
14. Acquisition and settlement of derivatives	(9,257,568,190)	(5,482,342,851)	(23,487,656,038)
IV. Effect of exchange rate changes on cash held	(2,300,635,831)	(1,157,958,553)	1,095,143,805
V. Net increase (decrease) in cash and cash equivalents	230,750,081,334	101,868,534,176	(61,687,157,584)
VI. Cash and cash equivalents at the beginning of year	263,382,828,151	161,514,293,975	223,201,451,559
VII. Cash and cash equivalents at the end of year	494,132,909,485	263,382,828,151	161,514,293,975

## GRI G4 & ISO 26000 Index

● Reported   ● Partially reported   ○ Not reported   N/A Not applicable

General Standard Disclosures GRI G4	No.	Description	Report	ISO 26000	Page/URL
Strategy and Analysis	G4-1	Statement from the most senior decision-maker of the organization about the relevance of sustainability to the organization and the organization's strategy for addressing sustainability	●	4.7, 6.2, 7.4.2	4~5
	G4-2	Key impacts, risks, and opportunities	●		14
	G4-3	Name of the organization	●		6
	G4-4	Primary brand, products, and services	●		36~37
	G4-5	Location of the organization's headquarters	●		6
	G4-6	Number of countries where the organization operates, and names of countries where either the organization has significant operations	●		36
	G4-7	Nature of ownership and legal form	●		2017 Business Report (p. 5)
	G4-8	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries)	●		36~37
Organizational Profile	G4-9	Scale of the organization	●	6.3.10, 6.4.1-6.4.5, 6.8.5, 7.8	6
	G4-10	Size of the manpower	●		8
	G4-11	Percentage of total employees covered by collective bargaining agreements	●		100%
	G4-12	Supply chain	●		2017 Business Report (p. 16)
	G4-13	Any significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain	●		2017 Business Report (p. 10)
	G4-14	Whether and how the precautionary approach or principle is addressed by the organization	●		10~11
	G4-15	List of externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses	●		60
	G4-16	Memberships of associations and national or international advocacy organizations	●		61
Identified Material Aspects and Boundaries	G4-17	All entities included in the organization's consolidated financial statements or equivalent documents / Any entity included in the consolidated financial statements or equivalent documents that is not covered by the report	●	5.2, 7.3.2-7.3.4	2017 Business Report (p. 5)
	G4-18	The process for defining report content and aspect boundaries / How the organization has implemented the reporting principles for defining report content	●		2
	G4-19	List of all the material aspects identified in the process for defining report content	●		13
	G4-20	Aspect boundary within the organization by material aspect	●		13
	G4-21	Aspect boundary outside the organization by material aspect	●		13
	G4-22	Effect of any restatements of information provided in previous reports, and the reasons for such restatements	●		7~8
	G4-23	Significant changes from previous reporting periods in the scope and aspect boundaries	N/A		No significant changes
	G4-24	List of stakeholder groups	●		9
Stakeholder Engagement	G4-25	Basis for identification and selection of stakeholders with whom to engage	●	5.3	9
	G4-26	Approach to stakeholder engagement	●		9
	G4-27	Key topics and concerns that have been raised through stakeholder engagement	●		9
	G4-28	Reporting period for information provided	●		2
	G4-29	Date of most recent previous report	●		2
Report Profile	G4-30	Reporting cycle	●	7.5.3, 7.6.2	2
	G4-31	Contact point for questions regarding the report or its contents	●		2
	G4-32	GRI Index	●		53~57
	G4-33	Independent Assurance Report	●		58~59
	G4-34	Governance structure of the organization, including committees of the highest governance body, any committees responsible for decision-making on economic, environmental, and social impacts	●		6, 25
Governance	G4-35	Process for delegating authority for economic, environmental, and social topics from the highest governance body to senior executives and other employees	●	6.2, 7.4.3	6, 25
	G4-36	Whether the organization has appointed an executive-level position or positions with responsibility for economic, environmental, and social topics, and whether post holders report directly to the highest governance body	●		6
	G4-37	Process for consultation between stakeholders and the highest governance body on economic, environmental, and social topics	●		6
	G4-38	Composition of the highest governance body and its committees	●		25
	G4-39	Whether the chair of the highest governance body is also an executive officer	●		25
	G4-40	Nomination and selection processes for the highest governance body and its committees, and the selection criteria	●		25
	G4-41	Process for the highest governance body to ensure conflicts of interest are avoided and managed	●		25
	G4-42	Highest governance body's and senior executives' roles in the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies, and goals related to economic, environmental and social impacts	●		25
	G4-43	Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental, and social topics	○		
	G4-44	Processes and actions taken for evaluation of the highest governance body's performance with respect to governance of economic, environmental, and social topics	○		

	G4-45	Highest governance body's role in the identification and management of economic, environmental and social impacts, risks, and opportunities / Whether stakeholder consultation is used to support the highest governance body's identification and management of economic, environmental, and social impacts, risks, and opportunities	○		
	G4-46	Highest governance body's role and influence in reviewing the effectiveness of the organization's risk management processes for economic, environmental, and social topics	●		6, 11
	G4-47	Frequency of the highest governance body's review of economic, environmental, and social impacts, risks, and opportunities	○		
	G4-48	Highest position that formally reviews and approves the organization's sustainability report and ensures that all material aspects are covered	●		6
	G4-49	Process for communicating critical concerns to the highest governance body	●		6, 11, 25
	G4-50	Nature, total number, and frequency of concerns that were communicated to the highest governance body and the grievance mechanism(s) used to address and resolve them	●		25, 28
	G4-51	Remuneration policies for the highest governance body, senior managers and senior executives / Performance criteria in the remuneration policy related to the highest governance body's and senior executives' economic, environmental, and social objectives	●		2017 Business Report (p. 243)
	G4-52	Process for determining remuneration	●		25
	G4-53	How stakeholders' views are sought and taken into account regarding remuneration, including the results of votes on remuneration policies and proposals	●		25
	G4-54	Report the ratio of the annual total compensation for the organization's highest-paid individual to the median annual total compensation for all employees in the same country	○		
	G4-55	Report the ratio of percentage increase in annual total compensation for the organization's highest-paid individual to the median percentage increase in annual total compensation for all employees in the same country	○		
Ethics and Integrity	G4-56	Values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	●		26
	G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity, such as helplines or advice lines	●	7.7.5, 4.4, 6.6.3	26
	G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity	●		26

Specific Standard Disclosures GRI G4	No.	Description	Report	ISO 26000	Page/URL
<b>Economic</b>					
Economic Performance	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●		14~15
	G4-EC1	Direct economic value generated and distributed	●	6.8.1-6.8.3, 6.8.7, 6.8.9	6~7
	G4-EC2	Financial implications, and other risks and opportunities for the organization's activities due to climate change	●	6.5.5	19, 22~23
	G4-EC3	Coverage of the organization's defined benefit plan obligations	●	6.8.7	2017 Business Report (p. 89)
	G4-EC4	Financial assistance received from government	●		7
Market Presence	G4-EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	○	6.3.7, 6.3.10, 6.4.3-6.4.4	
	G4-EC6	Proportion of senior management hired from the local community at significant locations of operation	●	6.4.3, 6.8.1-6.8.2, 6.8.5, 6.8.7	36
Indirect Economic Impacts	G4-EC7	Development and impact of infrastructure investment and service supported	●	6.3.9, 6.8.1-6.8.2, 6.8.7, 6.8.9	42~43
	G4-EC8	Significant indirect economic impacts, including the extent of impacts	●	6.3.9, 6.6.6-6.6.7, 6.7.8, 6.8.1-6.8.2, 6.8.5, 6.8.7, 6.8.9	42~43
Procurement Practices	G4-EC9	Proportion of spending on local suppliers at significant locations of operation	●	6.4.3, 6.6.6, 6.8.1-6.8.2, 6.8.7	36
<b>Environmental</b>					
Materials	G4-EN1	Materials used by weight or volume	●		7
	G4-EN2	Percentage of materials used that are recycled input materials	●	6.5.4	8
	G4-EN3	Energy consumption within the organization	●		8
Energy	G4-EN4	Energy consumption outside the organization	○	6.5.4	
	G4-EN5	Energy intensity	○		
	G4-EN6	Reduction of energy consumption	○	6.5.4-6.5.5	
	G4-EN7	Reductions in energy requirements of products and services	●		23
Water	G4-EN8	Total water withdrawal by source	●		32
	G4-EN9	Water sources significantly affected by withdrawal of water	●	6.5.4	32
	G4-EN10	Percentage and total volume of water recycled and reused	●		8

● Reported ○ Partially reported ○ Not reported N/A Not applicable

Specific Standard Disclosures GRI G4	No.	Description	Report	ISO 26000	Page/URL
Biodiversity	G4-EN11	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	●	6.5.6	32
	G4-EN12	Significant impact of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	○		
	G4-EN13	Habitats protected or restored	○		
	G4-EN14	Total number of IUCN Red List species and national conservation list species with habitats in areas affected by operations by regions, and by level of extinction risk	○		
Emissions	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●	6.5.5	14~15
	G4-EN15	Direct GHG emissions	●		8
	G4-EN16	Indirect GHG emissions	●		8
	G4-EN17	Other Indirect GHG emissions	○		
	G4-EN18	GHG emissions intensity	●		30
	G4-EN19	Reduction of GHG emissions	●		31
	G4-EN20	Emissions of ozone-depleting substances	○		6.5.3, 6.5.5
	G4-EN21	NOx, SOx and other significant air emissions	●		6.5.3
	G4-EN22	Total water discharge by quality and destination	●		6.5.3-6.5.4
	G4-EN23	Total weight of waste by type and disposal method	●		8
Effluents and Waste	G4-EN24	Total number and volumes of significant spills	N/A	6.5.3	Not applicable to significant spills or shipment of hazardous substances
	G4-EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex and percentage of transported waste shipped internationally	N/A		
	G4-EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharge of wastewater	○		
	G4-EN27	Extent of impact mitigation of environmental impacts of products and services	●		
Products and Services	G4-EN28	Percentage of products sold and their packaging materials that are reclaimed	N/A	6.5.3-6.5.5, 6.7.5	33~34, 36~37 Not applicable due to the nature of power generation industry
	G4-EN29	Monetary values of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	●	4.6	No fines and non-monetary sanctions for non-compliance with environmental laws and regulations
Transport	G4-EN30	Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	N/A	6.5.4, 6.6.6	Not applicable due to the nature of power generation industry
Overall	G4-EN31	Total environment protection expenditures and investments by type	●	6.5.1-6.5.2	8
	G4-EN32	Percentage of new suppliers that were screened using environmental criteria	●	6.3.5, 6.6.6, 7.3.1	39
Supplier Environmental Assessment	G4-EN33	Percentage of suppliers identified as having actual and potential negative environmental impacts and actions taken	●		39
	G4-EN34	Number of grievances about environmental impacts filed, addressed and resolved through formal grievance mechanisms	●	6.3.6	9
Environmental Grievance Mechanisms					
Social					
Labor Practices and Decent Work					
Employment	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●	6.4.3	14~15
	G4-LA1	Total number and rates of new employee hires and employee turnover	●		8
	G4-LA2	Benefits provided to full-time employees only	●		28
	G4-LA3	Return to work rates after parental leave by gender	●		8
Labor/Management Relations	G4-LA4	Minimum notice periods regarding operational change	●	6.4.3, 6.4.5	40
	G4-LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	●	6.4.6	40
Occupational Health and Safety	G4-LA6	Rates of injury, occupational diseases, and absenteeism, and total number of work-related fatalities, by region and by gender	●	6.4.6, 6.8.8	38
	G4-LA7	Workers with high incidence or high risk of diseases related to their occupation	●		38
	G4-LA8	Health and safety topics covered in formal agreement with trade unions	●		40
	G4-LA9	Average hours of training per year per employee by gender, and by employee category	●		8
Training and Education	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●	6.4.7, 6.8.5	14~15
	G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	●		29
	G4-LA11	Percentage of employees receiving regular performance and career development reviews	●		40



Specific Standard Disclosures GRI G4	No.	Description	Report	ISO 26000	Page/URL
Diversity and Equal Opportunity	G4-LA12	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	●	6.2.3, 6.3.7, 6.3.10, 6.4.3	8
Equal Remuneration for Women and Men	G4-LA13	Ratio of basic salary and remuneration of women to men by employee category	○	6.3.7, 6.3.10, 6.4.3, 6.4.4	
Supplier Assessment for Labor Practices	G4-LA14	Percentage of new suppliers that were screened using labor practices criteria	●	6.3.5, 6.4.3, 6.6.6, 7.3.1	39
	G4-LA15	Percentage of suppliers identified as having significant actual and potential negative impacts for labor practices and actions taken	①	6.3.5, 6.4.3, 6.6.6, 7.3.1	39
Labor Practices Grievance Mechanisms	G4-LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	①	6.3.6	9
<b>Human Rights</b>					
Investment	G4-HR1	Percentage of significant investment agreements that include human rights clauses or that underwent human rights screening	●	6.3.3, 6.3.5, 6.6.6	39
	G4-HR2	Total hours of employee training on human rights policies or procedures concerning aspects of human rights that are relevant to operation including the percentage of employees trained	●	6.3.5	8, 26
Non-discrimination	G4-HR3	Total number of incidents of discrimination and corrective actions taken	●	6.3.6, 6.3.7, 6.3.10, 6.4.3	No incidents of discrimination and corrective actions taken
Freedom of Association and Collective Bargaining	G4-HR4	Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	●	6.3.3-6.3.5, 6.3.8, 6.3.10, 6.4.5, 6.6.6	40
Child Labor	G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	●	6.3.3-6.3.5, 6.3.7, 6.3.10, 6.6.6, 6.8.4	No operations and suppliers identified as having significant risk for incidents of child labor
Forced or Compulsory Labor	G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced labor, and measures taken to contribute to the elimination of all forms	●	6.3.3-6.3.5, 6.3.10, 6.6.6	No operations and suppliers identified as having significant risk for incidents of forced or compulsory labor
Security Practices	G4-HR7	Percentage of security personnel trained in the organizations human rights policies or procedures that are relevant to operations	○	6.3.4, 6.3.5, 6.6.6	
Indigenous Rights	G4-HR8	Total number of incidents of violations involving rights of indigenous people and actions taken	●	6.3.4, 6.3.6-6.3.8, 6.6.7, 6.8.3	No incidents of violations involving rights of indigenous peoples
Assessment	G4-HR9	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	●	6.3.3-6.3.5	Human rights reviews are taken at the head office and all domestic work sites
Supplier Human Rights Assessment	G4-HR10	Percentage of new suppliers that were screened using human rights criteria	●		39
	G4-HR11	Significant actual and potential negative human rights impacts in the supply chain and actions taken	①	6.3.3-6.3.6	39
Human Rights Grievance Mechanisms	G4-HR12	Number of grievances about human rights impacts, filed, addressed and resolved through formal grievance mechanisms	①	6.3.6	9
<b>Society</b>					
Local Communities	G4-SO1	Percentage of operations with implemented local community engagement, impact assessment, and development programs	●	6.3.9, 6.5.1-6.5.3, 6.8	42~43
	G4-SO2	Operations with significant actual and potential negative impacts on local communities	●	6.3.9, 6.5.3, 6.8	No operations with significant actual and potential negative impacts on local communities
Anti-corruption	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●		14~15
	G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	●	6.6.1-6.6.3	26
	G4-SO4	Communication and training on anti-corruption policies and procedures	●	6.6.1-6.6.3, 6.6.6	26
	G4-SO5	Confirmed incidents of corruption and actions taken	●	6.6.1-6.6.3	26
Public Policy	G4-SO6	Total value of political contributions by country and recipient/beneficiary	N/A	6.6.1-6.6.2, 6.6.4	Not applicable under national regulations
Anti-competitive Behavior	G4-SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	●	6.6.1-6.6.2, 6.6.5, 6.6.7	No legal actions for anti-competitive behavior, anti-trust, and monopoly practices
Compliance	G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	●	4.6	2017 Business Report (p. 255)
Supplier Assessment for Impacts on Society	G4-SO9	Percentage of new suppliers that were screened using criteria for impacts on society	●		39
	G4-SO10	Significant actual and potential negative impacts on society in the supply chain and actions taken	①	6.3.5, 6.6.1-6.6.2, 6.6.6, 6.8.1-6.8.2, 7.3.1	39



● Reported ● Partially reported ○ Not reported N/A Not applicable

Specific Standard Disclosures GRI G4	No.	Description	Report	ISO 26000	Page/URL
Grievance Mechanisms for Impacts on Society	G4-SO11	Number of grievances about impacts on society field, addressed, and resolved through formal grievance mechanisms	●	6.3.6, 6.6.1-6.6.2, 6.8.1-6.8.2	9
<b>Product Responsibility</b>					
Customer Health and Safety	G4-PR1	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	●	6.7.1-6.7.2, 6.7.4-6.7.5, 6.8.8	38
	G4-PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts of products and services during their life cycle, by type of outcomes	●	4.6, 6.7.1-6.7.2, 6.7.4-6.7.5, 6.8.8	No incidents of non-compliance with regulations and voluntary codes concerning the health and safety impacts
Product and Service Labeling	G4-PR3	Type of product and service information required by the organization's procedures for product and service information and labelling, and percentage of significant product and service categories subject to such information requirements	N/A	6.7.1-6.7.5, 6.7.9	Not applicable due to the nature of power generation industry
	G4-PR4	Total number of incidents or non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes	N/A	4.6, 6.7.1-6.7.5, 6.7.9	
	G4-PR5	Results of survey measuring customer satisfaction	●	3.7.1-6.7.2, 6.7.6	40~41
Marketing Communications	G4-PR6	Sale of banned or disputed products	N/A		Not applicable due to the nature of power generation industry
	G4-PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship, by type of outcomes	●	4.6, 6.7.1-6.7.3	No incidents of non-compliance with regulations and voluntary codes concerning marketing communications
Customer Privacy	G4-PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	●	6.7.1-6.7.2, 6.7.7	45
Compliance	G4-PR9	Monetary values of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	●	4.6, 6.7.1-6.7.2, 6.7.6	No fines for non-compliance with laws and regulations concerning the provision and use of products and services

Sector Specific Disclosure	No.	Description	Report	ISO 26000	Page/URL
Organizational Profile	EU1	Installed capacity, broken down by primary energy source and by regulatory regime	●		6
	EU2	Net energy output broken down by primary energy source and by regulatory regime	●		2017 Business Report (p. 18)
Research and Development	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●		14~15
	EU8	Research and development activity and expenditure aimed at providing reliable power and promoting sustainable development	●		7
Availability and Reliability	G4-DMA	a. Report why the Aspect is material and the impacts b. Report how the organization manages the material aspect or its impacts c. Report the evaluation of the management approach	●		14~15
	EU10	Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	●		18
System Efficiency	EU11	Average generation efficiency of thermal plants by energy source and by regulatory regime	●		20~21
	EU18	Percentage of contractor and subcontractor employees that have undergone relevant health and safety training	●		7
Customer Health and Safety	EU25	Number of injuries and fatalities to the public involving company, assets, including legal judgements, settlements and pending legal cases of diseases	●		38
	Access	Power outage frequency	●		21
		Average power outage duration	●		2017 Business Report (p. 18)
	EU30	Average plant availability factor by energy source and by regulatory regime	●		2017 Business Report (p. 18)

EN-29, SO-7, SO-8, PR-2, PR-7, PR-9 : The assurance was taken on the incidents of sanctions reported in POSCO ENERGY's business reports of 2016, 2017, and the first half of 2018, disclosed on the Data Analysis, Retrieval and Transfer System (DART) of the Financial Supervisory Service (FSS).

EN-33, LA-15, HR-11, SO-10 : In accordance with the supplier assessment policy of POSCO ENERGY, the assurance was taken on the suppliers to have potential negative impact.

EN-34, LA-16, HR-12, SO-11 : The assurance taken on the grievance mechanism through various stakeholder channels.

LA-1 : The assurance was taken on the status of turnover. / LA-9 : The assurance was taken on the training of all employees without dividing into employment type and gender.

EU-28 : As it is impossible to measure frequency of power outage, the assurance was taken on the rate of failure maintenance, which has the same management purpose.

## Independent Assurance Report

### To the management of POSCO ENERGY

We have been engaged by POSCO ENERGY (the "Company") to perform an independent assurance engagement in regard to the following aspects of the POSCO ENERGY 2016-2017 Sustainability Report (the "Report").

### Scope and subject matter

The information for the year ended December 31, 2017 (hereinafter, collectively referred to as the "Sustainability information") on which we provide limited assurance consists of:

- The Company's conclusion on meeting the principles of Inclusivity, Materiality and Responsiveness in the AA1000 AccountAbility Principles
- The non-financial information, stated in "GRI (Global Reporting Initiative) G4 Index (the pages 53- 57 through )" as subject to an external assurance (the "Sustainability Data") is prepared based on the reporting principles set out on G4 Index with Core option

We read the other information included in the Report and considered whether it was consistent with the Sustainability Information. We considered the implications for our report in the case that we became aware of any apparent misstatements or material inconsistencies with the Sustainability Information. Our responsibilities do not extend to any other information.

### Assurance work performed

We conducted our engagement in accordance with ISAE 3000<sup>(1)</sup> and AA1000AS<sup>(2)</sup>

The term 'moderate assurance' used in AA1000AS (2008) is designed to be consistent with 'limited assurance' as articulated in ISAE 3000. Our assurance is a Type II assurance engagement as defined in the AA1000AS (2008).

Our work involved the following activities:

1. Interviews with the personnel responsible for data collection and field managers to discuss their approaches to stakeholder inclusivity, materiality and responsiveness
2. Visits to the Company's headquarter in Seoul office to understand the systems and processes in place for managing and reporting the Sustainability Data
3. Review of samples of internal documents relevant to output from the risk assessment process, sustainability-related policies and standards, the sustainability materiality assessment matrix and other documents from stakeholder-engaged activities
4. Evaluating the design and implementation of key processes and controls for managing and reporting the Sustainability Data
5. Limited testing, through inquiry and analytical review procedures, of the preparation and collation of the Sustainability Data
6. Interviews with the management of the Company

### Respective responsibilities of the management of the Company and Samil PricewaterhouseCoopers

The management of the Company is responsible for establishing reporting principles that meet the principles of Inclusivity, Materiality and Responsiveness in the AA1000APS, measuring performance based on the reporting principles, and reporting this performance in the Report.

Our responsibility is to provide a conclusion based on our assurance procedures in accordance with ISAE 3000 and AA1000AS.

This report, including the conclusion, has been prepared for the management of the Company as a body, to assist the management in reporting on the Company's sustainability performance and activities. We do not accept or assume responsibility to anyone other than the management of the Company as a body and the Company for our work or this report save where terms are expressly agreed and with our prior consent in writing.

### Inherent limitations

Non-financial performance information is subject to more inherent limitations than financial information, given the characteristics of the subject matter and the methods used for determining such information. Qualitative interpretations of relevance, materiality and the accuracy of data are subject to individual assumptions and judgments.

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(1) International Standard on Assurance Engagements 3000 – 'Assurance Engagements other than Audits or Reviews of Historical Financial Information' issued by International Auditing and Assurance Standards Board

(2) AA1000 Assurance Standard(2008), issued by AccountAbility



A limited assurance engagement is less in scope than a reasonable assurance engagement under ISAE 3000. Consequently, the nature, timing and extent of procedures for gathering sufficient, appropriate evidence are deliberately limited relative to a reasonable assurance engagement.

In particular:

- We did not attend any stakeholder-engaged activities. Therefore our conclusion is based on our discussions with the management and the staff of the Company, and our review of sampled documents provided to us by the Company.
- The scope of our work was restricted to 2017 performance only, as set out in the scope and subject matter section above. Information related to the year ended December 31, 2016 and earlier periods have not been subject to assurance by us.

## Conclusion

Based on the results of the assurance work performed, our conclusion is as follows

- On the AA1000APS principles

### Inclusivity

- The Company has collected concerns and opinion through stakeholder communication channels that include those of Employees, Partners, Customers, Stakeholders, Investors, Environment and Society.
- Nothing has come to our attention to suggest that material stakeholder groups were excluded from these channels.

### Materiality

- The Company has identified most relevant and significant sustainability issues through process for identifying material issues.
- Nothing has come to our attention to suggest that material issues were omitted in this process.

### Responsiveness

- The Company has included in the Report its response to the material sustainability issues which are defined through process for identifying material issues.
- Nothing has come to our attention to suggest that there were material deficiencies in the issue management system.
- Nothing has come to our attention that causes us to believe that the Sustainability Data for the year ended December 31, 2017 is not fairly stated, in all material respects, in accordance with the Company's internal reporting principles set out on GRI Standard with Core option.

## Recommendations

As a result of our work, we have provided the following recommendations to the management.

- The company regularly monitors and checks various activities in terms of economy, society, and environment by forming a Sustainability Management Committee. We recommend that you establish governance that enables you to check the activities of sustainable management within the board of directors in order to perform and internalize them more effectively in the future.
- The company needs to improve the reliability of its reporting by continuously supplementing the quantitative data management system. We recommend designating data management staff and strengthening the process of managing the mid-to-long-term goals at the headquarters level.
- Creating social values associated with stakeholders is an important issue of sustainable management. Continuous growth of the company requires more strategic sustainability management activities to meet the interests and expectations of stakeholders beyond the creation of financial performance.

Samil PricewaterhouseCoopers  
Jae Heum Park, Partner

*Samil PricewaterhouseCoopers*

*Jae Heum Park*

Seoul, Korea  
October 5th, 2018

## UN Global Compact Index

Classification	Principle	GRI	Page	
Human Rights	1	Businesses should support and respect the protection of internationally proclaimed human rights; and rights;	G4-HR2, G4-HR7, G4-HR8, G4-HR9, G4-HR12, G4-SO1, G4-SO2	8, 9, 26, 38, 42, 43
	2	make sure that they are not complicit in human rights abuses.	G4-HR1, G4-HR10, G4-HR11	39
	3	Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;	G4-11, G4-HR4, G4-LA4	39, 40
Labour Standards	4	the elimination of all forms of forced and compulsory labour;	G4-HR6	27
	5	the effective abolition of child labour; and	G4-HR5	27
	6	the elimination of discrimination in respect of employment and occupation.	G4-10, G4-EC5, G4-EC6, G4-LA1, G4-LA3, G4-LA9, G4-LA11, G4-LA12, G4-LA13, G4-HR3	40
Environment	7	Businesses should support a precautionary approach to environmental challenges;	G4-EC2, G4-EN1, G4-EN3, G4-EN8, G4-EN15, G4-EN16, G4-EN17, G4-EN20, G4-EN21, G4-EN27, G4-EN31	8, 19, 22, 32, 34, 36, 37
	8	undertake initiatives to promote greater environmental responsibility; and	G4-EN1, G4-EN2, G4-EN3, G4-EN4, G4-EN5, G4-EN6, G4-EN7, G4-EN8, G4-EN9, G4-EN10, G4-EN11, G4-EN12, G4-EN13, G4-EN14, G4-EN15, G4-EN16, G4-EN17, G4-EN18, G4-EN19, G4-EN20, G4-EN21, G4-EN22, G4-EN23, G4-EN24, G4-EN25, G4-EN26, G4-EN27, G4-EN28	8, 23, 30, 31, 32, 34, 36, 37
	9	encourage the development and diffusion of environmentally friendly technologies.	G4-EN29, G4-EN30, G4-EN31, G4-EN32, G4-EN33, G4-EN34	8, 9
Anti-Corruption	10	Businesses should work against corruption in all its forms, including extortion and bribery	G4-EN6, G4-EN7, G4-EN19, G4-EN27, G4-EN31	8

## Membership in Associations

<b>Economy</b>	National Science & Technology Commission	<b>Society</b>	CSV Forum
	Korea Valuation Association		UN GLOBAL COMPACT
	Korea Management Association		Korean Industrial Safety Association
	Korean institute of electrical engineers		The Business Institute for Sustainable Development of Korea
	Korea Electric Association		Korea Table Tennis Association
	Samsung Economic Research Institute		Saeul Foundation of Culture
	Korea Chamber of Commerce and Industry		Korea Fire Safety Institute
	Korean Hydrogen & New Energy Society		Public Safety Administer Association
	Association of the Electricity Supply Industry of East Asia and Western Pacific		Best SM Forum
	Association of Energy Future Forum		Korea Personnel Improvement Association
	Incheon Employers Federation		Incheon National Security Facility Committee
	Incheon Citizens' Coalition for Economic Justice		Human Resources Education Center
	Federation of Korean Industries International Management Institute		Korea CSR Society
	Jeonnam Wind Power Industry Association		Korea Fire Safety Association
	The Korea Institute of Power Electronics		Korean Business Table Tennis Federation
	Steel Convergence Technology Research Association (SCRA)		Korean Japanese Culture Association
	Korea Construction Engineers Association	<b>Environment</b>	KRX Global Premier Exchange
	Korea Industrial Technology Association		Kyungbug Dongbu Environmental Engineers Conference
	Korean Society for New and Renewable Energy		National Assembly Forum on Climate Change
	Korea New and Renewable Energy Association		Daegu Gyeongbuk Korea Environmental Protection Association
	Korea Engineering & Consulting Association		Seo-gu Autonomous Environmental Purification Council
	Korea Electrical Contractors Association		Korea Carbon Capture and Sequestration R&D Center
	Korea Electric Engineers Association		Incheon Green Korea United
	Korea Electric Power Engineers Association		Incheon Federation for Environmental Movement Incheon
	Korea Battery Industry Association		Chung Ryong Environment Corporation
	Korea Photovoltaic Industry Association		Cunghak Environmental Movement Headquarter
	Korea Wind Energy Industry Association		Korea Chemicals Management Association
			Korea Environmental Engineers Association

## Participants

Kyoung-rok Kwon	Min-ji Park	Seung-mok Lee
Dae-ho Kim	Kwang-cheol Shin	Byoung-dong Lim
Mi-young Kim	Cheol-hong Shin	Seok-hyung Jung
Young-tae Kim	Ji-young An	Il-sik Jo
Yun-mi Kim	Sang-geun Yang	Dong-chan Choi
Jong-myung Kim	Mee-yeon Won	Bu-young Choi
Jin-seon Kim	Seok-kyu Yoon	Seung-young Choi
Cheol-woo Kim	Jae-woong Yoon	Jeong-haeng Heo
Hee-dong Kim	Deok-jin Lee	Seong-cheol Hong
Byung-il Moon	So-young Lee	Ho-su Hong



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**Headquarters**

16F, POSCO Center West Wing, 440 Teheran-ro, Gangnam-gu, Seoul

**Future Energy Campus**

363 Jungbong-daero, 405 Beon-gil, Seo-gu, Incheon

**Incheon LNG Combined Cycle Power Plant**

314 Jungbong-daero, 405 Beon-gil, Seo-gu, Incheon

**Gwangyang Off-gas Combined Cycle Power Plant**

Within Gwangyang Steelworks, 1800 Jecheol-ro, Gwangyang, Jeollanam-do

**Pohang Off-gas Combined Cycle Power Plant**

Within Pohang Steelworks, 6262 Donghaean-ro, Nam-gu, Pohang, Gyeongsangbuk-do

**Pohang Fuel Cell Manufacturing Facility / Fuel Cell Technology Institute**

153-154, Yeongilmansandan-ro, 88 Beon-gil, Heunghae-eup, Buk-gu, Pohang, Gyeongsangbuk-do



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