

BUILDING YOUR TOMORROW TODAY

Doosan Corporation CSR Report 2016



RESPECT FOR PEOPLE

RELIABLE OPERATING

RESPONSIBILITY IN ENGAGEMENT

CSR VALUE CREATION





We have adopted a 3D logo to express our determination to pursue sustainable growth in the future. The 3D cubes representing corporate identity colors symbolize the dynamic image of Doosan Corporation.

About this report

Overview of the Report

At Doosan Corp, we have published our annual Corporate Social Responsibility (CSR) report, which adopts our stakeholders' opinions, since 2013 to share our CSR achievements with them. This report is our 4th CSR report. We announce our CSR achievements in 2016 to our stakeholders through the CSR report.


Composition of the Report

We select key issues based on the interest of the stakeholders and strategic importance and present mainly relevant achievements and information in 'Core Issues'. The appendix outlines other key policies, management approaches and achievements related to CSR activities that are not mentioned in 'Core Issues'.


Reporting Period and Scope

This report presents our CSR achievements in 2016 and contains three or more years of data for certain achievements to enable time-series analysis. It also discloses both our plans for 2017 and mid- and long-term plans, including forward-looking statements based on them. It presents the achievements and activities around domestic worksites with greater business weight and information concerning overseas worksites for certain details depending on their importance.

Reporting Principles

This report was developed in accordance with the 'Core Option' of the Global Reporting Initiative (GRI) G4 guidelines. Our status on these reporting principles appears on  pages 75 to 77.

Independent Assurance

Korea Productivity Center assured the contents and publication process of this report and the assurance statement appears on  pages 78 and 79.

Interactive PDF

This report is available in an interactive PDF format that allows readers to navigate to relevant pages or go directly to the related webpages.

BUILDING YOUR TOMORROW TODAY

Doosan Corporation CSR Report 2016

Contents

Introduction

CEO Message	2
Letter to Stakeholders	4
Introduction of Doosan Group	6
Introduction of Doosan Corporation	10
Business Strategies	12
Materiality Assessment	20
CSR Commitment	22

Core Issues

Products for Tomorrow	26
Green & Safe Sites	36
Talent Communication & Development	44
Shared Growth Supply Chain	50
Local Community Engagement & Development	54

Appendix






Transparency of Governance	60
Stakeholder Engagement	61
Risk Management	62
CSR Value Structure	64
Anti-Corruption/Supply Chain/Human Rights	65
Summary of Core Issues	66
Sustainability Performance	68
GRI G4 Content Index	75
Independent Assurance Statement	78
Major Memberships/Participation Principle	80
Key Awards and Assessment in 2016	81

INTERACTIVE USER GUIDE




Doosan Corporation CSR Report 2016 was produced as Interactive PDF file.

Please select specific content and click on the Black icon. If you click on an icon or the table of contents, you can jump to that area. If you click on an icon at the top of all pages, you can jump to that page.

NAVIGATOR BUTTON

-  **HOME**
A button that takes you to the cover page.
-  **CONTENTS**
A button that takes you to the table of contents.
-  **RE PAGE**
A button that takes you to the page just before.
-  **PREVIOUS PAGE**
A button that takes you to the preceding page of the current page.
-  **NEXT PAGE**
A button that takes you to the following page of the current page.

A button that takes you to a specific contents.

-  **Move to Website**
A button that takes you to a specific website.
-  **Move to Page**
A button that takes you to a specific Page.
-  **E-Mail**
Click to E-mail program operation

CEO Message



“

Doosan Is Preparing
for Tomorrow Now!

”

Doosan Corp, Korea's very first modern business company, has forged a history of incessant growth and innovation over the past 121 years. Doosan has become a global top-tier company in the field of Infrastructure Support Business (ISB) with its steady growth abled by bold innovation and change under any business environment.

Now, Doosan is creating a better future based on its proud history. Doosan engages in businesses for the future of both the company and society by focusing on technologies that are needed now, but will become more valuable in the future. The challenging entrepreneurial spirit, willing to take risk on failure, will be the strong foundation for Doosan's tireless pursuit of change and creation.

We will listen to the diverse voices and opinions of all our stakeholders such as shareholders, customers, employees, suppliers and local community in preparation for the future. We will continue to pursue win-win development with the community while actively communicating with the stakeholders.

We deem our efforts to explore the common future together with our stakeholders as 'corporate social responsibility'. Even at this very moment, all Doosan employees around the world are faithfully performing their social responsibilities in their respective positions.

Corporate social responsibility is a foothold of growth for better future, as well as our promise to the society. We will keep this promise while pursuing growth together with our stakeholders.

We hope for your continued attention and support for Doosan's resolute efforts to fulfill its promises.

Thank you!

Chairman of Doosan Group, CEO of Doosan Corporation
Jeongwon Park

Letter to Stakeholders



“

Doosan aims to practice substantial Corporate Social Responsibility (CSR) management while preparing a springboard for future growth.

”

Dear Stakeholders,

We take a long-term approach to our business growth and corporate social responsibility in order to maintain steady growth amid the sluggish global economic environment. Corporate social responsibility has become increasingly vital to our success due to the tightening of environmental regulations and growing social expectations concerning basic human rights and sustainable supply chain.

In addition, business and economic paradigms are changing rapidly with the IoT and the 4th industrial revolution emerging as major factors. We have strived to lay a solid foundation for future growth while responding to such changes in the global business environment in an agile manner.

Performance of social responsibility through growth

In 2016, we at Doosan Corp developed a mid- and long-term roadmap for the development of products and technologies by analyzing the ongoing changes in market demand while closely analyzing future markets. Such mid- and long-term plans are built to achieve our future growth without fixating on short-term financial performance. We intend to achieve our vision of becoming a 'Global Leading High-Tech Company' by implementing technology-oriented business systems that address changes in the markets. We have launched a duty-free and developed various new growth items across various business groups, including electrodes for fuel cell, marine motors and pumps, and new bio materials. We have also strengthened our foundation for long-term growth by enhancing and expanding our product portfolio.

We at Doosan Corp have methodically and scientifically refined our business processes in order to enhance our business capabilities while turning growth opportunities into stable profitability. We have also enhanced our operational efficiency by tirelessly pursuing innovation in our production processes while strengthening our operational systems in purchasing, quality management, production, etc.

Promotion of substantial CSR-oriented management

In 2016, we at Doosan Corp strived to implement substantial CSR initiatives directly in the field rather than concentrating on form-oriented or CSR-oriented management. Accordingly, we held three CSR Committee meetings, performed specific tasks according to each business group or division, and extended our CSR-oriented management to our suppliers and overseas worksites.

Specific tasks were performed by each business group or division with the emphasis on human rights, supply chain, and the development of green products. Additional efforts were dedicated to enhancing the practical capacity of business groups based on their specific characteristics. Meanwhile, to better align our policies with our human rights responsibilities, we instituted enterprise-wide human rights education, strengthened our grievance-handling policies, and carried out human rights activities at individual worksites. To effectively manage our sustainable supply chain, we enhanced our evaluation system for suppliers and reflected the newly-developed definition and regulations on green products in our new business group-based roadmaps for the development of products and technologies.

In addition, we have enhanced our energy basic unit management while preemptively conducting an EHS impact assessment in preparation for changes in the regulations regarding chemical substances. We have also made improvements to our leading CSR programs, such as 'Time Traveler' and 'Woori Door'. These programs enable us to reach out and engage with the local community, while educating and fostering talent with a particular emphasis on the acquisition of job skills.

In 2017, we plan to enhance the CSR commitment of our suppliers through consulting and education. At the same time, each business group will disseminate outstanding CSR cases to our overseas suppliers in order to improve their CSR performance.

The trust and support of our stakeholders have always been the driving force of the remarkable growth we have achieved to date, and they remain critical to our potential development. As such, we ask for your continuing interest in and support for Doosan Corp.'s efforts to achieve growth and CSR-oriented management.

Thank you!

Chairman of the Doosan Corp CSR Committee

Hyunsoo Dong

Introduction of Doosan Group

Doosan Group

Korea's Oldest Enterprise

As Korea's 1st modern company, Doosan has experienced constant changes throughout its 121-year history. Our long history began in 1896 when Park Seung-Jik opened the country's 1st modern store in Baeogae (currently Jongno 4-ga in Seoul). Since then, we have pursued constant change and growth over the past century.



Shift into an ISB-driven Business Portfolio

In 1995, a year before our 100th anniversary, we initiated business reforms with the belief that growing into a global company requires a bold transformation through 'selection and focus'. We sold off OB Beer, one of our then-flagship businesses, and other core affiliates and assets, consolidated the remaining affiliates while improving profitability, and adopted an advanced management system.

Since 2000, we have been shifting the focus of our business portfolio from consumer goods to ISB (Infrastructure Support Business) that encompasses vast areas ranging from industrial infrastructure, construction equipment to energy, national defense, and production equipment. In exploring such new growth drivers, we have accomplished remarkable change and growth.

2016 Group Highlight

Total assets



KRW 28.7 trillion

Revenues



KRW 16.4 trillion

Operating income



KRW 900 billion

Number of Employees



37 thousand

* Based on the consolidated financial statements in 2016

An ISB Leader Recognized Worldwide

We are emerging as an ISB leader in areas including power generation, seawater desalination, construction equipment and marine engine. Our status as the unrivaled No. 1 in the power plant market is internationally recognized, and our advancement into the Multi-Effect Distillation (MED) sector of the desalination market further strengthened our market dominance, solidifying our position as a global ISB leader. Our Skid Steer Loader (SSL) operations are ranked 1st in the global construction equipment market. Furthermore, the Korean government designated our steam generators for commercial nuclear plants and forged back-up rolls for plate rolling mills as the World's Best Products.

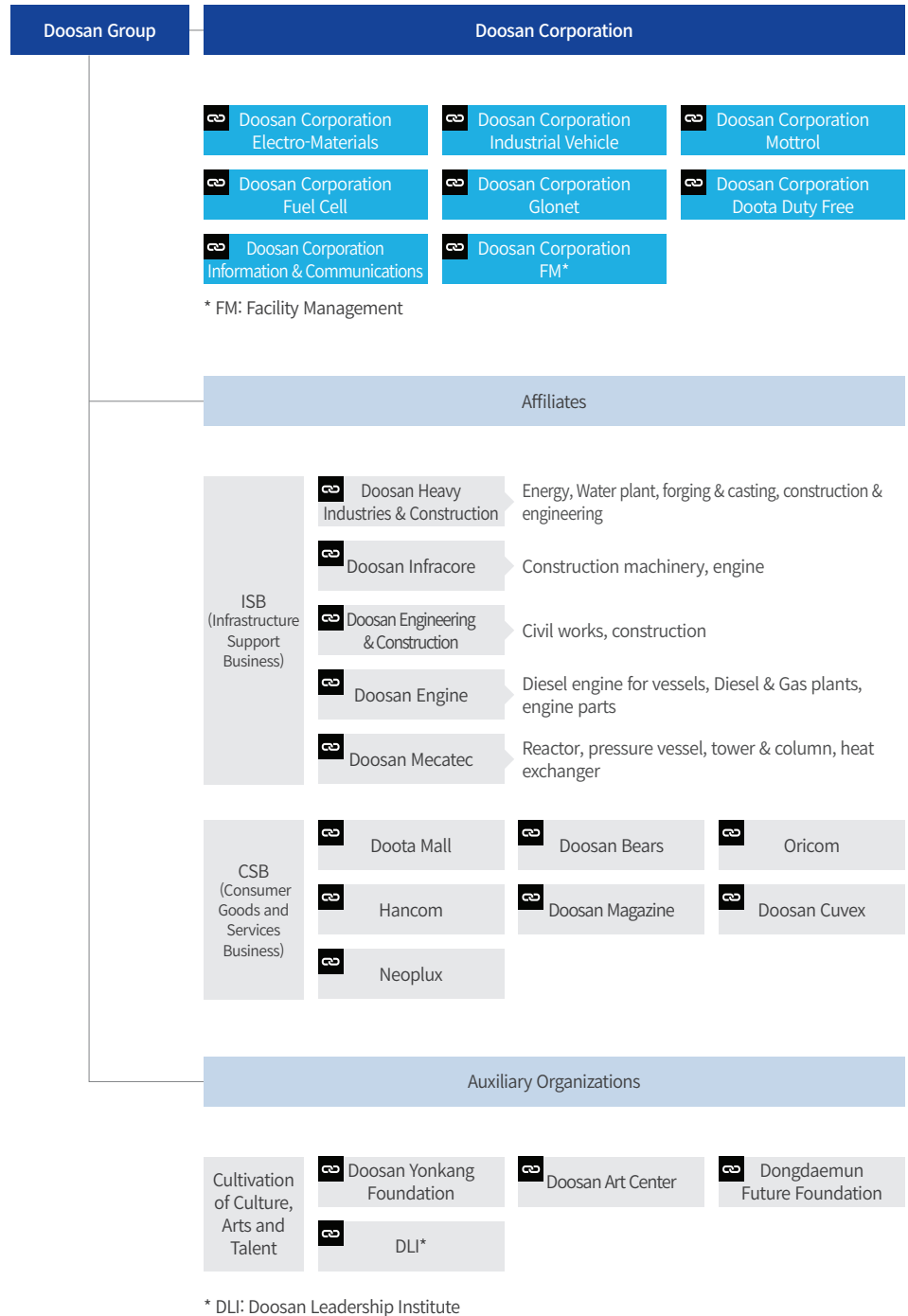
Open a New Chapter in Global Enterprise History

We operate 26 domestic affiliates and 120 overseas subsidiaries. We will never stay complacent about our past achievements and will pursue constant change. By delivering products and services that set us apart from the competition and thus inspire trust and pride among customers, we will grow into a global company hand-in-hand with our customers.



Doosan Corporation, committed to making the world a better place to live in, operates in an extensive range of business areas including ISB (Infrastructure Support Business), which encompasses industrial base equipment, machinery and heavy construction equipment, and CSB (Consumer & Service Business) encompassing distribution and comprehensive advertising services.

Organization of our key affiliates



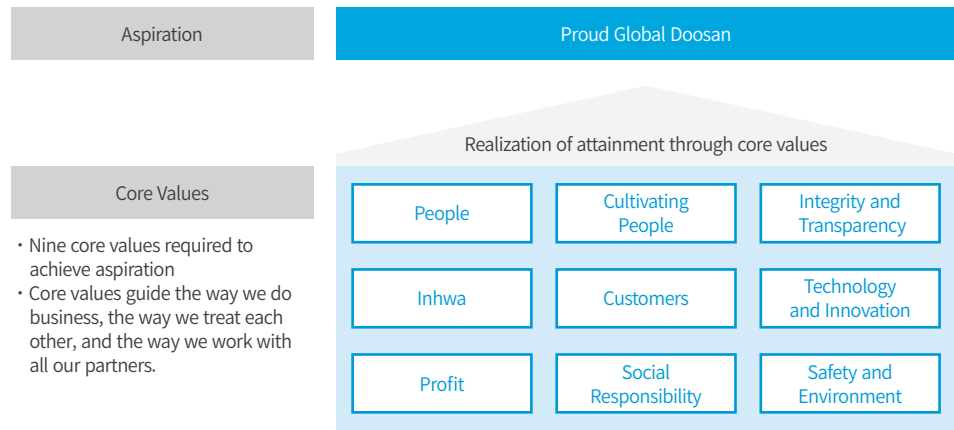
* DLI: Doosan Leadership Institute

Doosan Way

Doosan Way represents the corporate philosophy, culture, and set of management principles developed to build Doosan Corp into a globally respectable company. Doosan Way consists of the following three elements: Doosan Credo, the People of Doosan (“The Six Traits of Proud Doosan People”) and the Doosan Way Change Model (serves as the foundation on which the People of Doosan realize the Doosan Way).

Doosan Credo

- A philosophy to be observed by Doosan people
- A charter serving as the criteria and frame of reference for all of business conduct and decision-making processes
- Compositions of Aspirations and Core Values

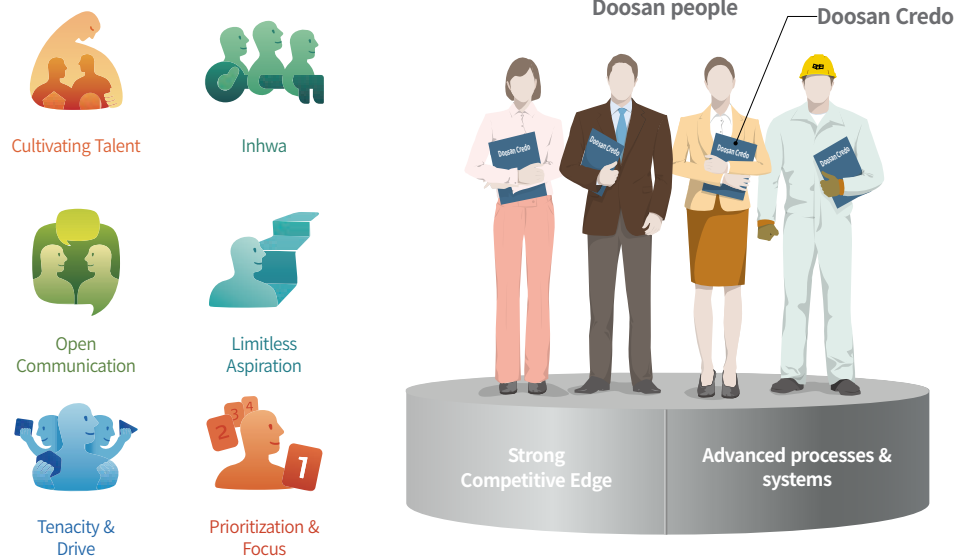


Traits of Proud Doosan People

- Traits and characteristics required of Doosan people in practicing Doosan Credo

Change Model of Doosan Way

It is necessary to establish a solid business foundation that is not swayed by the short-term competitive environment in order to develop talents who are equipped with the required traits and who steadily practice Doosan Credo on a long-term basis.



History of the Doosan Way



* Smart Office: Undertaken to eliminate inefficient work practices to improve competency with an aim to make business practices more advanced and scientific

Introduction of Doosan Corporation

Doosan Corporation

Doosan Corporation, the parent company of Doosan Group, operates its own eight business lines and manages 26 affiliates operating in diverse business areas.

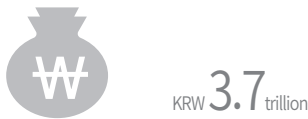
Overview

Name of Company	Doosan Corporation
Date of Establishment	December 18th, 1933
CEO	Park Jeongwon, Lee Jaekyung
Business Areas	Electronic components/materials, hydraulic parts, forklifts, biomaterials, fuel cell, duty free
Operating Countries	12 countries including Korea, China, USA, UK
Headquarters	275, Jangchungdan-ro, Jung-gu, Seoul, Republic of Korea

Doosan Corp operates in eight business areas and comprises six business groups - Electro-Materials, Mottrol, Industrial Vehicle, Fuel Cell, Glonet, and Doota Duty Free- and two business units of Information & Communications and FM.

2016 Doosan Corporation Highlight

Total assets



Revenues



Operating income



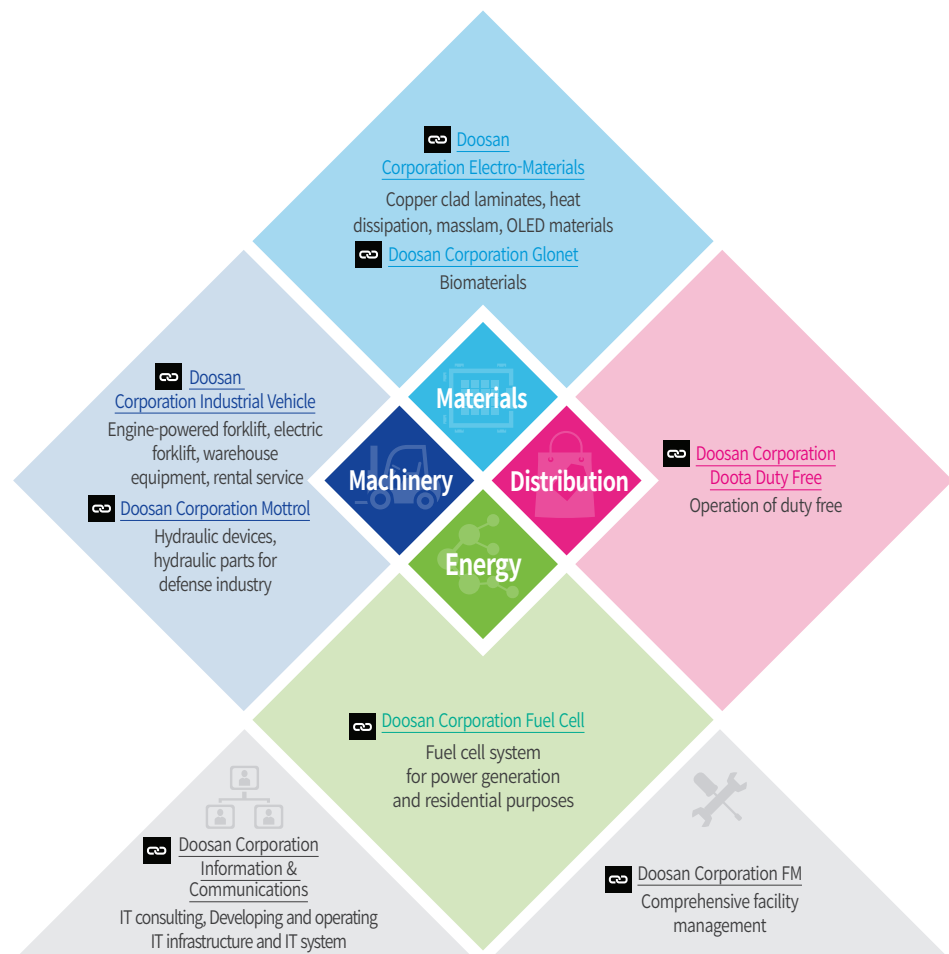
Number of Employees

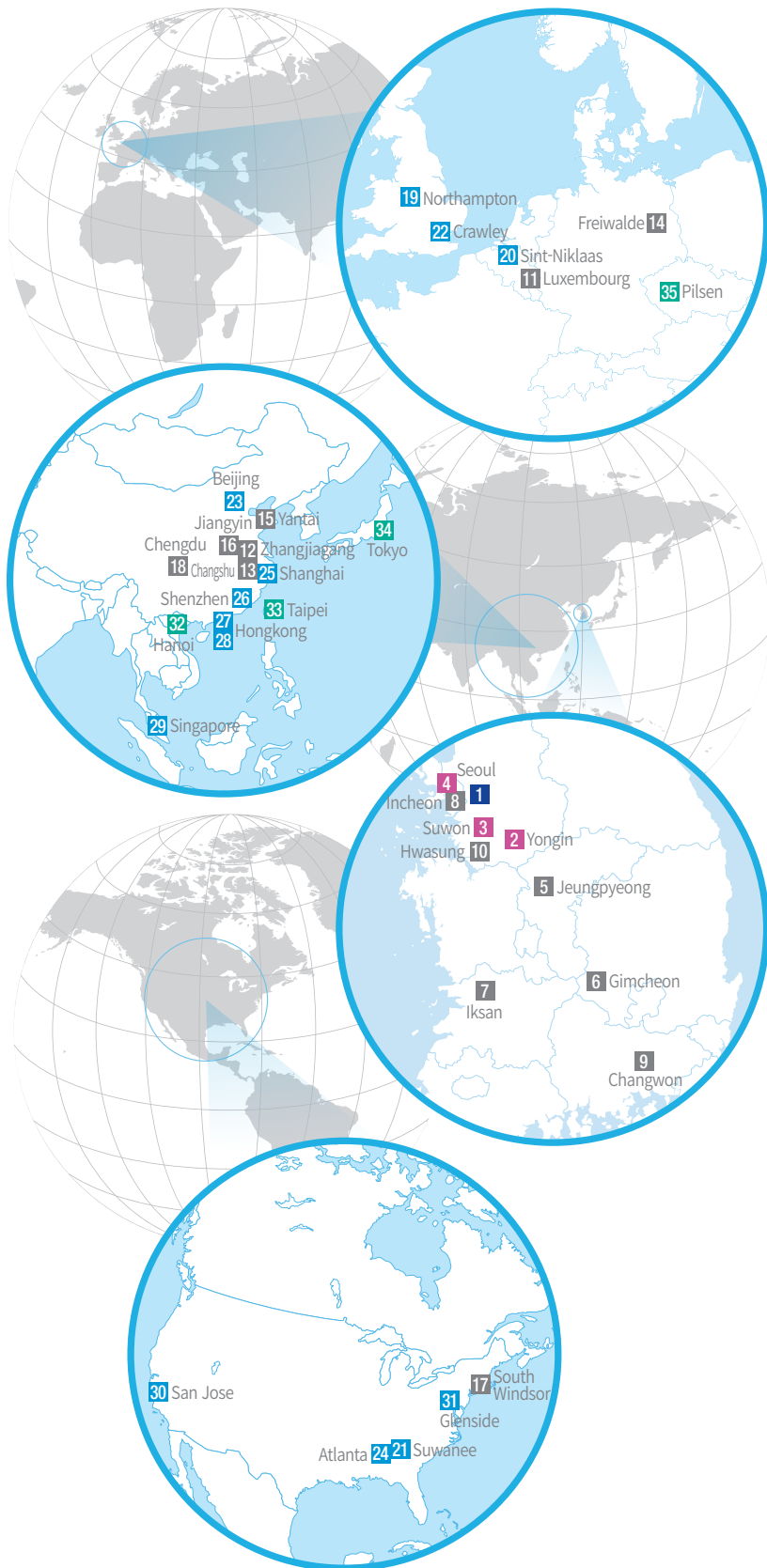


* Based on the non-consolidated financial statements in 2016

* Including employees from the corporate office, business groups, and administration center

Business Areas of Doosan Corporation





Current Status of Key Worksites

Doosan operates 14 production plants, 13 branches and 4 local subsidiaries in 12 countries around the world.

Headquarter

1	Doosan Corporation	Seoul, S. Korea
---	--------------------	-----------------

R&D Centers

2	Electro-Materials R&D Center	Electro-Materials	Yongin, S. Korea
3	Glonet R&D Center	Glonet	Suwon, S. Korea
4	Industrial Vehicle R&D Center	Industrial Vehicle	Incheon, S. Korea

Production Plants (Domestic)

5	Jeungpyeong Plant	Electro-Materials	Jeungpyeong, S. Korea
6	Gimcheon Plant	Electro-Materials	Gimcheon, S. Korea
7	Iksan Plant	Electro-Materials/ Glonet/Fuel Cell	Iksan, S. Korea
8	Incheon Plant	Industrial Vehicle	Incheon, S. Korea
9	Changwon Plant	Mottrol	Changwon, S. Korea
10	Hwasung Plant	Fuel Cell	Hwasung, S. Korea

Production Plants (Overseas)

11	CFL	Electro-Materials	Wiltz, Luxembourg
12	CFAP Zhan gjiagang Branch	Electro-Materials	Zhangjiagang, China
13	Changshu Branch	Electro-Materials	Changshu, China
14	DLE	Industrial Vehicle	Freiwalde, Germany
15	DIVC	Industrial Vehicle	Yantai, China
16	DMJC	Mottrol	Jiangyin, China
17	DFCA Branch	Fuel Cell	South Windsor, USA
18	Glonet JV	Glonet	Chengdu, China

Overseas Branches

19	DIVUK	Industrial Vehicle	Northampton, UK
20	DIVEU	Industrial Vehicle	Sint-Niklaas, Belgium
21	DIVAC	Industrial Vehicle	Suwanee, USA
22	DSIE	Information & Communications	Crawley, UK
23	DSIC	Information & Communications	Beijing, China
24	DSIA	Information & Communications	Atlanta, USA
25	Shanghai Branch	Electro-Materials	Shanghai, China
26	Shenzhen Branch	Electro-Materials	Shenzhen, China
27	Hong Kong Branch	Electro-Materials	Hong Kong, China
28	CFAP Branch	Electro-Materials	Hong Kong, China
29	Singapore Branch	Electro-Materials	Singapore
30	America Branch	Electro-Materials	San Jose, USA
31	CFT Branch	Electro-Materials	Glenside, USA

Overseas Local Subsidiaries

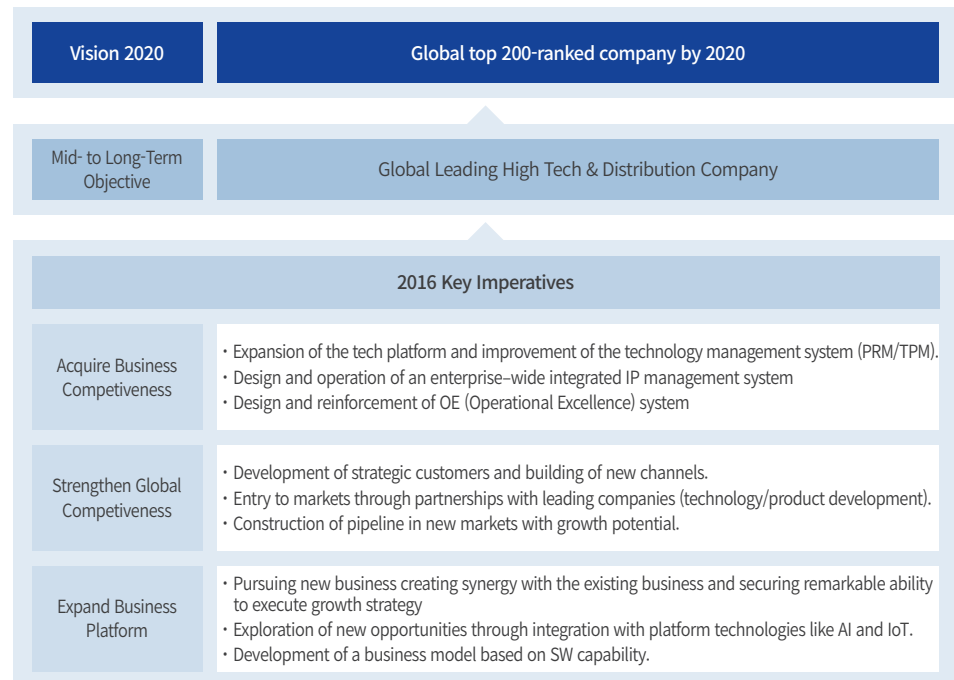
32	Vietnam Branch	Electro-Materials	Hanoi, Vietnam
33	Taiwan Branch	Electro-Materials	Taipei, Taiwan
34	Japan Branch	Electro-Materials	Tokyo, Japan
35	DSIE-CZ	Information & Communications	Pilsen, Czech

Headquarters	1	R&D Centers	3	Production Plants	14
Overseas Branches	13	Overseas Local Subsidiaries	4		

Business Strategies

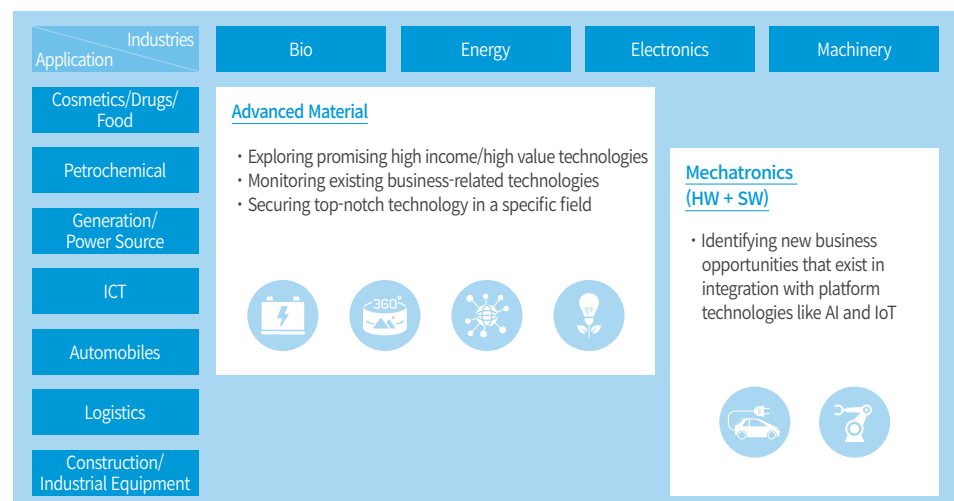
We have emerged as a strong global competitor in the infrastructure support business and are seeking additional growth opportunities in energy and distribution. Additionally, in order to respond to market demands, we plan to focus on developing leading products and expanding our technical capabilities, increasing the overseas revenue as a proportion of total revenue (to KRW 32 trillion, i.e. 42% of total revenue by the year 2020), and pursuing continuous growth by expanding the business platform through the development of new business.

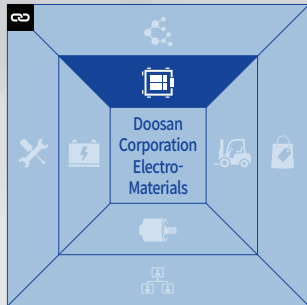
Mid- to Long-Term Strategic Direction of Doosan Corp.



We intend to strengthen the underpinning technology in advanced materials and mechatronics areas where our business areas are integrated with new technology. At the same time, we plan to leverage our global network and outside experts for the purpose of acquiring tomorrow's technology that can be used to develop new growth businesses.

Doosan Business/Technology Areas





Main Products

- CCL*, OLED* components, other substrate materials, heat dissipation materials, Masslam etc.
- * CCL (Copper Clad Laminate): Key materials for PCBs used as essential parts of electronic devices
- * OLED (Organic Light Emitting Diode): Core display materials

Applications

Smartphone and smart device, network equipment, computer, home appliances, semiconductor substrate, OLED, industrial machinery, etc.

Sales in 2016



While mobile products, a key application, are growing at an annual average rate of 3%, new applications such as the IoT, servers, and electric cars are growing at a rapid pace. Therefore, high value products such as NWB and semiconductor CCL are expected to grow faster than the average growth rate of all CCL products. In addition, the OLED market is expected to grow at an annual average rate of over 30% until 2021 as a result of the switch from LED to OLED mobile and TV display panels.

Sales of high-value-added products



High-end network appliance boards for communication infrastructure

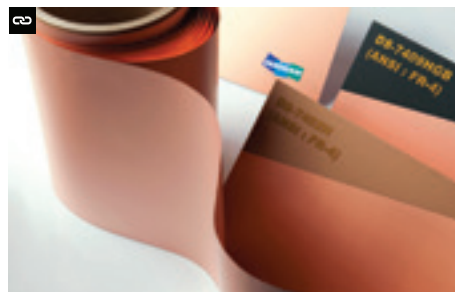
Entry into the **Top Tier**

CCL market (PKG, FCCL WW M/S #2)

The **6**th place in the global market

Changes in Market	Achievements in 2016	Plans in 2017
Slow growth of smart phone market	Increase of sales of high value added products and expansion of business overseas	Expansion of sales of high value added products business and increase of sales in China markets
Market opportunities for semiconductor/NWB CCL	Reinforcement of operational reform by maximizing productivity and reducing production costs	Process optimization achieved by big data analysis and advanced quality-oriented management
Switch to OLED display panels	Promotion of new businesses (including electrodes for fuel cell)	Stabilization of new business and exploration of additional growth engines

In 2016, overall sales increased sharply over the preceding year due to an increase in sales of high value added products, including high-end CCL for network equipment and OLEDs. In 2017, it plans to continue our pursuit of growth by diversifying its global customer segments and stabilizing new business, while expanding existing business with the focus on high value added products with strong growth potential.

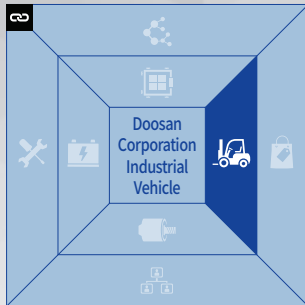


CCL



OLED

Business Strategies



Main Products and Business

- Diesel/LPG engine-powered forklifts
- Electric seated/stand-up forklifts
- Warehouse equipment
- Rental of forklift

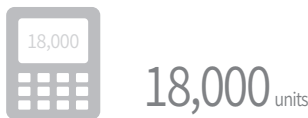
Sales in 2016



Market share of forklifts*



Global sales of forklifts in 2016



Cumulative production of forklifts



* Based on domestic sales

The global forklift market is growing thanks to the growth-oriented policies of North American and West European countries and active global business growth. The demand for electric forklift is steadily growing as nations have strengthened their regulations on diesel engine exhaust emissions. The demand for warehouse equipment is also enjoying continued growth as the speed and efficiency of logistics increase, along with the growth of online shopping services. Such market trends are expected to continue along with the current regulatory enforcement trend on fossil fuels and the innovation of ICT-based logistics services. However, as the price competition becomes increasingly intense due to excessive supply, the market leaders are likely to try to improve the growth rate and profitability of their value added business with solutions for downstream and logistics services, including the rental and trading of used equipment.

Changes in Market	Achievements in 2016	Plans in 2017
Growth of global forklift market	Expansion of sales network overseas	Expansion of overseas sales network (North America and emerging markets)
Growth of demand for electric warehouse equipment	Increase of business areas and domains through strategic alliances	Increase of business areas (downstream)
Intensification of price competition due to excessive supply		

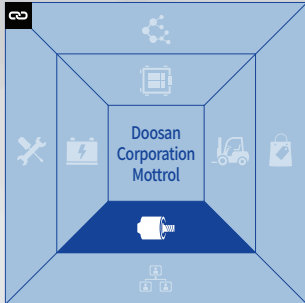
In 2016, our financial performances saw a slight decline due to a drop in sales in the domestic market. However, a solid foundation for future growth has been laid along with strong growth in the overseas business domains and sales networks. In 2017, it plans to increase sales by 15% compared with 2016, along with recovery of the domestic market, enhancement of overseas sales networks, and expansion of business areas.



2 ton diesel forklift 7 series



2 ton electric forklift 7 series



Main Products

- Hydraulic devices
- Hydraulic parts for the defense industry

Applications

Industrial heavy equipment including excavator, crawler crane, crawler drill, crusher and screen

Sales in 2016



The current intense price and supply competition looks set to continue with existing and new competitors in the hydraulic parts market. In the defense market, the government is steadily increasing the budget for the guided missile, aerospace and naval sectors while reducing the budget allocated to ground weapons, formerly the primary business in the defense sector.

Market Share of Hydraulic Parts*



The 2nd place

Key customers in China

Won The Best Supplier Award

* Based on the travel device of excavators in China



Doosan Corporation Mottrol is striving to develop new products and diversify its product lines in order to explore advanced markets such as North America and Europe and emerging markets like India and Turkey, while maintaining its control over existing markets by securing superior cost and quality competitiveness. In the defense market, it is active in areas related to guided, aerospace and naval weapons based on the core products it possesses in existing areas, while preparing to advance into overseas defense markets.

In 2016, its sales grew sharply over the preceding year thanks to the recovery of the excavator market in China and its efforts to diversify sales in different regions. Furthermore, its outstanding performances in terms of quality and delivery were recognized by its customers, including 'Best Supplier' awards from key customers in China and other parts of the world. In 2017, it plans to continue with its efforts to diversify its customers and sales regions, and also plans to continue pursuing growth by strengthening its control over the excavator market in China and increasing its sales of non-excavator products.

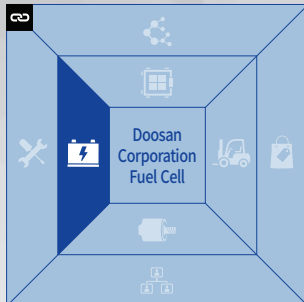


Travel device



Hydraulic pump

Business Strategies



Main Products

- 1kW, 600W fuel cell for residential use/5kW, 10kW fuel cell for building (PEMFC*)
- 400kW fuel cell for power generation purpose (PAFC*)
- * PEMFC (Polymer Electrolyte Membrane Fuel Cell)
- * PAFC (Phosphoric Acid Fuel Cell)

Sales in 2016

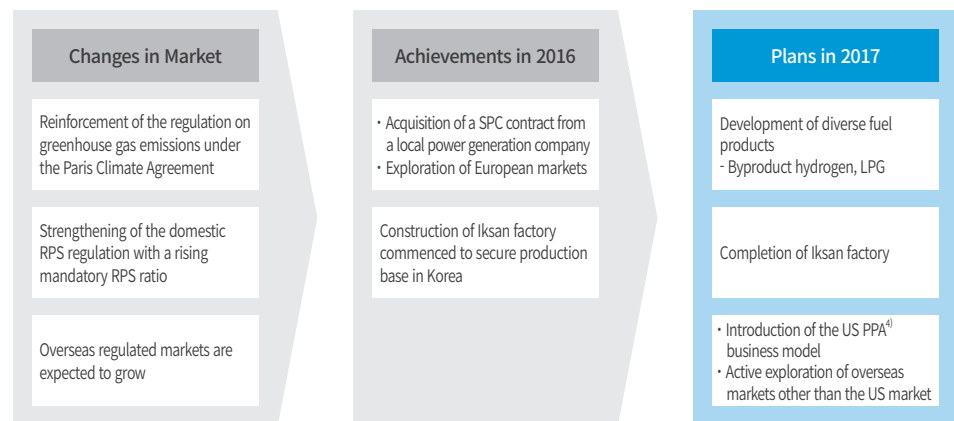


Cumulative contract bidding*



* The sum of cumulative contract bidding in the two years since the start of business

The local market for residential fuel cell is expected to grow as it shifts from the currently regulated market to deregulated market, while the global market is expected to grow up to KRW 17 trillion by 2023.¹⁾ In Korea, the market of fuel cell for building is becoming increasingly active because of the enhanced regulation on Renewable Portfolio Standards (RPS)²⁾, mandatory renewable energy use of public buildings, growing market of environmental impact assessment and the sharply rising price of the Renewable Energy Certificate (REC)³⁾. The State governments in the USA support RPS policy and the adoption of renewable energy sources. In addition, new market is gradually being established in countries including the UK and Germany due to the reinforcement of environmentally-friendly policies. Since government and other public buildings in Korea are now required to use renewable energy, the market of fuel cell for building continues to grow.

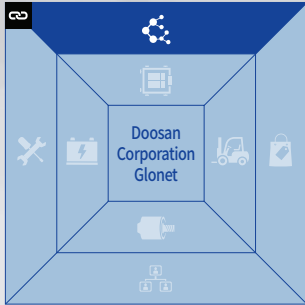


Doosan Corporation Fuel Cell has secured a high share of the domestic residential fuel cell market based on its PEMFC source technology and technological competence in core parts. The group aims to lead the overseas regulated markets for fuel cell for building and power generation after securing a strong base in the domestic market. In 2016, its financial performance suffered a temporary setback due to the commencement of the construction and relocation of its factories and delays with overseas projects. In 2017, however, it plans to obtain contract volume worth more than KRW 1 trillion per year by increasing its customer base through PPA in the US as well as in the domestic market.

- 1) Forecast of world residential fuel cell market: Fuji Economic Research Institute, 2011
- 2) RPS (Renewable Energy Portfolio Standard): A system that requires the operators of power generation businesses with a capacity of 500MW or more to produce energy using only renewable energy sources
- 3) REC (Renewable Energy Certificate): A certificate attesting to the fulfillment of the mandatory requirement to use renewable energy by the operators of power generation businesses
- 4) PPA (Power purchase agreement): A long-term contract signed between a power generation business and an electricity sales business without going through the power exchange market



PureCell Model 400 fuel cell system



Main Products

- Pharmaceutical ingredients: PL95E (pharmaceutical emulsifier), Sodium Oleate
- Nutraceutical ingredients: PL series, PS series, MGD/NGD
- Cosmeceutical ingredients: Ceramide, Phytosphingosine

Applications

Pharmaceutics (emulsifier for pharmaceutical lipid emulsions and anesthetics), food (powdered milk and other dairy products, and health functional food ingredients), cosmetics (functional materials with moisturizing, anti-inflammatory/antibacterial, and skin regeneration effects)

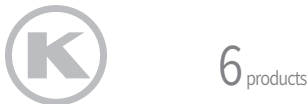
Sales in 2016



Ecocert* certified products



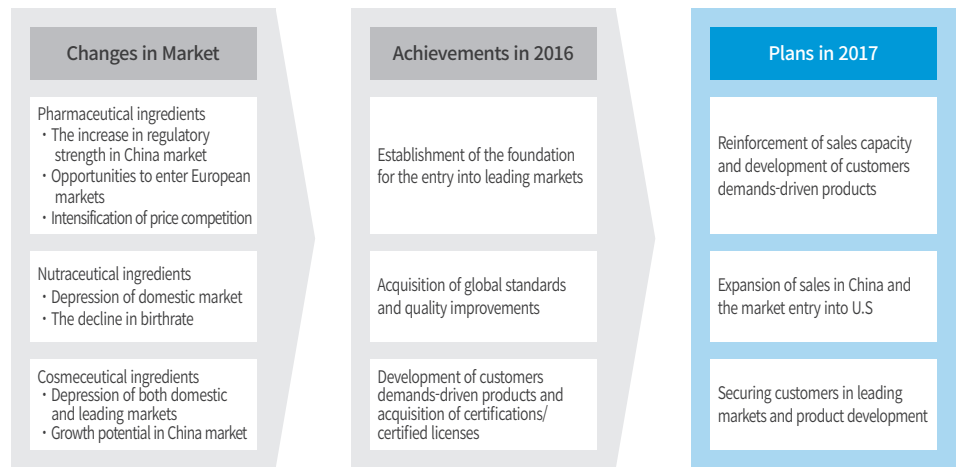
Kosher* certified products



* Ecocert: an organic certification organization in Europe

* Kosher: Global food safety certification, obtained in January 2017

In the case of pharmaceutical ingredients, the price competition is becoming increasingly intense due to the emergence of new producers while competition is becoming ever stronger in China market. Korean domestic market for food ingredients, in the meantime, has stagnated due to the economic recession and low birthrate, but overseas markets still offer significant growth opportunities. China's newly developing market for cosmetics ingredients also is expected to grow rapidly in the coming years.



Doosan Corporation Glonet operates a bio business in specialized areas, but due to the limited market size, sustaining a rapid growth is challenging. Therefore, Glonet aims to expand its market power with existing key products and to continue exploring new growth drivers while strengthening its efforts in increasing factory productivity, maximizing operational efficiency and improving quality management system in order to enhance the fundamental competitiveness. Glonet is expected to increase its market share by strengthening sales capacity while developing new products for the market of pharmaceutical ingredients and business unit for nutraceutical ingredients will promote continuous growth by entering into U.S, China and other overseas markets. In addition to domestic market, business unit for cosmeceutical ingredients also intends to expand its business by entering large European market and rapidly growing Chinese market as well.



Ceramide



PL95E

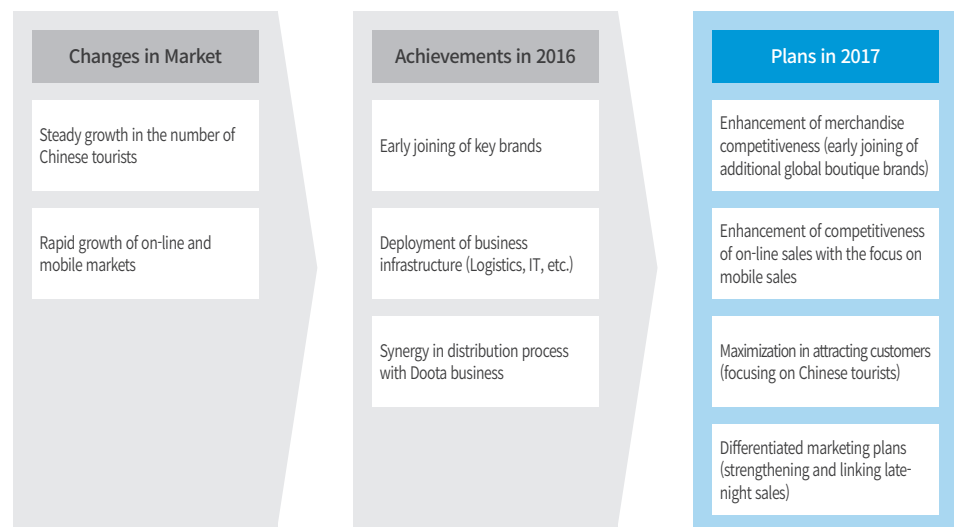
Business Strategies



Main Products

- Operation of the duty free that offers approximately 700 fashionable brands of cosmetics, perfumes, watches, bags, clothes, etc.
- Provision of youthful and refined K-Style goods as well as differentiated theme in consideration of the customers' needs in the region: competitiveness has been strengthened with services that pursue current trends and market dynamics.

As the number of foreign tourists visiting Korea has been increased steadily in recent years, the duty free business will grow accordingly. It is forecast that the number of foreign tourists visiting Korea will increase to 18 million, representing an increase of 11% compared with 2016, and that the number will grow at an annual average rate of 7% until 2021. The main customers of the duty free are Chinese tourists, who are expected to account for 53% of all foreign visitors in 2017. The ratio of sales through online and mobile platforms at the duty free is increasing rapidly.

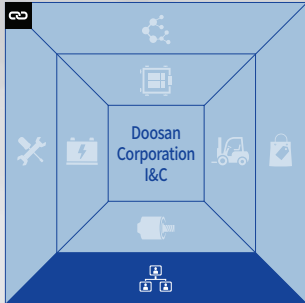


Duty free **opened**
at Doota, a major landmark
at Dongdaemun, in 2016



Panoramic view of the Doota Duty Free

The Doota Duty Free successfully attracted world-famous watch brands such as Jaeger LeCoultre, Chopard, Panerai, Longines, along with other famous fashion brands Bally, Kenzo, Longchamp, Michael Kors to join in the business. Sales increased by over 10% each month after the opening in 2016. In 2017, the Doota Duty Free plans to enhance its merchandise and business competitiveness by actively attracting more global famous brands.



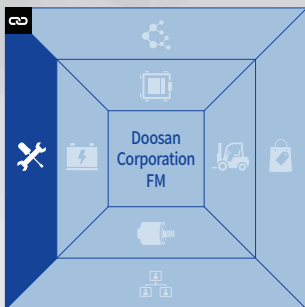
Main Services

- IT consulting and system deployment
- Business system operation
- IT infrastructure operation



Data center in Yongin

Doosan Corporation I&C provides inclusive IT services to all of the affiliates of Doosan Group throughout the world, including IT consulting and system integration, and application system and IT infrastructure services. It also concentrates on the cultivation of specialists in the provision of IT infrastructure cloud services and ICT-centered industry 4.0 and duty free systems. Doosan Corporation I&C also aims to provide IT services that substantially contribute to the enhancement of customer values. In 2017, it plans to support the business success of all affiliates of Doosan Group by providing competitive IT services that reflect the rapidly changing technological environment, business/management conditions, and Doosan Group's IT strategies. To that end, it plans to continue offering services that provide the highest levels of customer satisfaction while expanding its technological competencies and field services.



Main Services

- Facility Management
- disaster prevention services



Doota control tower

An increasing number of advanced skyscraper buildings and industries facilities are being built in line with the advancement of construction technologies, thereby raising the public's perception of the professional management of buildings. The scope of facility management is showing a marked tendency to expansion into areas that require specialized technologies, including factories, tunnels, railways and hospitals. A new market with an estimated value of around KRW 200 billion is being generated thanks to government policies aimed at entrusting the management of government and other public buildings to outsourced management groups. Therefore, the demand for integrated building management services is likely to enjoy steady growth.

Doosan Corporation FM has successfully switched to the Share Service* in 2016, and plans to provide a more efficient facility management service to the affiliates of Doosan Group.

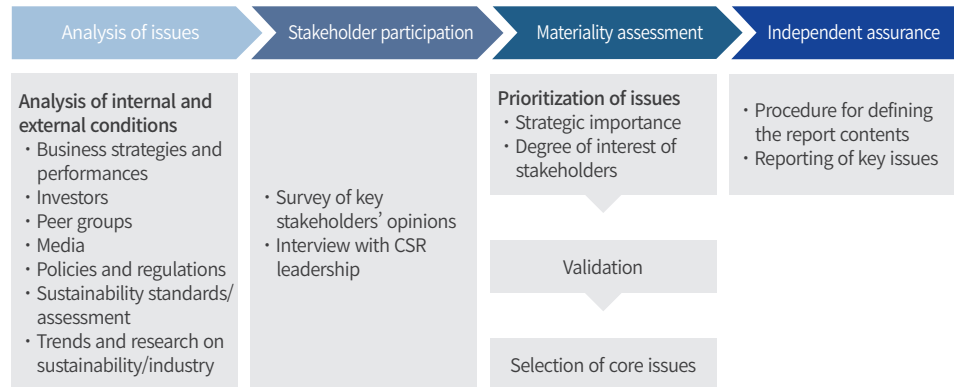
* Shared Service: Provision of a higher level of service by centralizing resources on functions that are performed repeatedly and which are scattered among various units of an organization or group

Materiality Assessment

We define the contents of the report by conducting a materiality assessment with the participation of our stakeholders in order to identify essential CSR information that could affect our decision making process.*

* Based on the materiality assessment framework of the Accountability and GRI Guidelines

Procedure for Defining the CSR Report Contents

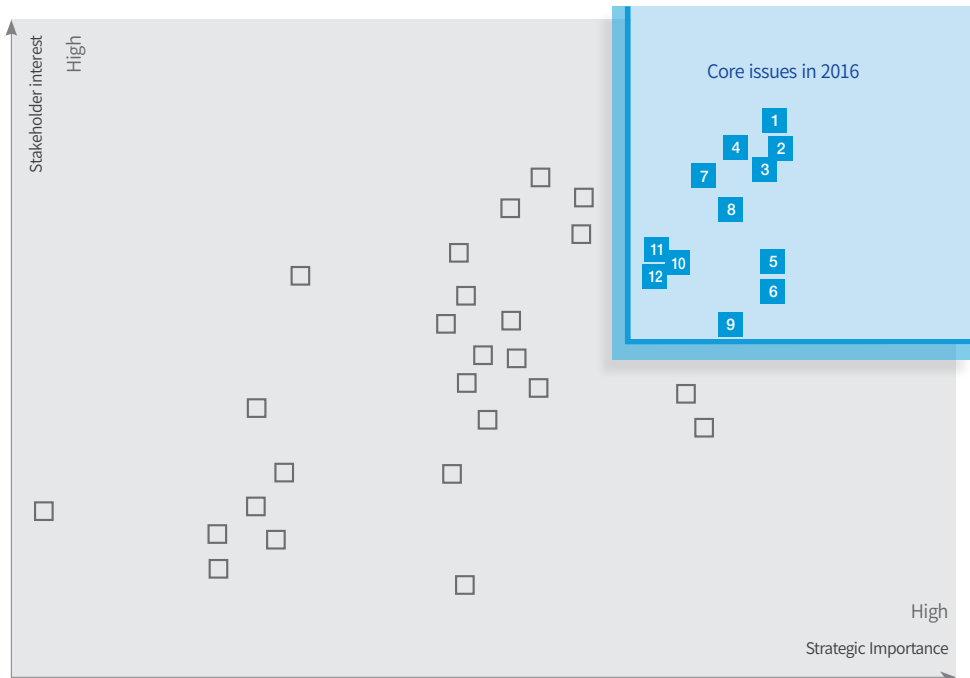


Analysis of Issues

We explored all of the potential issues that could be reported by analyzing internal and external conditions in the context of our pursuit of sustainability. We selected 37 issues after analyzing 100 potential issues based on the similarity of the contents.

Outcome of Materiality Assessment 2016

Priority	Core Issues
1	Product safety
2	Management of hazardous chemical substances
3	Management of environmental pollutants
4	Maximization of customer values through quality innovation
5	Employee communication
6	Health and safety at worksite
7	R&D investment and activities
8	Sustainable business strategies
9	Development of environmentally-friendly products and services
10	Inducement of personnel and development of human resources
11	Support for suppliers through shared growth
12	CSR considering requirements of local communities



Stakeholder Engagement


We conducted a stakeholder survey from 16 December 2016 to 7 January 2017 in order to collect their opinions on its CSR management. The survey targeted 941 key stakeholders from total six stakeholder groups, including employees, customers, suppliers, local communities, academia and experts, and investors. Opinions were collected from 265 persons or 28% of the survey respondents.













The CSR leadership interview was conducted to check the direction of the company’s CSR strategies while enhancing the management team’s understanding of corporate social responsibility-based management. The interviewees included the heads of key business groups, including the Electronics, Industrial Vehicle, Mottrol, Duty Free and Fuel Cell business groups, and officers in charge of human rights, talent development, environmental issues, customers, social responsibility, fair trading, personal information, technologies and products.

Materiality Assessment

The ranking of stakeholders’ interest and strategic importance were quantified based on the outcome of the stakeholder survey and interviews with members of the management team. The priority ranking of key CSR issues was determined based on these two criteria, and twelve issues were selected as the core issues for 2016, including product safety, management of hazardous chemical substances, and control of environmental pollutants. The selection of the core issues included both affirmative and negative factors in order to treat our CSR influence in a balanced manner. The data collection plan was developed by examining the influence of each issue on CSR in internal and external areas of the organization, and whether the activities or events occurred during the report period and by assessing the long-term CSR influence.

Independent Assurance

An independent professional verification agency without any connection with or interest in our business affairs or purposes conducts a review to determine whether the report duly complies with the report publication procedure and requirements as provided under AA1000AS and the GRI guidelines and whether it duly discloses information on the selected core issues. The independent assurance statements are provided on  pages 78 and 79.

Report Boundary		Our Core CSR Issues		Layout of Core Issues	Pages
Internal	External				
●	●	8	Sustainable business strategies	 Business Strategies	 12
●	●	1 9	Product safety Development of environmentally-friendly products and services	 Products for Tomorrow	 26
		4 7	Maximization of customer values through quality innovation R&D investment and activities		
●	●	2 6	Management of hazardous chemical substances Health and safety at worksite	 Green & Safe Sites	 36
		3	Management of environment pollutants		
●		5	Employee communication	 Talent Communication & Development	 44
		10	Inducement of personnel and development of human resources		
●	●	11	Support for suppliers through shared growth	 Shared Growth Supply Chain	 50
●		12	CSR considering requirements of local communities	 Local Community Engagement & Development	 54

* The numbers denote the priority ranking of the issues based on the results of the materiality assessment.

CSR Commitment

Our Determination to Conduct CSR-based Management



Woneui Kim,

Senior Vice President in charge of HR/Operational Excellence affairs, Doosan Corp



Linking CSR with Business Competitiveness



The ultimate purpose of CSR is to secure sustainable business competitiveness. Our core CSR strategy is to create a virtuous cycle; it is a cycle in which investments in green technologies lead to product competitiveness by satisfying customers' environmental concerns, while support for suppliers leads to the enhanced competitiveness of the supply chain. To that end, all business groups and units have established and implemented CSR projects, and their achievements are inspected by CSR Committee. They also strive to enhance overseas worksites' CSR to a level comparable with that of the global enterprise.



Practical Support to Promote Supply Chain Sustainability



We also emphasize environmental and CSR requirements to our suppliers in order to promote and propagate CSR throughout the supply chain. However, as some suppliers do not have sufficient resources to satisfy the requirements, we devise means of providing substantial assistance for their deployment of CSR systems. One successful example of such efforts is Doosan Corporation Industrial Vehicle's project to enhance the competitiveness of its suppliers and improve their workplace safety and environment last year.



Bangyu Sim,

Senior Vice President in charge of Industrial Vehicle operation, Doosan Corp



Keeping Promises from the Long-term Perspective



We often fall into the dilemma of choosing between long-term sustainability and short-term financial achievements in our decision-making processes. We strive to resolve such a dilemma from the perspective of 'keeping our promises'. Even if unexpected changes take place in the market, we believe that keeping our promises to customers or suppliers will help enhance our business values in the long term. As such, we keep our promises even if it causes short-term financial difficulties, as securing the trust of our customers will reward us far greater value.



Donghwi Choi,

Vice President in charge of Mottrol Sales affairs, Doosan Corp



Internalization of CSR through Education and Communication



We strive to enable our actual CSR management to settle in all our business units smoothly without focusing on minor formalities. Diverse education and training programs are the main tools for such CSR internalization. In particular, we aim to enhance the level of understanding of CSR among our employees, and the host and beneficiaries of our CSR management by inclusively communicating the future direction of its implementation.



Seungwon Lee,
Vice President in charge of HR affairs, Doosan Corp



Pursuit of Social Destinations through R&D



We actively study how we will lead changes in the market with our technologies and products and how we will diffuse our environmental and social impacts. In 2016, we made efforts to enhance the economic, environmental and social values of our future products by reflecting sustainable elements on our roadmap for the development of technologies and products.

Inwook Kim,
Vice President in charge of Electro-Materials New Business Center Research Institute, Doosan Corp



Enhancement of Future Community Competitiveness and Business Value Through Strategic CSR Activities



We operate the leading CSR programs that we have developed based on our strategy of 'enhancing future community competitiveness and business value through strategic CSR activities'. In 2016, we made efforts to enhance the expertise of the personnel in charge while stabilizing these programs. We plan to implement differentiated CSR activities by examining what we can do best to enhance social effectiveness in viable areas.



Eunsik Min,
Vice President in charge of Administration Center, Doosan Corp

Core Issues

Products for Tomorrow	26
Green & Safe Sites	36
Talent Communication & Development	44
Shared Growth Supply Chain	50
Local Community Engagement & Development	54





Products for Tomorrow



01 R&D

02 Quality Innovation

03 Responsible Products



Byeongman Go, Manager, Equipment Maintenance Team, Kyungdong Express (KD Express)

Doosan supplies KD forklift package customized to the specific operational conditions of KD Express, a business specializing in the physical distribution service. The KD forklift package has three unique features: 1) it has been reinforced with thicker steel plate to enhance the durability as forklift is exposed to the risk of frequent collisions while operating in a limited space, 2) it is equipped with magnets that collect nails from the ground and 3) A forklift is deactivated automatically when the operator leaves his seat for 30 seconds or more to sort cargo boxes.

KD forklift package is the product of the long-term collaboration between Doosan Corp and KD Express. We look forward to maintaining a good relationship through reliable quality and service.

01

R&D



The majority of Doosan Corporation's business lines are based on advanced technologies. Technology leadership is closely related to the current performance in the market as well as the long-term increase of business values. A good example of this principle can be found in the fuel cell market. Only three companies in the world, including Doosan Corporation, are equipped with technologies related to fuel cell for buildings and power plants, and technological advantage is directly linked to the market leadership. As we strengthen our technology-oriented business structure with the focus on technology rather than production, R&D is regarded as a key element of our business strategy.

Market/Technology Based R&D

2.5%

R&D investments to sales*

Enhanced R&D System

31 projects

Key development items commercialized

Strategic IP Portfolio Deployed

159 applications

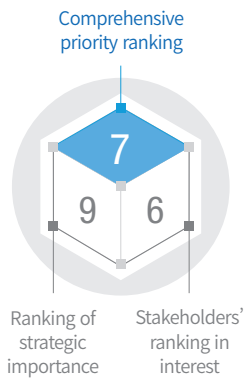
Patents filed

* Based on investment and sales volume of Electro-Materials, Industrial Vehicle, Mottrol, Fuel Cell, and Glonet BG, which require R&D activities

Ongoing Progress

We plan to strengthen our business competitiveness with mid- and long-term R&D strategies and PRM/TRM¹⁾ based on markets and technologies. As such, our technology-management system consist of preemptive research and development based on analyses of markets and technologies, efficient R&D processes and enhanced implementation, and the development of strategic IP²⁾ portfolios.

R&D Investment and Activities



Strategic tasks	Market/technology based R&D	Enhanced R&D system	Strategic IP portfolio deployed
2016	<ul style="list-style-type: none"> Introduction of enterprise-wide technology sessions: Introduction of PRM/TRM 	<ul style="list-style-type: none"> Deployment of R&D field management system: Project Review Meetings, Technology Cooperation Committee 	<ul style="list-style-type: none"> Enterprise-wide IP process standardized
2017	<ul style="list-style-type: none"> Enhanced operation of PRM/TRM processes 	<ul style="list-style-type: none"> Securing visible R&D achievements 	<ul style="list-style-type: none"> Deployment of enterprise-wide IP systems
Mid- and long-term	Preemptive R&D based on technology platform	Advancement of global R&D cooperation structure	Possession of market-leading IP portfolio
Targets	Preemptive development of market-leading products and technologies	Timely securing of target products and technologies	Early occupation of strategic IP leading markets

1) PRM/TRM: Product Road Map/Technology Road Map

2) IP: Intellectual Property

Technological Competitiveness Originating from Market

In 2016, we prepared our PRM by selecting innovative product groups that will lead the future markets by analyzing both markets and customer requirements. We also developed the TRM to develop the next-generation technologies required for developing such products. All Doosan Corporation business groups have set new mid- and long-term growth targets based on a high-growth highly profitable business portfolio by analyzing business structures and markets. We have also developed PRM/TRM to achieve such targets. Accordingly, PRM and TRM are regularly updated based on changes in the market.

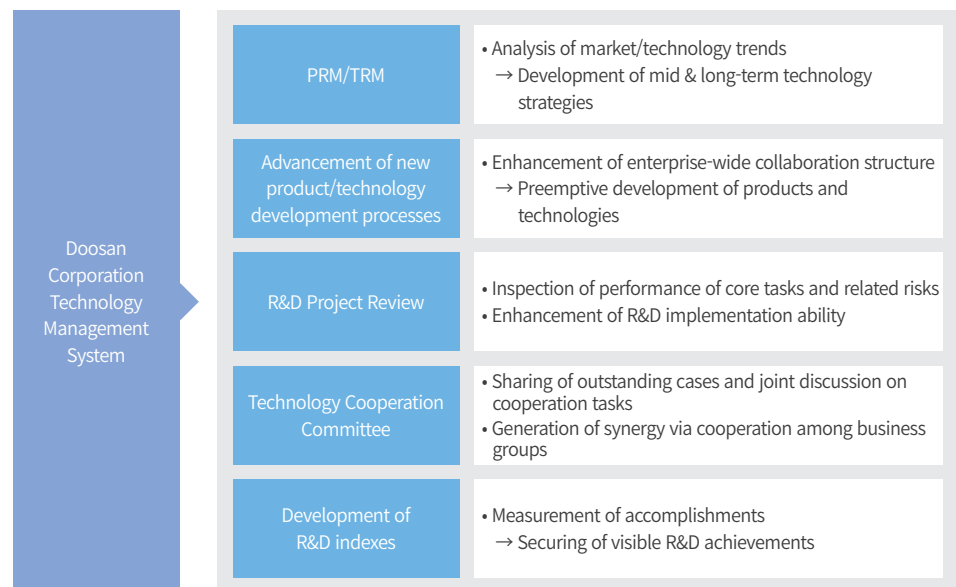
PRM/TRM Concept



Key to Powerful Implementation

In 2016, We held R&D Project Review and Technology Cooperation Committee on a regular basis, and improved new product/new technology development processes customized to each business group in order to enhance our ability to implement technology-management systems. In 2017, We plan to consolidate our system for implementing strategies while responding more flexibly to changes in the environment through field-oriented management. We are currently developing R&D indexes in order to effectively manage the performance and progress of such achievements.

Doosan Corporation Technology Management System



Technology Cooperation Committee

Systematic Management of IP Portfolio

We plan to systematically manage our strategic patents and IP portfolio by deploying an enterprise-wide unified IP system. In 2016, we standardized our IP regulations and processes. We also plan to manage IP filing, analysis, strategy development, and issue-handling by all our business groups by deploying a unified IP management system from 2017.

Accumulated IP



Sources of Technology, Personnel and Infrastructure



Aerial view of DRC in Gunpo

R&D Academy

Doosan Corporation Mottrol runs the R&D Academy with the aim of securing 'Fundamental Competitiveness'. In 2016, it provided a total of 15 education courses covering the basics on patents, processes, jig design, and matching engine output with pump load. Some 140 R&D personnel completed courses amounting to 473.5 hours of education and training in total.

Expansion of Infrastructure for the Development of Future Energy

Doosan Corporation Fuel Cell plans to deploy equipment required for developing Megawatt-class fuel cell systems on a long-term basis. It is considering the possibility of entering the Doosan Research Center (DRC) in 2018 currently under construction at Gunpo, Kyeonggi-do; and is operating a test infrastructure at the Iksan factory in relation to the performance of a short-term localization project.

2016 R&D Highlight

Entry Into the Market for Hydraulic Parts for Vessels

In 2016, Doosan Corporation Mottrol entered the hydraulic parts market for vessels by developing radial motors and industrial axial piston pumps. Thus domestic customers, which previously used imported parts for vessels, can enjoy from cost reduction as well as increased stabilization of parts supply. These products can be purchased starting from 2017.



Radial motor



Single pump

Enhancement of Product Competitiveness with Unique Technologies for Separation and Purification

Phospholipids, key ingredients of cell membrane, play an important role in regulating the physiological activities of living organisms. Technologies that separate and refine phospholipids to a higher purity can enhance the product competitiveness in the biotech business, as the global medical market prefers the phospholipids with the highest purity level. Doosan Corporation Glonet is striving to improve cost efficiency while advancing product specifications by using its unique separation and purification technologies that are outstanding from the market. In addition, Doosan Corporation Glonet is steadily enhancing its product competitiveness by strengthening technologies for improving productivity and developing products customized to the needs of customers. Thanks to such efforts, the company is increasingly attracting new customers from Europe, the US, and other regions.

02

Quality Innovation



Quality innovation refers to our management activities of meeting customers' expectations. Therefore, quality can be viewed as a core and fundamental survival element that is connected with business competitiveness as well as the reliability of a company's products and corporate image. In the business sphere of Doosan, too, quality is the basis for customer satisfaction and works as an essential element of corporate survival. In particular, enhanced quality competitiveness has emerged as a key competitive element in the markets, which have entered a complete competition system, including the domestic market for industrial vehicles.

Enhancement of Quality Management System

2%
Defect improvement rate*

Enhancement of Customer Satisfaction through Improved Quality

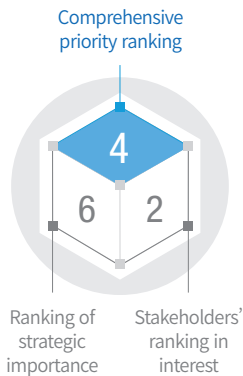
3.8 Points
Customer satisfaction index*

* Doosan Corporation Mottrol

Ongoing Progress

We have strengthened our quality management system in order to secure consistent product quality by improving quality steadily. All of our business groups have staged quality improvement activities, and are striving to enhance customer satisfaction with quality assurance that reflects customer requirements.

Maximization of Customer Values through Quality Innovation



Strategic tasks	Enhancement of quality management system	Enhancement of customer satisfaction through improved quality
2016	<ul style="list-style-type: none"> Acquisition of advanced quality management system certification Deployment of global standard analyzing methods 	<ul style="list-style-type: none"> Deployment of monitoring system to improve customer satisfaction Execution of CS operation process
2017	<ul style="list-style-type: none"> Upgrading of quality management system based on data Enhancement of quality management ability of suppliers 	<ul style="list-style-type: none"> Establishment of processes reflecting VOC* products Expansion and enhancement of customer satisfaction survey
Mid- and long-term	<ul style="list-style-type: none"> Upgrading of enterprise-wide quality management system 	<ul style="list-style-type: none"> Enhancement of systems reflecting customer needs Upgrading of processes for managing satisfaction
Targets	<ul style="list-style-type: none"> International quality specifications secured to explore new markets Reduction of defect rate and enhancement of quality competitiveness 	<ul style="list-style-type: none"> Enhancement of systems to reflect customer requirements Upgrading of processes for satisfaction management

* Voice of Customer (VOC): Overall feedback on customer requirements, including complaints and suggestions concerning products and services.

Enhancement of Management System for Improving Quality

We have continued with our quality improvement activities in accordance with the characteristics of each business group based on its quality management system.

Electro-Materials	<ul style="list-style-type: none"> China subsidiary and all domestic business units obtained ISO/TS-16949* certification <ul style="list-style-type: none"> → Entry into automotive market + upgrade of production and customer management level Deployment of systems for data-based analysis and real-time monitoring <ul style="list-style-type: none"> → Reduction of analysis time and application of systems for automatic sharing and alarming system → Enhancement of productivity by securing optimum recipe (Max Speed-up)
Mottrol	<ul style="list-style-type: none"> Pre-Delivery Inspection (PDI) <ul style="list-style-type: none"> → Assessment of quality of newly developed products Periodic mass-produced part/product audit by product group <ul style="list-style-type: none"> → Plan to expand operational scope to suppliers by 2017
Glonet	<ul style="list-style-type: none"> Systematization of BGMP* management <ul style="list-style-type: none"> → Preparation of four major specification statements and enhancement of quality system operation based on GMP standards Ceramide registered for JSQI* → Exploration of new ceramide markets, securing of analysis methodologies and standards compatible with advanced specifications

* ISO/TS-16949: Higher certification of automotive industries under ISO 9001, international standard for quality management systems.

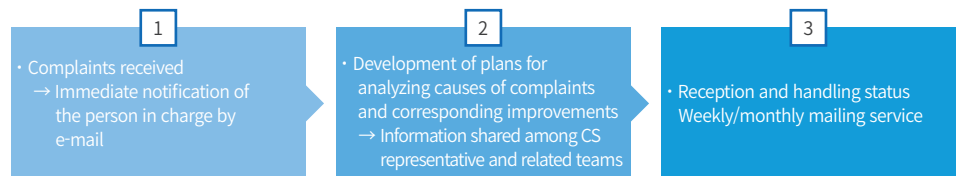
* BGMP (Bulk Good Manufacturing Practice): Standards that need to be followed in all production and quality control processes for good medicine and medical supplies.

* JSQI (Japanese Standards for Quasi-Drug Ingredients)

Customer Satisfaction through Quality Innovation

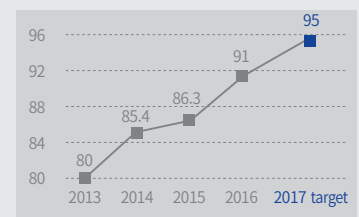
We have improved customers' perception and enjoyment of quality by strengthening the quality of our service at the customer contact points. In 2016, Doosan Corporation Industrial Vehicle has enhanced the technical capabilities at the customer contact point by providing 702 service technicians with a total of 45 training sessions. Furthermore, Doosan Corporation Mottrol shortened the response time for customer complaints by improving its system for monitoring the entire processes from the reception of complaints to the completion of handling. In addition, Doosan Corporation Mottrol has enhanced customers' perception of quality by operating regional CS operation processes in Korea and China.

Doosan Corporation Mottrol Process: Monitoring Customer Complaints



Zero-defect Quality Management for Customer Satisfaction

Doosan Corporation Industrial Vehicle has implemented zero-defect quality management by inspecting all of its vehicles for export and domestic sales. The items pointed out in the inspection results and the units responsible for them are shared on a daily basis. The causes of the referred items are analyzed and improvement plans are developed and reflected in mass production. The rate of zero-defect vehicles was 91% in 2016; the business group plans to improve this to 95% in 2017 by making steady improvements to product quality.



Percentage of zero-defect vehicles shipped by Doosan Corporation Industrial Vehicle

03

Responsible Products



Product safety is considered one of the most significant topics in Doosan Corp.'s major business fields, including electronic materials, forklifts, and functional bio materials. In particular, while praised for being comfortable, forklifts carry the risk of causing serious injuries as they are large, fast and heavy. In addition, bio materials are used in products that directly affect the human body. The environmental effect of products is another important issue that significantly affects Doosan's overall operations. The market demands and regulations concerning exhaust emissions may be regarded as both an opportunity and a threat to Doosan Corporation Industrial Vehicle. Fuel Cell products, as a future energy source and axis of the new industries, are designed to include various environmentally-friendly characteristics.

Augmentation of Product Responsibility Development of Green Products

702 persons

Number of persons participated in a product safety service training*

* Industrial Vehicle BG

42.1 %

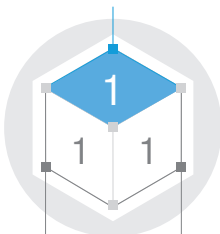
Sales ratio of environmentally-friendly products*

* Electro-materials, Industrial Vehicle, Mottrol, Glonet BG

Ongoing Progress

Product Safety

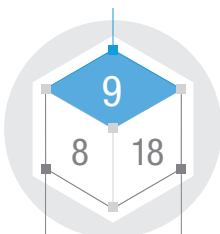
Comprehensive priority ranking



Ranking of strategic importance Stakeholders' ranking in interest

Development of Environmentally-friendly Products

Comprehensive priority ranking



Ranking of strategic importance Stakeholders' ranking in interest

We are making concerted efforts to develop responsible products by augmenting its product responsibility and developing green products. Our products are designed by taking into account the need for safety and environmental performance from the planning stage.

The key indicators of green products are selected and managed by all business groups.

Strategic tasks	Augmentation of product responsibility	Development of green products
2016	<ul style="list-style-type: none"> • Deployment of systems for verifying reliability • Enhanced advance inspection of products • Improvement of GSS¹⁾ packages 	<ul style="list-style-type: none"> • Declaration of green products • Selection of indicators for assessing green products • Development of definitions of grades of green products • Reflection of sustainability in PRM/TRM
2017	<ul style="list-style-type: none"> • Upgrading of safety design and management • Introduction of reliability verification systems 	<ul style="list-style-type: none"> • Enhancement of sustainability factors in PRM/TRM
Mid- and long-term	<ul style="list-style-type: none"> • Augmentation of reliability verification • GMP²⁾ certification of new businesses 	<ul style="list-style-type: none"> • Updating of road map for the development of green products
Targets	<ul style="list-style-type: none"> • Development of reliability verification processes • Securing of product safety throughout all processes 	<ul style="list-style-type: none"> • Regular process for updating the roadmap for the development of green products

1) GSS (Guardian Safety System): A system designed to ensure user safety and the operational stability of industrial vehicles.
 2) GMP (Good Manufacturing Practice): Standards for the production and quality management of superior medicines and medical supplies.

1,000 Hours for Consumer Safety

Consumers are demanding the application of increasingly stringent standards regarding the reliability of electronic materials. As such, reliability verification is an important process that needs to be passed to manage product competitiveness and the associated risks. Reliability verification is carried out to check the following three aspects of a product's characteristics: whether the product functions properly, whether there are any problems occurred in processes, and whether the product functions reliably when actually used on site.

Customers cannot wait even though many hours are invested in a product from its initial planning and development to reliability assurance. 1,000 hours are required to test the basic reliability of any one aspect of a product alone, while a minimum 5,000 hours are required for UL tests¹⁾. In 2016, Doosan Corporation Electro-Materials conducted research on how to reduce the amount of verification hours, with a focus on reliability aspect among its tasks to enhance product safety. The business group was able to deploy a verification system that is capable of effectively verifying product reliability while reducing the time required for verification.

1) UL tests: Safety tests performed based on the standards of the Underwriters Laboratory Inc. (UL), a representative safety testing agency of the USA

Safety Management On All Processes through Preliminary Inspection

Doosan Corporation Industrial Vehicle conducts a preliminary inspection of all its industrial vehicles as part of its efforts to secure product safety throughout all product processes from development to scrapping. In 2016, Doosan prevented product safety-related accidents during their use by conducting preliminary inspections of 812 vehicles for 220 customers. It also provided customer support to enable customers to use their products in the optimal conditions.

GSS Safety Maintenance

Doosan Corporation Industrial Vehicle applies the GSS (Guardian Safety System) to ensure user safety and operational stability. The GSS reduces the risk of accidents that can affect operators and cargoes. In 2016, application of the GSS was extended to include 2.5-ton B25X, B25T electric forklift model and 2.5-ton BC25S electric forklift model.²⁾

2) GSS as an optional specification

Key GSS elements applied to electric forklift



<p>Inclines are no problem Electro-magnetic Auto Parking Brake (EPB) prevent the forklift from rolling back at a stop on an upslope.</p>	<p>Brake Oil Level Indicator When the brake oil level in the brake oil reservoir is lower than minimum level, the low brake oil level indicator in the instrumental panel will flash.</p>	<p>OSS (Operator Sensing System) Whenever the operator leaves the seat, the truck travel and mast lifting will stop.</p>
<p>Automatic Speed Control The angle sensing information controls the travel speed at sharp turning.</p>	<p>Low Battery Alarm Lifting is limited to guide charging battery at 80% battery discharge during operation. This function can prevent sudden truck stop due to discharged battery.</p>	<p>Mast* Tilt Lock (ISO3691) The hydraulic locking device prevents the mast from natural lowering and tilting.</p>
<p>Seat Belt Indicator When the driver starts the forklift, the warning Indicator in the instrumental panel will flash if the seat belt is not fastened.</p>	<p>Mast Lowering Inter-Lock (ISO3691) On condition that an operator keys off or getting off seat after lifting or tilting mast, the hydraulic lift & tilt locking system will prevent motion of truck such as lifting, tilting lowering and so on.</p>	

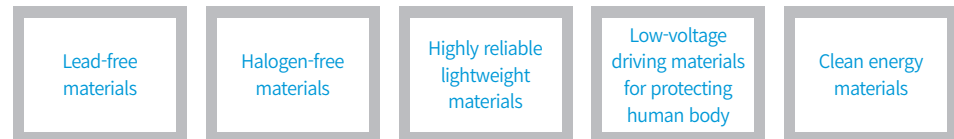
* Mast: Device for lifting loaded freight.

Development of Green Products

We are striving to develop green products based on its R&D and environmental management policies. In 2016, we adopted key indicators after defining the green products of all business groups with the aim of approaching them more strategically.

Doosan Corporation Electro-Materials has selected a number of key eco-friendly areas, including the exclusion of lead and halogen, and the development of lightweight materials, highly reliable materials that can endure high voltage, ensuring safety of electric vehicles under low driving voltage, materials for fuel cell parts so called renewable energy.

Key Elements of Green Products of Doosan Corporation Electro-Materials



Doosan Corporation Industrial Vehicle selected exhaust emissions, energy consumption, and noise as key indicators of green products based on an evaluation of the importance of their eco-friendly elements. It also defined its products as Eco-product and Premium Eco-product based on their grades. It is also conducting R&D with the aim of increasing the proportion of Eco-products and Premium Eco-products among its entire product portfolio.

Grades of green product of Doosan Corporation Industrial Vehicle

	Definition	Indicators
Eco-product	<ul style="list-style-type: none"> Products that satisfy all indicators among products that satisfy all regulations in each market 	<ul style="list-style-type: none"> Emissions Noise
Premium Eco-product	<ul style="list-style-type: none"> Products that satisfy additional customer requirements and recommendations by market while satisfying the standards for Eco-product - One or more of the three requirements 	<ul style="list-style-type: none"> Emissions Noise Energy consumption rate

The definitions, indicators and targets of each business group with regard to green products are reflected in the mid- and long-term PRM/TRM¹⁾, and will be linked not only to R&D but also to the exploration of new business lines considering its environmental aspect.

1) PRM/TRM: Product Road Map/Technology Road Map

Provision of Safety and Environmental Information



Doosan Corporation Electro-Materials'
RoHS test report

We at Doosan Corp. preemptively prevent damages caused by safety defects in its products by including safety-related information in the product manuals that are distributed to its customers. Doosan Corporation Electro-Materials uploads and periodically updates information related to MSDS²⁾, RoHS, and halogen of all its products on its website, thereby allowing customers to easily access information about product safety and hazardous materials. Regarding OLED materials in powder form, it enables customers and other related personnel to recognize hazardous materials during the transportation and operation processes of the customers by affixing a hazard marking on the product packages or boxes.

2) MSDS (Material Safety Data Sheet): A document that provides information related to the safe use and stewardship of chemical materials.

Certification of Safe Green Products



Ecocert certification mark

All of the products of Doosan Corporation Glonet are developed using natural materials. The quality of soybean lecithin and other key raw materials is controlled through stringent advance verification as their possible genetic modification can affect consumer preferences. Doosan Corporation Glonet uses minimal amounts of solvents in the product manufacturing processes, and is making special efforts to replace toxic solvents with eco-friendly ones. As a result of such efforts, it registered three products with Ecocert, Europe's stringent certification agency for organic products, in 2016, and also registered one product with REACH, a European certificate of new chemical materials control.

2016 Eco-Product Highlight



Doosan Corporation Electro-Materials' highly reliable FFC

Materials for Lightweight Vehicles

The electrical harness installed in a car generally weighs anywhere from 40 to 70 kilograms. As fuel may be saved by reducing a car's weight, the development lightweight materials is an important element of efforts to reduce energy consumption while improving fuel efficiency. To meet such requirements, Doosan Corporation Electro-Materials developed the high reliable FFC "Flexible Flat Cable" in 2016.

2.5 Ton Green Forklift

Doosan Corporation Industrial Vehicle is committed to developing next-generation electric forklift that do not emit any exhaust gases. In 2016, it launched a 2.5 ton electric forklift featuring improved energy efficiency, greater quality stability, and enhanced operator convenience to reflect the latest market requirements.



B25X-7: 2.5 ton electric forklift (Cushion tire)



BC25S-7: 2.5 ton electric forklift

Improved Fuel Efficiency through Electronic Controls

Due to market demands for energy efficiency, environmental-friendliness, controllability and productivity, the world's leading excavator manufacturers are increasing their production of excavators with electronically controlled hydraulic systems. In response, Doosan Corporation Mottrol has procured various electronic control technologies by developing the fuel efficiency analysis tool, the controller for pump horsepower control and an electronic regulator. In 2017, the company will complete the development of the HPM¹⁾ system, which is an electronic pump control system, for commercialization. With the HPM system in hand, the company is planning to enter the market for excavators equipped with electronically controlled hydraulics. By pursuing early product development efforts and conducting rigorous product evaluations, Doosan has successfully developed an HPM system that can get rid of the flow rate loss needed for pump control and can minimize the pressure loss by increasing the controllability and response time of the pump. It is expected that fuel efficiency of this system could be improved by as much as 12~15%, compared to that of the NFC²⁾.

1) HPM: High speed Power Matching

2) NFC: Negative Flow Control

Green & Safe Sites



04 Environmental Management

05 Safe Green Worksites



Yongmok Jeong*, Superintendent, Iksan Factory, Doosan Corporation Electro-Materials

* Awardee of the Doosan Way Awards, in recognition of efforts to enhance employees' EHS mindset through EHS Leadership activities

Doosan Corp is leading the way in establishing an upright EHS culture. We at Doosan Corporation Electro-Materials in Iksan were selected as the Best Doosan Business Unit in recognition of distinguished achievements, including untarnished record of Zero safety accidents in 24 months, A-grade rated collaboration program with suppliers, and the certification as an outstanding business unit that strives to enhance our employee health while exceeding the leadership practice targets in the EHS inspection, risk exploration, education and emergency response drills. We aim to further raise our competitiveness in environment and safety administration by steadily spreading our EHS culture.

04

Environmental Management

As the government has gradually strengthened environmental regulations, businesses are assuming greater responsibility for activities related to environmental management. In particular, as more stringent environmental regulations such as the 'Act on Registration, Evaluation, etc. of Chemicals' and the 'Chemicals Control ACT' are being applied to the diverse chemicals used in production and other processes, we consider it important to preemptively respond to them by monitoring changes in them. This will contribute to reducing the related risks and simultaneously creating new business opportunities by responding to customer requirements.

Reduction of Environmental Pollutants

Enhancement of Resource Recycling

KRW **10.1 billion**
 Environmental investments

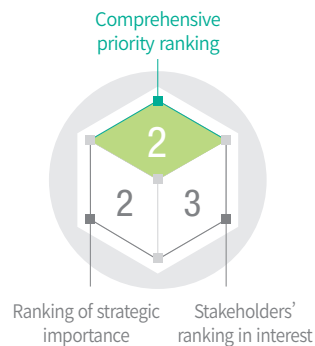
2,439 t
 Reduction of hazardous chemicals

939 t
 Reduction of waste generated*

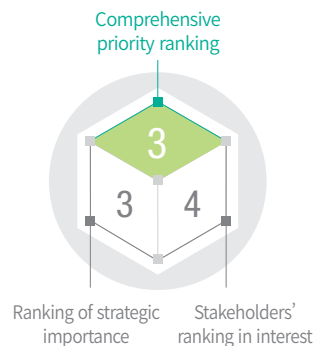
* Volume reduced compared to 2015, Based on volumes generated by Doosan Corporation Electro-Materials, Industrial Vehicle, Mottrol, and Glonet. (Exclusive of additional generated volumes attributable to newly started business projects)

Ongoing Progress

Management of Hazardous Chemical Substances



Management of Environmental Pollutants



We have developed and implemented a mid- and long-term roadmap for the promotion of green management with the target of becoming a 'Global Top Green Company' by 2020, and has implemented three Green (3G¹⁾) action tasks based on its three major green management strategies. These tasks include the management of environmental impacts in all the processes of product design and production. The task of establishing environmentally-aware management in the production process is being carried out with the focus on reducing the use of pollutants and improving the recycling of resources.

Strategic tasks	Reduction of environmental pollutants	Enhancement of resource recycling
2016	<ul style="list-style-type: none"> Reduction of use of hazardous chemicals by replacement Investment in environment to reduce odor-generating pollutants 	<ul style="list-style-type: none"> Enhanced reuse of waste materials by process improvement Reduction of water consumption by switching cooling methods
2017	<ul style="list-style-type: none"> Improvement of facilities that handle hazardous chemicals Investment in new equipment, extension or replacement of outdated equipment for environment 	<ul style="list-style-type: none"> Enhancement of recycling and reuse of wastes Reasonable response to the Emission Trading Scheme (ETS)
Mid- and long-term	<ul style="list-style-type: none"> Preemptive response to statutes and strengthened regulations Enhanced efforts to improve the environment by business unit 	<ul style="list-style-type: none"> Response to systems for managing performance in resource recycling Attainment of reduction target of GHG/energy consumption
Targets	<ul style="list-style-type: none"> Compliance with environmental statutes Minimization of discharge of environmental pollutants 	<ul style="list-style-type: none"> Maximization of reuse and recycling of resources Minimum use of energy and resources

1) 3G: Green Culture, Green Value, Green Communication

Reduction of Environmental Pollutants

Response to and Monitoring of New Environmental Regulations

As environmental issues have become increasingly significant, including worldwide environmental pollution, water shortages, natural disasters, and climate change, ever greater emphasis is being placed on the urgent need to address them. Furthermore, diverse stakeholders are demanding closer communication concerning the company's green (environmental) activities. In this regard, we have deployed a green management system aimed at minimizing its impact on the environment. It proactively responds to government regulations and tendencies by steadily monitoring their trends and surveying their impact on local communities. Furthermore, it has conducted in-depth expert education to secure essential EHS capabilities and has internally reinforced EHS participatory activities.

Hazardous Chemical Management

We update our regulations and countermeasures by inventory each quarter by deploying an enterprise-wide inventory of chemical substances. Doosan Corporation Industrial Vehicle's Incheon factory handled a total of 1,807 tons of 243 chemical substances in 2016. It has fundamentally blocked the inflow of hazardous chemical substances into the factory as of January 2017 by replacing the ten hazardous chemical substances specified under the Toxic Chemical Control Act with harmless substitutes or restricting orders thereof.

We manage chemical substances by promoting organic cooperation among the Production, Purchase and Research Departments. Prior to the purchase of any new chemical substance, the relevant Material Safety Data Sheet (MSDS), certificate of chemical substances, and Letter of Confirmation (LOC) must be reviewed. In addition, we run periodic training courses on the safe handling of chemical substances, emergency actions to be taken in the event of exposure to chemical substances, and the wearing personal protective gear for all employees who are responsible for handling chemical substances at its business sites.

We inspect our facilities that store, use or handle chemical substances pursuant to the Act on the Registration and Evaluation, etc. of Chemicals and the Chemicals Control Act, both of which have been enforced since 2015. Notably, in 2016, we conducted a special diagnosis together with experts to satisfy the further strengthened standards for facilities that handle hazardous chemicals. We plan to develop specific plants and complete our improvement by 2019, the deadline allowed under the statute. Further, we are striving to promote the steady chemical management and an effective response to accidents by strengthening our capabilities for green management by running an in-depth training session for EHS representatives and related employees.



Education for in-depth understanding of the Act on the Registration and Evaluation of Chemicals

Air Pollutant Management

We control the emission of air pollutants generated at our business sites to below 50% of the standards allowed under the current statutes, thereby reflecting our determination to reduce their impact on the environment by establishing standards that are actually stronger than those required under the statutes. In 2016, Doosan Corporation Glonet installed condensers to reduce substances that emit a foul odor from drying equipment in its production factories, and ultimately succeeded in reducing odors by recollecting 70 to 80% of the organic solvents consumed per unit of its products.

Water Usage and Effluents Management

We constantly check and improve our processes as part of our concerted effort to reduce water consumption. In 2016, Doosan Corporation Mottrol reduced its water consumption by switching the equipment it uses to cool the heat generated by the processes for testing the performance of newly developed products from the water-cooling to the air-cooling type. It also reduced unit water consumption by reusing water discharged after cooling by installing additional cooling towers. We limit the density of water pollutants in final effluents to below 50% of the standards allowed under the statutes.

Enhancement of Resource Recycling

Doosan Corporation Mottrol's reduction of unit water consumption by installing cooling towers*



2.9 m³/t

* Reduced from 7.8 m³/t in 2015 to 4.9 m³/t in 2016

Doosan Corporation Electro-Materials' revenue from waste recycling



Approximately
KRW **4.2** billion

Doosan Corporation Industrial Vehicle's reduction of resources by separate collection of plastic scrap



Approximately
19 tons

Waste Management

To reduce the volume of discharged waste, we distinguish our waste by nature and state, and legitimately treat all waste through our 'Allbaro System'.¹⁾ To legitimately treat waste products generated by diverse industrial processes, we periodically educate and evaluate the vendors responsible for treating wastes. Also, we are continuously making efforts to reduce the volume of waste discharged from our processes. In 2016, Doosan Corporation Electro-Materials' Kimcheon factory improved its B-grade MEK recycling process, and is expected to reduce the volume of its discharged waste by approximately 640 kilograms per month. Furthermore, Doosan Corporation Industrial Vehicle reduced the cost of disposing of waste plastic resin scraps by KRW 66 million a year by collecting them separately.

1) Allbaro System: An IT-based waste management system of the Korean government that controls the entire processes of waste management from discharge to transportation to final treatment.

Countermeasures against Global Warming by Saving Energy

Since the adoption of the Paris Agreement in December 2015, widespread efforts are being made to accelerate the reduction of greenhouse gas emissions. We control the greenhouse gases emitted by our facilities in accordance with the IPCC²⁾ Guidelines and government guidelines, and disclose information related to greenhouse gas emissions and efforts to curtail them in our business report. We also submit statements on our greenhouse gas emissions and energy consumption and the related monitoring plans for verification by third parties each year. In 2016, we vigorously carried forward energy saving activities by each business group in order to reduce greenhouse gas emission volume.

Key examples of energy saving

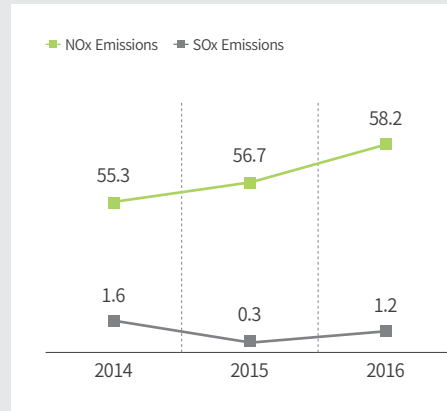
Doosan Corporation Electro-Materials	Replacement of factory lighting with LED lamps	24-hour lighting: 10,728 lamps replaced by LED lamps	Reduction of energy consumption 1.71 GWh/year	Cost saving KRW 194 million	Improvement of brightness 138%
	RTO #3 recovery of waste heat	• Heat exchanger installed on RTO #3 damp ducts to recover waste heat (RTO #3 is facility incinerating waste gases) • Hot water tank heated using recovered waste heat	Volume of heat recovered 160,000 kcal/hour	Cost saving KRW 55 million	LNG fuel saving Approx. 12,000 m³/month
	Installation of inverter	6 Tritter heat circulation pumps, Installation of Oven fan 4 inverters	Reduction of energy consumption 0.40 GWh/year	Cost saving KRW 0.38 million	
Doosan Corporation Motrol	Replacement of all factory lighting fixtures with LED lamps	All lighting lamps in the Business Group: 3,600 lamps replaced by LED lamps	Reduction of energy consumption 1,092 GWh/year	Cost saving KRW 138 million	Improvement of brightness 50~140%
	Improvement of performance or equipment efficiency	• Elimination of preventable hours per performance process • Improvement of control of main pumps • Elimination of flushing processes ³⁾	Reduction of energy cost KRW 20 million	Cost saving by improving equipment efficiency KRW 55 million	

To reduce energy consumption, we discharged greenhouse gases within the specified limit under the certified emission reduction (CER) scheme vested by the government in 2016. The CER credits thus saved were brought forward to 2017.

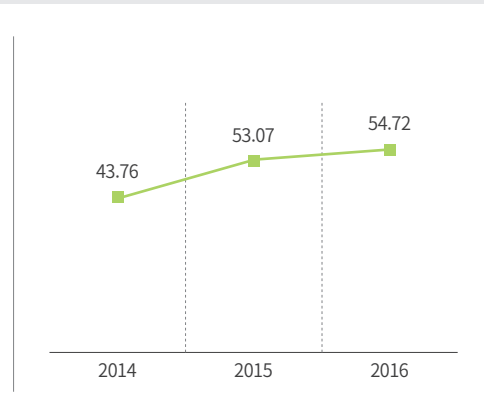
- 2) IPCC (Intergovernmental Panel on Climate Change): An international consultative body organized under the UN to develop coordinated international action against climate change
- 3) Flushing: A process by which oil is injected into hydraulic appliances and circulated through them in order to improve the cleanliness of residual oil upon completion of performance tests

Achievements in the Management of Environmental Impact on Worksite

NOx, SOx Emissions Unit: t

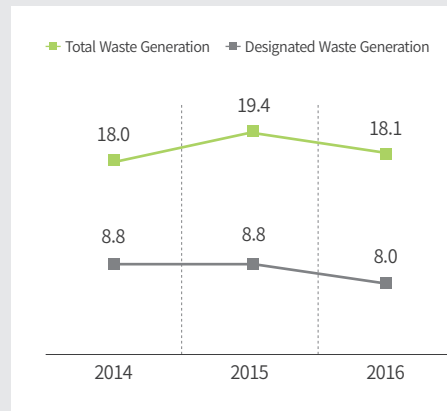


Average THC* Concentration Unit: ppm

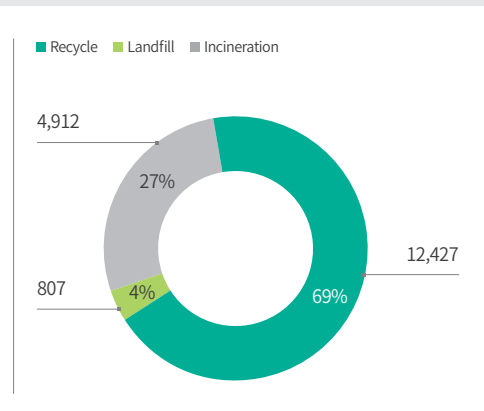


*THC: Total Hydrocarbon

Waste Generation Unit: thousand t

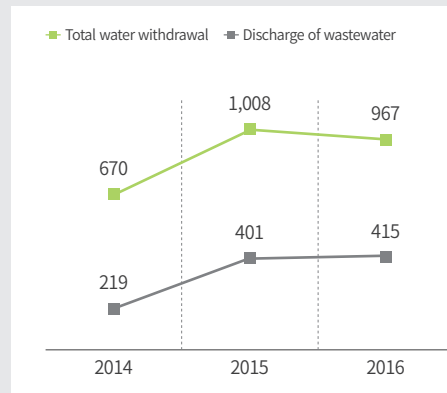


Total Waste Recycle and Disposal Unit: t



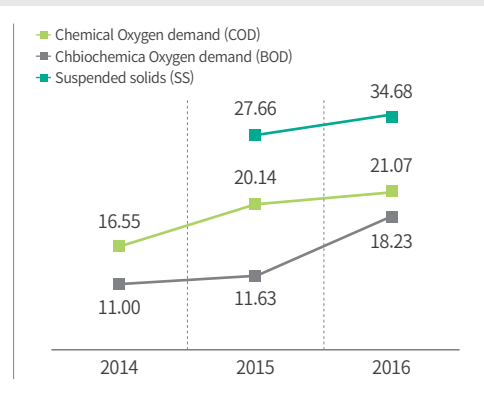
* As the scope of the data collected for the report has increased, some values differ from those disclosed in earlier reports. (In Korea, the Doota and Yeongang buildings, Overseas Production Plant - Changshu in China, CFL, DLE, DIVC, DMJC, FCA)

Water Withdrawal Unit: thousand t



Concentration of Water Pollutants in Effluents

Unit: [COD/BOD] ppm, [SS] mg/l



* Data was modified due to the expansion in data collection scope (Changshu, CFL, DLE, DMJC)
 * Water withdrawal and discharge of waster volume have sharply increased as CFL data was included since 2015

05

Safe Green Worksites



There is growing public concern about worksite safety and workers' health and this has led to the government strengthening the Occupational Health and Safety Act. Safety accidents do not only result in direct economic losses and diminution of human resources but can also be detrimental to the image of a company. Furthermore, worker health is an issue that directly impacts productivity. As we are totally committed to implementing socially responsible management practices, the prevention of risk factors on our business premises and the creation of a healthy work environment are important issues for the company.

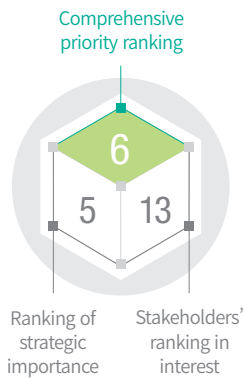
Establishment Practice Culture and Enhancement of Management Systems

0.15 %
Occupational accident rate

Ongoing Progress

We execute our projects based on its mid- and long-term roadmap for green management with the aim of becoming a leader in the field of health and safety by 2020. As such, we are intensively promoting a number of core strategic tasks in the health and safety area including the establishment of active practice and the enhancement of our management system and organizational capabilities.

Health and Safety at Worksite



Strategic tasks	Establishment practice culture and enhancement of management systems	Enhancement of organizational, health and safety capabilities
2016	<ul style="list-style-type: none"> EHS leadership activities Re-establishment of standards for assessing health and safety performance Support for EHS of suppliers 	<ul style="list-style-type: none"> Enhancement of EHS Academy education Evaluation of and support for BCM¹⁾ training
2017	<ul style="list-style-type: none"> Increase of support for EHS of suppliers Companywide promotion of EHS leadership activities Introduction of programs maintaining the EHS basics 	<ul style="list-style-type: none"> Implementation of EHS CoP²⁾ activities Extension of EHS Academy courses Enhancement of efficiency of BCM training
Mid- and long-term	<ul style="list-style-type: none"> Amendment of guidelines on evaluating EHS performance Development of foundation for employee-led EHS activities Deployment of EHS communication channels at overseas sites 	<ul style="list-style-type: none"> Development of training courses to enhance managerial abilities Courses on system-based training of EHS specialists
Targets	Establishment of a mutually-dependent safety practice culture (characterized by mutual care and observance among employees)	Securing and demonstration of world-class organizational health and safety capabilities among all employees

1) BCM (Business Continuity Management): Management system designed to ensure the continuity of business operations in the event of a disaster or crisis
 2) CoP (Community of Practice): A group of people interested in a specific field formed to share, learn, and disseminate knowledge.

“The fastest way is the safest way”*

* “Best Slogan” awarded at the Electronic Business Group’s EHS slogan event in 2016

Safety risks improved through the Top Patrol



26 cases

Leaders’ Patrol of Sites

We are committed to improving the level of health and safety by monitoring worksites’ efforts to prevent accidents, enhance safety management, and assess the working environment. The members of the management team actively participate in the health and safety conditions of the employees by personally patrolling worksites based on their concern and support for health and safety. In particular, Doosan Corporation Industrial Vehicle explores and improves problematic areas by reflecting the findings of its leader’s personal tour of worksites under the EHS Top Patrol.

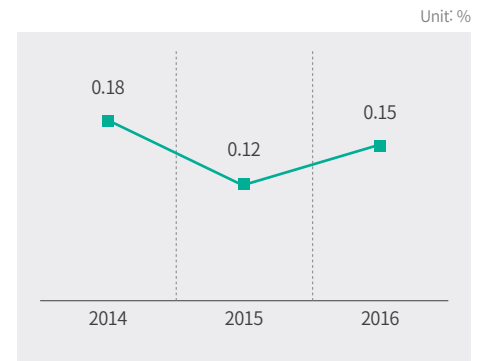
Doosan Corporation Industrial Vehicle: establishment of safety culture through the Top Patrol initiative

- Leaders’ monthly on-site inspection
- Implementation of RCA* method in accident investigation

- Efforts to induce changes in the behavior of officers and employees
- Development of a safety management culture
- Prevention of recurrence of accidents by analyzing past cases

* RCA (Root Case Analysis): Accident survey technique for directly analyzing the fundamental causes of accidents using special tools

Occupational accident rate of Doosan Corporation



Health & safety symbiotic cooperation of Doosan Corporation Mottrol in 2016

Safe Worksites Created Together

We have deployed a mutual cooperation system with our suppliers in order to establish safe and healthy worksites. In 2016, Doosan Corporation Electro-Materials’ Iksan factory won the grade “A” rating in the ‘Safety, Health Win-Win Program’ KOSHA (Korea Occupational Safety and Health agency) implemented for four suppliers, and was also ranked within the top ten percent throughout the country. Doosan Corporation Mottrol has also implemented the program for five suppliers to assess their risks, and plans to provide unsparing support to help enhance health and safety at its suppliers.

Establishment of a Health and Safety Culture through Quizzes

In 2016, Doosan Corporation Electro-Materials held various events designed to establish the company’s health and safety culture and foster the related knowledge, including the EHS OX Quiz and the EHS Golden Bell. These served as occasions for enhancing employees’ knowledge concerning the environment and health & safety issues in a pleasant atmosphere. In 2017, Doosan Corporation Electro-Materials plans to continue hosting EHS culture events in where all officers and employees can participate in 2017 as to help establish the health and safety execution culture.



Doosan Corporation Electro-Materials’ EHS Golden Bell

Enhancement of Organizational Health and Safety capabilities



Doosan Corporation Electro-Materials' BCM training



Firefighting drill

Worksites or Facilities that Continue Operating in the Event of a Crisis

We conduct BCM¹⁾ training each year to secure operational continuity by rapidly responding to disasters while protecting our employees as well as valuable assets in a critical situation. In 2016, Doosan Corporation Industrial Vehicle conducted fire escape drills while Doosan Corporation Electro-Materials conducted BCM training to be prepared for fire and explosion of hazardous material tanks caused by an earthquake. They were successfully conducted according to the relevant manuals and procedures, including ensuring the safety of officers and employees, emergency aid, minimization of losses of assets, and actions for recovering normal operations.

1) BCM (Business Continuity Management): Management system designed to ensure the continuity of business operations in the event of a disaster or crisis

Steady Development of Organizational Capabilities and Experience-oriented Education of Employees

We participated in the development of EHS Academy programs managed by DLI²⁾ and enhanced its EHS organizational capabilities by training the selected employees. It plans to further accelerate the development of their capabilities by upgrading its EHS education and training programs.

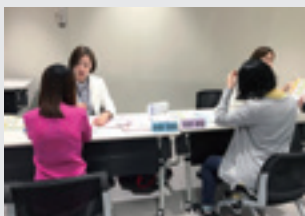
We conduct firefighting drills twice a year and CPR education once every three years in order to improve the first-aid skills of employees through practice-oriented training. All of our employees will complete the EHS education course in 2017 as well.

2) DLI: Doosan Leadership Institute

Enhancement of Employees' Health

To help improve and maintain employees' health, we support the management of high-risk groups with serious diseases and kinesiotherapy for those with cardiovascular or musculoskeletal diseases through periodic physical checkups. We also attempt to improve the fitness of employees by running programs aimed at improving their daily life habits, including a non-smoking fund, an obesity escape program, and healthy diet management. It also continues to provide counseling and stress management programs designed to enhance employees' mental health. Doosan Corporation Electro-Materials conducted 'Dugeun dugeun psychological counseling program' in 2016 to care for the mental health of employees with a view to enhancing productivity, while Doosan Corporation I&C provided a program designed to cultivate the expression of affirmative emotions together with mental counseling and special lectures for all of its employees.

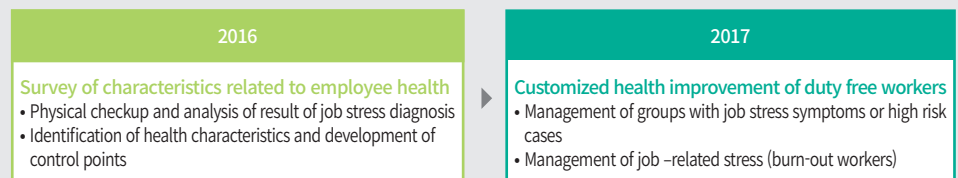
Inclusive Management of Job-related Stress



Doosan Corporation Doota Duty Free's Health Checkup

Many employees of Doosan Corporation Doota Duty Free belong to a service job category whose workers are required to perform their duties while suppressing their emotions. As Doosan Corporation Doota Duty Free determined that job-related stress should be controlled inclusively, it diagnosed the level of job stress and burn-out syndrome of all its administrative and sales employees in 2016, and classified 296 employees who participated in the diagnosis into high and medium risk groups. As such, it plans to provide those diagnosed as belonging to a high stress level with counseling and support programs in cooperation with expert agencies in 2017.

2017 Doosan Corporation Doota Duty Free Plans for Implementing Mental Health Programs



Talent Communication & Development



06 Employee Communication

07 Talent Attraction and Human Capital Development



Donggyu Park, Manager, Doosan Corporation Mottrol, Doosan Corp

Efficient communication and effective grievance handling are essential to the establishment of a healthy organizational culture. We operate various HR systems, including Ombuds Program, as windows for handling key grievance, a career path service, Doosan Way Change Agents, and counselors for handling the grievance of female employees. All grievance are handled according to the three principles of protection of anonymity, prevention of disadvantages, and sharing of outcomes. We also plan to enhance communication efficiency and the satisfaction of our employees by developing detailed guidelines for counseling on grievance while boosting the monitoring of its grievance-handling services.

06

Employee Communication



We have steadily reformed our business structure through M&A. In particular, the number of employees has increased sharply and their composition has also diversified, as the group reorganized its business structure—previously centered on consumer goods in the domestic market—into an infrastructure support business (ISB) with the focus on industrial commodities for export. Accordingly, employee communication has emerged as a key component of corporate competitiveness because efficient communication is essential to transforming their individual expertise into business competitiveness.

Enhancement of Communication Efficiency through the Doosan Way

4,900 hours
Doosan Way Time

Enhancement of Grievance Handling Capacity

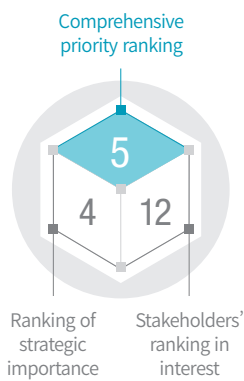
82 persons
Number of Change Agents

14 cases
Number of grievance officially handled

Ongoing Progress

Doosan pursues communication that helps enhance business efficiency and establish our employees' identity based on the Doosan Way. With "Team Doosan" - which has gathered our competencies into one - as our basis, we will become a "Winning Team" that achieves sound performance from now on. The grievance handling procedure has also been strengthened to eliminate factors that impede employees' commitment to their work.

Employee communication



Strategic tasks	Enhancement of communication through the Doosan Way	Enhancement of grievance handling
2016	<ul style="list-style-type: none"> Promotion of business communication channels Settlement of programs practicing leadership reform 	<ul style="list-style-type: none"> Increase of channels for counseling on grievance Enhancement of perception of Ombuds program Education conducted on human rights and grievance handling
2017	<ul style="list-style-type: none"> Searching and sharing of outstanding examples of the Doosan Way Enhancement of Doosan Way performance by team leaders: Doosan Way Review Survey 	<ul style="list-style-type: none"> Increase of employee communication channels Enhancement of feedback concerning grievance counseling
Mid- and long-term	<ul style="list-style-type: none"> Enhancement of business efficiency among teams and divisions through communication: Having Cross Functional Doosan Way Time among teams and divisions Internalization of the Doosan Way in company operations: Enhancement of reaching the winning stories 	<ul style="list-style-type: none"> Enhancement of promotion of complaint grievance channels Enhancement of feedback concerning grievance counseling
Targets	<ul style="list-style-type: none"> Enhancement of business process efficiency Linkage of enterprise-wide-focused tasks with execution plans in teams Enhancement of communication efficiency and enterprise-wide sense of unity 	<ul style="list-style-type: none"> Improvement of systems for grievance handling Strengthen the practical communication Enhancement of satisfaction among employees

Doosan Way Time for Open Communication

Doosan Way Time represents Doosan's unique communication culture designed to develop pleasant, lively working conditions. Doosan Way Time is held every month, and participated by employees in their respective team. Doosan Way Time enables all employees at Doosan Corp to understand the concept of Doosan Way and embed it in their daily operations.

Change Agent Placed at the Hub of Communication

A Change Agent (CA) is an employee who is appointed to lead and execute changes in Doosan Corp. Since the launch of the Doosan Way in 2012, CAs have engaged in active communication within their respective organizations and units. The remit of each CA is to support the main task of their business unit or team and ultimately to realize the Doosan Way through that task. As of the end of 2016, 82 CAs are leading the communication culture at Doosan Corp.

Outstanding Examples of CA Activities

CA*	Role of CA	Execution of changes
Doosan Corporation Electro-Materials Choongwon Kim, Assistant Manager of the Quality Planning Team	Communicator	"Exchange of opinions and development of consensus with peers" • Finding Issues related to Daily Report • Sharing of information on current status of each business site and discussion on improvement plans.
Doosan Corporation Mottrol Daeyoung Kang, Deputy Manager of the Production technology Team	Discoverer	"Discover the merits of team members and instill pride" • Link the Doosan Way with the employees • Support them to win praise and encourage them at the team level.
Doosan Corporation Glonet Jungchun Kim, Assistant Manager, Technology (Quality Team)	Facilitator	"Prepare means of promoting smooth communication" • Develop activities for linking the Doosan Way between technological and administrative personnel • Host discussion meetings among job groups and conduct joint safety education

* 2016 Doosan Way Awards Best CA title winner

Leader's Action Plan (LAP)

The Leader's Action Plan (LAP) is a program practicing leadership reform to implement the Doosan Way of operations. Since 2014, leaders at Doosan Corp have striven to realize the Doosan Way through the LAP and led organizational reforms by the Doosan Way based on introspection and the opinions of both high- and low-ranking employees.



Outstanding officers practicing the Doosan Way LAP

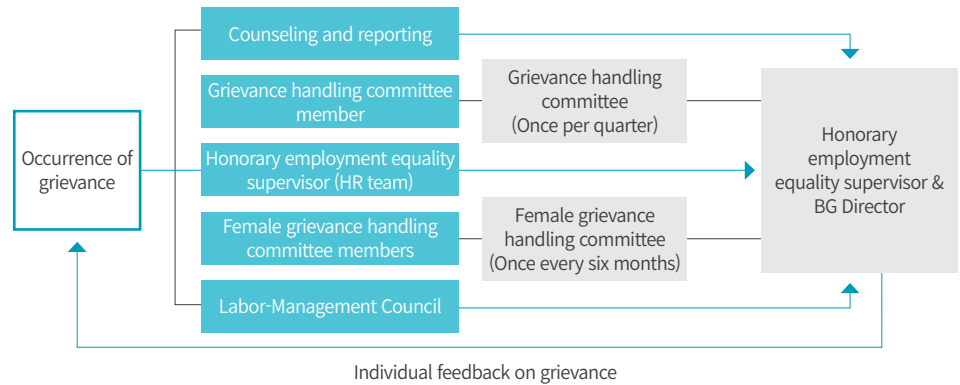
2016 Key LAP activities and achievements

Doosan Corporation Electro-Materials In-uk Kim, Executive Director • Enhanced communication with researchers by job grade - Formation of process improvement points	Doosan Corporation Industrial Vehicle Kunhwa Lee, Managing Director • Production of video introducing forklift of sales reps • Provision of external education that reflects employees' needs	Doosan Corporation Mottrol Kyungsub Lee, Executive Director • Dissemination of necessity for process changes • Periodic check of process (Health Check)
Active communication with and promise to support other departments	Operation of programs for acquiring small forklift operator license	Develop ways of improving operational processes
• Collaboration among employees • Encouragement of self-directed work performance	• Improvement of employees' capacity • Long-term organizational development	• Process optimization • Enhancement of operational efficiency

Improved Grievance Handling for a Healthy Organizational Culture

We operate the Ombudsman program and various other complaint counseling programs to pay attention to the complaints or suggestions of our employees and provide necessary help. We have installed complaint-handling boxes in order to receive complaints offline in addition to the online handling of complaints through the group portal. In this way we are able to promote complaint handling onsite and develop our organizational culture. Managers implement one-on-one counseling programs for counseling on complaints with their subordinates each month. In 2017, they introduced plans to enhance communication efficiency to foster employees with one-on-one counseling programs rather than temporary complaint handling.

Grievance Handling Process



Education on grievance counseling skills of Doosan Corporation Electro-Materials

In 2016 Doosan Corporation Electro-Materials ran a course designed to improve the skills of its grievance handling committee by educating its members on important points to heed when counseling on complaints, counseling techniques for various types of complaints, and ways of attentively listening to and sympathizing with employees' grievances. In addition, the company's various business groups provided all of their employees with human rights education on 30 occasions under the theme of 'Developing a healthy organizational culture together'.

Labor-Management Council to build up mutual trust



Win-win agreement signed between labor and management at Doosan Corporation Industrial Vehicle

We exert to develop a win-win labor-management culture by promoting mutual understanding through active communication between the labor and management. So, the labor-management council meetings are held each quarter along with site council meeting, labor-management joint activities, and management briefing sessions. Doosan Corporation Electro-Materials and Doosan Corporation Industrial Vehicle conduct one-on-one meetings between leaders and technicians each quarter to listen to grievances of field managers, discuss solutions, and deliver leaders' messages. In particular, Doosan Corporation Industrial Vehicle held a ceremony signing a win-win agreement between labor and management jointly with Jungbu Branch Office of the Ministry of Employment and Labor and labor unions to practice win-win programs and corporate social responsibilities.

'Mind relief' Program to Improve the Handling of Grievances



Doosan Corporation Electro-Materials' mental health enhancement training program

We now operate a number of psychological counseling programs as our employees have raised the need for effective stress management. For instance, Doosan Corporation Electro-Materials operates the 'Dugeun Dugeun Psychological Counseling' program with external experts. In 2016, the business group conducted an education course aimed at enhancing its employees' mental health and operated experience booths in collaboration with the Chungbuk Mental Health Promotion Center. In the same year, Doosan Corporation I&C introduced the 'Mind Relief' program by providing psychological counseling in connection with its programs for handling the grievances of employees. The program represented a wider attempt to provide help not only to the company's employees, but also to their family members, to resolve personal unrelated with their duties.

07

Talent Attraction and Human Capital Development



Talents equipped with specific expertise are the engine for future growth as well as the foundation of business growth. In particular, Doosan's key business lines require a higher ratio of R&D and engineering personnel. Therefore, enhancing their job competence is an indispensable factor in improving business competitiveness. Customer satisfaction and financial achievements are closely linked with the competence of the personnel who provide services at the customer interaction points of our retail service, which constitutes a major axis of our new growth engine.

Enhancement of Job Competence/Cultivation of Leadership Ability

82 hours

Training hours per capita

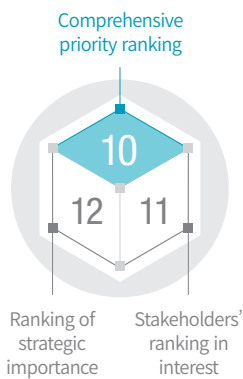
5.7 billion

KRW Total training investments

Ongoing Progress

We place top priority on investing in personnel development in accordance with its people-oriented management philosophy. To develop the talents who will serve as engines of steady growth in the future, we conduct intensive programs to enhance its employees' job competences and cultivate their leadership ability as one of our core strategic tasks.

Inducement of Personnel and Development of Human Resources



Strategic tasks	Enhancement of job competency	Cultivation of leadership ability
2016	<ul style="list-style-type: none"> Reorganization and extension of manufacturing job training Enhancement of research and development capabilities 	<ul style="list-style-type: none"> Implementation of leadership courses by business group Development of leadership ability by job grade Implementation of leadership courses for female managers
2017	<ul style="list-style-type: none"> Implementation of training programs for technicians Upgrading R&D and manufacturing job training 	<ul style="list-style-type: none"> Implementation of leadership courses by each specific business group Implementation of leadership courses for female managers (including junior managers) Implementation of junior MBA courses
Mid- and long-term	<ul style="list-style-type: none"> Enhancement of customized job training programs Improvement of programs based on evaluation of education effects 	<ul style="list-style-type: none"> Review of leadership courses for leader or manager candidates
Targets	Improvement of organizational performance by cultivating the ASK* required for jobs	Contribution to organization enhanced by cultivating the mindset of leaders

* ASK (Attitude, Skill, Knowledge): Attitude, Skills, Knowledge required for the performance of one's

Enhancement of Job Capabilities, the Source of Business Competitiveness

We are committed to establishing a company-wide learning environment and the related programs by assessing the capabilities of our employees and analyzing their development capabilities based on the functional competency (FC) required for the performance of their duties. In 2016, Doosan's business groups conducted customized education courses with the aim of enhancing job-related capabilities.

Achievements of Job Capability Education by Key Business Group

Electro-Materials	<p>Training programs for the enhancement of R&D capabilities</p> <ul style="list-style-type: none"> • Biz. communication Course: Communication skill education tailored to the specific titles of 103 R&D personnel → Enhancement of communication skills onsite • Cost Analysis Course: R&D education linked to business financing issues for 58 researchers at the team leader level • Patent analysis Course: Analysis of competition trends and enhancement of patent competitiveness based on a survey of prior art patents → Enhancement of job-related expertise
Industrial Vehicle	<p>Course aimed at cultivating newly-hired researchers and the Purchase Academy</p> <ul style="list-style-type: none"> • Enhancement of quality demand level/difficulty level of development tasks – increasing and improving of newly-hired training courses • Selection of job-related education courses specialized for business groups - 170 persons attended 13 specialized courses
Mottrol	<p>R&D Academy</p> <ul style="list-style-type: none"> • 15 courses linked to the systems of job-related capabilities (cost computing of processed parts, tolerances, and Geometric Dimensioning and Tolerancing (GD&T) → Courses focusing on the enhancement of competencies for design and quality verification and development of cast materials
Information & Communications	<p>Program for diagnosing and enhancing PI&T FC competencies</p> <ul style="list-style-type: none"> • Implementation of site-oriented programs for fostering job experts or specialists (Internal SAP standards and UX) → 104 employees attended 10 courses run by 17 internal instructors • Plans to implement programs aimed at enhancing surveying competencies and boosting the enterprise-wide IT trend in 2017 → Enhancement of new IT technology competencies

Education on Active Talent and Leadership Skills

We periodically conduct leadership education for team or part leaders, intermediate managers, team members and project managers to help them cultivate the leadership skills required to handle diverse situations within the organization and its business operations based on the Doosan Group Leadership Competency Model (DCM). In 2016, Doosan Corporation Electro-Materials conducted the Leadership Quantum Jump (QJ) course in order to provide the managers and leaders of overseas business units with an opportunity to fully understand the HR development philosophy of the home office.

* Leaders of Luxembourg Corporation (CFL), corporations and branches in China (Changshu, Shanghai, Shenzhen, Zhangjiagang)

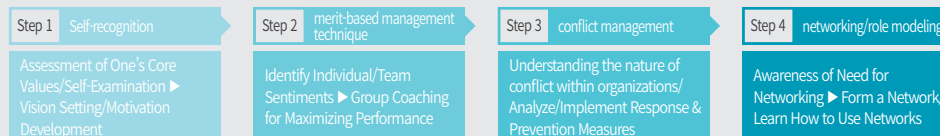
Women's Council, a Base for Expanding Leadership for Female Managers



Women's Council: female leadership courses

In 2016, the Doosan Women's Council ran the Women Manager Leadership Course consisting of four modules in cooperation with the Women in Innovation (WIN), which is composed of former and current female officers of leading companies from Korea and overseas. A total of 26 female managers from Doosan Corporation Electro-Materials, Doosan Corporation Industrial Vehicle and Doota Mall participated in this course. The council plans to increase the number of participants to allow more female employees to improve their performance based on self-development, including junior personnel.

Modules of female leadership courses



Shared Growth Supply Chain



08 Sustainable Supply Chain



Gaphwan Park, Executive Director, P&H Tech

We at P&H Tech, a supplier of Doosan Corp, produces OLED (Organic Light Emitting Diodes) components. In 2016, Doosan provided suppliers with systematic feedback on industrial safety, environmental issues, and compliance with the statutes by conducting a health and safety diagnosis of its suppliers. As a result of these services, we were able to improve the EHS competitiveness of our production facilities. We aim to maintain a desirable collaborative relationship with Doosan Corp in order to jointly develop the industry.

08

Sustainable Supply Chain



As competitiveness can hardly be secured through the efforts of a business alone, the competitiveness of network should be secured by promoting collaboration between all of the stakeholders in the value chain in order to achieve long-term survival and development. The scale of our supply chain has been expanding steadily thanks to its newly launched business projects and the acceleration of overseas business. As the joint capability of the supply chain has had a growing impact on business superiority, efforts to enhance the CSR of our overall supply chain and business capabilities are essential to raising our business competitiveness, in addition to the perspective of risk management.

Augmentation of Supply Chain CSR Management System

Enhancement of Support for Suppliers

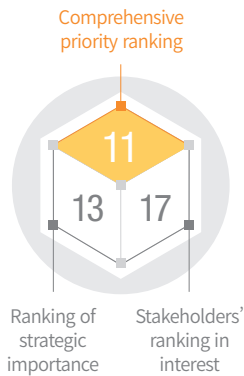


* Including the amount of support for Network Loan

Ongoing Progress

We have enacted guidelines on the management of our sustainable supply chain, and augmented our supply chain CSR management system with the focus on the following four areas: labor/human rights, safety/health, environment, and ethics/fair trade. Furthermore, as part of our efforts to augment the supply chain CSR, we have enhanced the support programs for our suppliers.

Support for Suppliers through Shared Growth

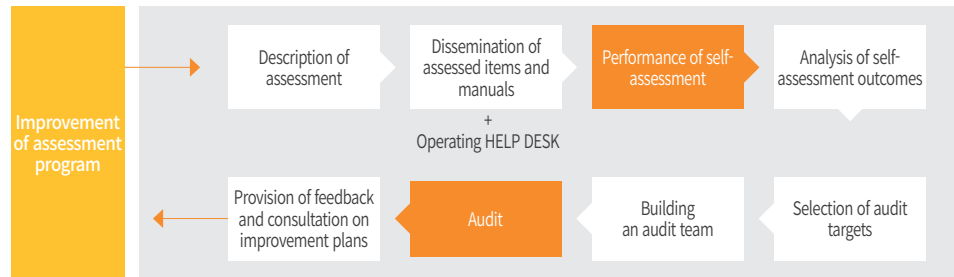


Strategic tasks	Augmentation of supply chain CSR management system	Enhancement of support for suppliers
2016	<ul style="list-style-type: none"> Updating of guidelines on the operation of supply chain CSR Expansion of supply chain CSR to overseas corporations and new business lines Enhanced assessment of sustainability of supply chain 	<ul style="list-style-type: none"> Operation of education programs Development of action plans for consulting program
2017	<ul style="list-style-type: none"> Enhancement of systems for securing sustainable supply chain Expansion of overseas suppliers subject to application 	<ul style="list-style-type: none"> Improvement of education program Enhanced support for education and consulting program
Mid- and long-term	Linking of supply chain CSR management with objectives of enterprise-wide management	Enhancement of supply chain CSR collaboration
Targets	Integrated supply chain risk management of economy, environment and society	Support for sustainable supply chain and mutually beneficial cooperation

Sustainable Supply Chain Management

We developed and published **GSSC (Guidelines for a Sustainable Supply Chain)** to promote the systematic management of our supply chain CSR. All of the suppliers in business with us observe the GSSC based on an agreement. In 2016, we diagnosed and assessed our suppliers under SSAP (Supplier Sustainability Assessment Program) based on the GSSC, and have since raised the level of the supply chain CSR by discussing the necessary improvements with them.

Implementing Process of SSAP



Support for CSR of Suppliers

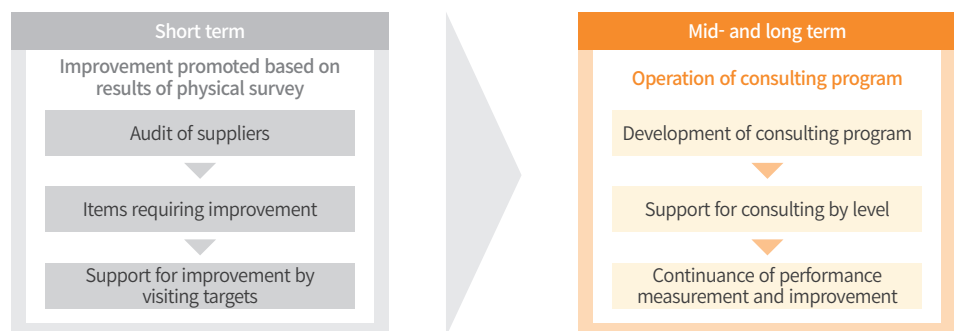
We provide training and consulting to help our suppliers secure their CSR competitiveness by themselves. In 2016, we provided training for the employees of 83 suppliers after developing CSR training program for them. We also selected areas requiring support for improvement by analyzing the results of their sustainability assessment. From 2017, we plan to raise the standard of actual supply chain CSR by offering them consultation in the relevant areas.

Configuration of Contents of CSR Training Program for Suppliers

EHS	Compliance	CSR	Credit assessment
Environment/safety/health	Ethical management	<ul style="list-style-type: none"> Supply chain CSR Application of GSSC Risk assessment program 	Credit risk management

We make concerted efforts to jointly improve the CSR of those of our suppliers that turn out to have insufficient capabilities for self-improvement based on the results of audit of their CSR status. In the long term, we plan to provide CSR consulting to our suppliers according to their level by developing consulting program that reflect outstanding examples.

Plan to Support CSR Consulting of Suppliers



Support for Enhancing Quality Competitiveness

We support our suppliers to improve quality and enhance their product competitiveness, as well as to improve customized quality by business group. In 2016, Doosan Corporation Mottrol undertook comprehensive measures and activities aimed at improving the quality of supply chain.



Signing ceremony of agreement to raise the competitiveness of Doosan Corporation Industrial Vehicle's suppliers

Doosan Corporation Industrial Vehicle	<ul style="list-style-type: none"> • Holding a ceremony for the signing of an agreement aimed at enhancing the competitiveness of its suppliers • Intensively improve its suppliers' capabilities for quality and timely delivery by assigning experts in factory innovation • Field guidance for vendors subject to single PPM, diagnosis of quality management practices, and improvement of processes
---------------------------------------	---

Doosan Corporation Mottrol	<ul style="list-style-type: none"> • Support for activities aimed at improving competitiveness by category of processing/assembly and casting materials • Customized support provided by support groups by area of quality, production technology, purchase, etc. (10 companies in 10 months) 	
	Materials	Processing/Assembly
	<ul style="list-style-type: none"> • Improvement activities focusing on procurement → Enhancement of capability for quality improvement management of casting materials • Quality improvement TFT operation and ICT projects implemented 	<ul style="list-style-type: none"> • Improvement activities focusing on production and operation units → Enhancement of quality improvement and quality of casting materials • Dissemination of outstanding cases of substandard item management

Financial Support for Management Stability

We continue to provide financial support to enable suppliers to maintain their business stability. In 2016, Doosan Corporation Electro-Materials provided both financial and welfare support at the same time. Doosan Corporation Industrial Vehicle not only paid KRW 14.9 billion in accounts payable to its suppliers before the due date on the occasion of holidays, but also provided them with molds and jigs and welfare, and cited its outstanding suppliers.

In addition, Doosan Corporation Mottrol paid subsidies to the Supplier Business Council and provided KRW 0.8 billion of support to two suppliers, including creative economy and Innovation funds. Meanwhile, Doosan Corporation Glonet has steadily carried out the early payment of accounts payable in cash to its suppliers on holidays, while Doosan Corporation I&C paid a total of KRW 0.19 billion in accounts payable to 26 suppliers on holidays in the first half of the year.

Enhancement of Global Competitiveness through Support for Suppliers



Doosan Corporation Industrial Vehicle's business information session

Doosan Corporation Industrial Vehicle held a number of business briefings for its suppliers in China in order to share market trends and explain Doosan Corp's strategies. Making efforts to promote active communication with local suppliers and the development of joint business directions served as a foundation for further increasing global business competitiveness.

In addition, Doosan Corporation Industrial Vehicle surveyed industry trends and discussed ways of strengthening joint competitiveness by attending the LogiMat 2016 Germany, Hanover CeMAT 2016, and GACS together with representatives from five suppliers.

Local Community Engagement & Development



09 Growth of Local Community through Participation



Hae-jeong Kim, Teacher of Special Class, Seonyoo High School

In 2016, our students in special-ed class were invited to participate in a rather special education program, Doosan's 'Woori-Doori' physical education program for youths with disabilities. Under this program, the students played in Tee Ball matches on a regular basis with the assistance of expert instructors, greatly helping them to enhance their basic physical strength and sociality. We hope that this type of program will continue to be developed in the future.

09

Growth of Local Community through Participation



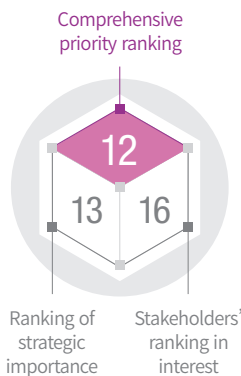
Our influence toward society has increased in line with the growth into a global business, which has in turn increased our responsibility to return to local community as we reap ever greater benefits from our business activities. We have established our mission to ‘enhance the future competitiveness of community and company value through the group-wise implementation of strategic corporate community involvement’ rather than short-term initiatives. We have planned and implemented systematic corporate community involvement initiatives designed to attain our vision of a ‘Top 100 Global CSR Leading Companies by 2025.’ We are striving to grow together with local community by actively implementing our initiatives in collaboration with the key base agencies and entities in the local community where our worksites are located.

KRW 7.4 billion CCI Investment **2,564 persons** Employee volunteering **9,199 hours** Volunteer hours

Ongoing Progress

We perform CCI (Corporate Community Involvement) initiatives in the three areas of education, culture, and sharing, reflecting the opinions of the local autonomous entities, residents, employees who play the main roles contributing to local community. We also enable the beneficiaries to enjoy more positive effects by developing and steadily operating CCI programs representing Doosan Corporation. We are currently working on a task aimed at stabilizing our representative CCI programs.

CSR Considering Requirements of Local Communities



Strategic tasks	Stabilization of representative CCI programs
2016	<ul style="list-style-type: none"> Development of a curriculum composed of representative CCI programs Evaluation of representative CCI programs Organization of an operational council and regular meeting
2017	<ul style="list-style-type: none"> Renewal of the curriculum of representative CCI programs Elevation of the level of programs (enhancement of communication of operational council) Expansion of beneficiaries of representative CCI programs
Mid- and long-term	<ul style="list-style-type: none"> Dissemination of representative CCI programs
Targets	<ul style="list-style-type: none"> Elevation of the level of programs representative CCI program and operational efficiency Improvement of representative CCI program and settlement of systems by checking its effectiveness

Enhancement of Local Community Engagement by Stabilization of Representative Social Contribution Programs

'Time Traveler' and 'Woori Doori' are the representative CCI programs planned to meet the needs of local community and to form close relations with local community from the planning stage. We developed the curriculum and measured the achievements by organizing an operational council to stabilize the program. We will further strengthen the operational council and improve curriculum in order to enhance the completion of CCI program.

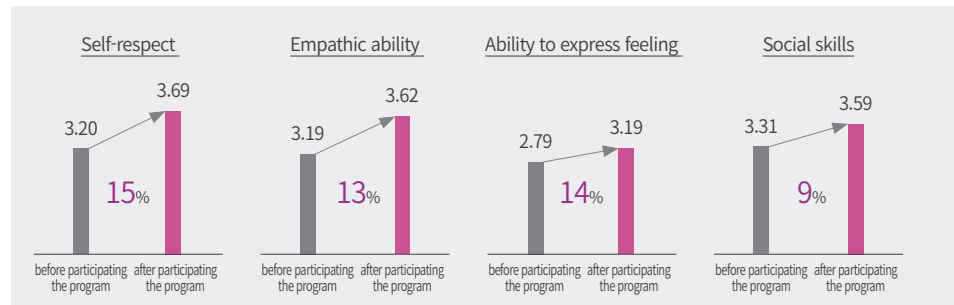
<Time Traveler>, Teenager Emotional Development Program

Launched in 2012, 'Time Traveler' is a program designed to help teenagers from low income families develop their own worldview and ways of communicating with the wider world by providing courses on photography theory and humanities as well as photo-taking trips. In 2016, a total of 335 teenagers participated in the program, including education at an open studio for newly elected students, advanced education for existing students and general education for teenagers. The students who participated in the program put together an exhibition consisting of 300 photos and essays on the theme of 'You, me and Us' after completing the education courses.

Outcome of the Effects of Time Traveler Program



Time Traveler Exhibition



<Woori Doori>, Sports for Youth with Disabilities

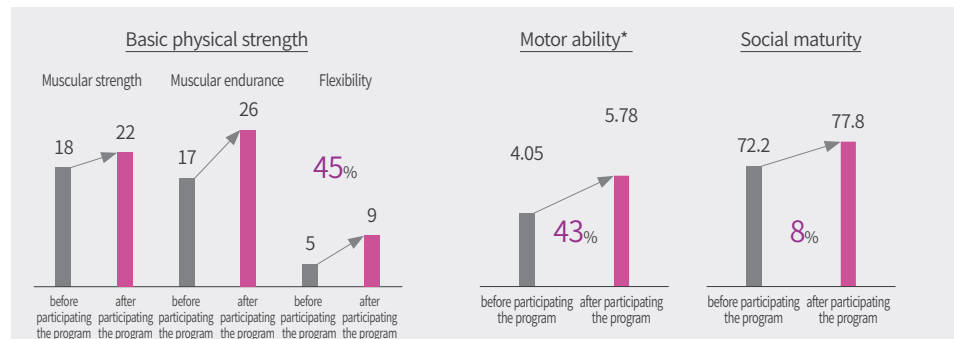
Since 2016 we have operated the 'Woori Doori' the sports program, which is designed to enhance the physical strength and social skills of youths with disabilities in places where our worksites are located, including Seoul, Incheon, Iksan, and Changwon. Each month our employees and undergraduate volunteers participate in sports program to help youths with disabilities with playing Teeball* together. At the year's end, an athletics meeting was held to allow them to experience the new game by competing in Teeball matches. The physical abilities of youths with disabilities were strengthened by playing Teeball games while the participant employees gained a new, more open perception of people with disabilities.

* Teeball is a team sport based on and simplifying baseball and softball.

Outcome of the Effects of Woori Doori Program



Woori Doori Athletics Meeting



* Measured by TGMD (Test of Gross Motor Development): composed of six factors including ball kicking, bouncing, throwing ability, etc.

Efforts to Promote Responsible Engagement



Mentoring of Youth Growth Scholarship Program



Transferring donations to the <Single Mom's Independence Support Program>



Arts & Business Collaboration

Funding Projects Participated by Employees

We raise fund through donation by employees and the matching grant method. We operate the scholarship Program [\[G\]](#) <Youth Growth Scholarship Program> and independent living programs for single mom <Single Mom's Independence Support> selected by the Funding Committee consisting of employees. Under the 'Youth Growth Scholarship' Program, the funds provided scholarships totaling KRW 0.1 billion to 27 students from low-income bracket to enable them to continue with their university education. Employees steadily help them to grow through diverse volunteer activities and communication, including book reading mentoring, while personally participating in the selection of scholarship recipients. Seoul City Government evaluated the program very highly and selected Doosan Corporation, as an example of outstanding Public-private cooperation entity. Doosan Corp. was awarded the commendation from Seoul City Government last year. The 'Single Mom's Independence Support' program, which is designed to assist single moms to become self-sufficient, provided 32 single moms with education subsidies to help them obtain the qualifications required to start a business or find a job, or to take national public official exam. In addition, the program also provided them with psychological testing, personal counseling, and psychotherapy to help them enhance their self-respect and confidence as they suffer from social prejudice and financial difficulties.

Meeting between Business and Art

Since 2014, we have joined the 'Art & Business Collaboration' project led by the Korea Mecenat Association and have supported Seoul Tutti Ensemble making effort to broaden the base for classical music. In 2016, we held a 'Healing Concert' for youths with disabilities and teachers who cannot afford to attend cultural or art performances. In addition, the 'Youth Growth Scholarship' mentoring program between scholarship students and employees included the 'Art Friends' cultural performance program.

Sending Tea with Love

We have forged sisterhood ties with the Baekdusan Unit of the ROK Army since 1991 and have carried out the 'Sharing Tea with Love' program. In 2016, we delivered 8,000 boxes of instant coffee and donations to boost morale of soldiers serving for our nation on the frontlines and to appreciate them for their commitment.

CCI Programs Linked to Business Characteristics

Since 2013, the employees of Doosan Corporation FM have been operating the <Making Stepping Stones> program, in which they use the technology and experience from facility management to improve the living environment of child welfare facilities. In 2016, they visited three local childcare centers to repair their toilets, install insect screens, and repair electrical facilities. Meanwhile, Doosan Corporation I&C has run <Da-dok-geo-rim>, reading education program to help development of children and youths' emotional capabilities since 2014. In 2016, Employees and experts participated in Reading education programs for infants and toddler at Eaden Children ville.

Facilitating the Local Business Area in Dongdaemun for Shared Growth



Site of Seoul 365 fashion

In 2015, we founded the [\[G\]](#) Dongdaemun Future Foundation to help facilitate the local business area in Dongdaemun and develop Dongdaemun area in a balanced manner. In 2016, the Foundation organized Chinese conversation classes for small enterprises and business people, provided assistance for the Seoul 365 Fashion Show and Seoul Bamdokkaebi Night Market, operated joint pattern and sample working room and held Dongdaemun Fantastic Festival together with the Doota Duty Free Shop. In particular, the Seoul 365 Fashion Show helped create jobs in the local community by providing aspiring models with opportunities to work as professional models. In 2016, Dongdaemun Future Foundation was selected by Seoul City Government as an outstanding Public-private cooperation entity in recognition of such efforts.

Doosan Day of Community Service

Doosan Day of Community Service which is group wide volunteer day was held annually. All employees around world participated in various activities designed to help communities.

Domestic



Administration Center

Replacement of window and door paper at Munmyo (Confucian Shrine) in Seoul, repair and cleaning of cultural heritage buildings, and weeding



Fuel Cell

Purification of the environment by removing 1.5 tons of waste from local areas



Electro-Materials

Cultivation of vegetable gardens for children with learning difficulties



I&C

Protection of cultural heritages by removing weeds and fallen leaves and waste at Gyeongbokgung Palace and Changgyeonggung Palace



Industrial Vehicle

Environmental purification at nursing facilities (planting trees and replacing insect screens, etc.)



Mottrol

Production of supplies for facilities for single moms and their children (baby rattles, pillows, dolls, etc.)



Business Division

Making kimchi for elderly citizens at the Seoul Senior Welfare Center



Glonet

Blood donation and promotion of blood donation



FM

Repair of electrical equipment, painting, and plumbing at local childcare center

Overseas



Electro-Materials in Luxembourg

Proceeds from sales of candies and jellies donated to the construction of a new playground in the local community



Fuel Cell in USA

Visit to charity organizations to help sort donated clothes and storage spaces, and work at farms



Industrial Vehicle in USA

Donation of care packages and cleaning of children's shelters



Electro-Materials in China

Environmental purification in the Changshu region



Industrial Vehicle in China

Environmental purification in the Yantai region



Mottrol in China

Environmental purification in the Jiangyin region

Appendix

Transparency of Governance	60
Stakeholder Engagement	61
Risk Management	62
CSR Value Structure	64
Anti-Corruption/Supply Chain/Human Rights	65
Summary of Core Issues	66
Sustainability Performance	68
GRI G4 Content Index	75
Independent Assurance Statement	78
Major Memberships/Participation Principle	80
Key Awards and Assessment in 2016	81

8 Transparency of Governance

BOD Composition

Our Board of Directors (BOD) is responsible for deliberating and voting on major business issues and making decisions on matters stipulated by laws/corporate by-laws, matters delegated by the general shareholders' meeting, and other important matters concerning company's basic management policies and operations. Our BOD consists of 2 inside directors and 5 outside directors, and operates the Audit Committee, Internal Transaction Committee, and Outside Director Nominating Committee composed of outside directors only.

BOD Composition

Inside Directors	Jeong won Park CEO, Chairman of the BOD	Jae kyung Lee CEO, Vice Chairman
	Gwang-su Song Chairman of the Internal Transaction Committee, Member of the Outside Director Candidate Nominating Committee (Present) Advisor to Kim & Chang law firm (Previous) 33rd Prosecutor General	Jong-baek Lee Chairman of the Outside Director Candidate Nominating Committee, Member of the Audit Committee (Present) Lawyer at Kim & Chang law firm (Previous) Chief Prosecutor at the Seoul High Prosecutor's Office
Outside Directors	Hi-taek Shin Chairman of the Audit Committee, Member of the Outside Director Candidate Nominating Committee, Member of the Internal Transaction Committee (Present) Professor of law at Seoul National University (Present) Chairman of the Korea Trade Commission	Chang-hwan Kim Member of the Audit Committee, Member of the Internal Transaction Committee (Present) Advisor to SG Tax & Consulting Group (Previous) Advisor to Yoon & Yang LLC (Previous) Director of the Busan Regional Tax Office
	Hyung-ju Kim Member of the Audit Committee (Present) Professor of Engineering at Seoul National University (Previous) General Director of Seoul National University Library (Previous) Chapter president of the Korean Institute of Information Scientists and Engineers	

BOD Committees

	Audit Committee	Internal Transaction Committee	Outside Director Candidate Nominating Committee
Members	Hi-taek Shin, Jong-baek Lee, Chang-hwan Kim, Hyung-ju Kim	Gwang-su Song, Hi-taek Shin, Chang-hwan Kim	Jong-baek Lee, Gwang-su Song, Hi-taek Shin
Responsibility	Audit Company's accounting and business operations and review the operational status of the internal accounting management system	Deliberate on and approve internal transactions pursuant to the fair trade law	Nominate outside director candidates
Activity Description	Review the outcomes of accounting audits performed by external auditors, consult on non-audited services, review the operational status of the internal accounting management system, etc.	Approve inter-affiliate transactions, etc.	Nominate outside director Candidates, etc.

Independence of the BOD

We appoint 5 outside directors to facilitate BOD's checks and balances so as to allow for balanced and objective decision-making. Directors who have interests in specific matters are restricted from their voting on such matters. Under the BOD are 3 committees including the Audit Committee, and each committee consists of outside directors only to ensure the independence and transparency. For the Audit Committee to perform audits effectively, the committee may request reporting on company's operations or investigate the status of corporate assets. If deemed necessary for auditing, the committee may also request that relevant employees or external auditors attend meetings while seeking advice from experts at the Company's expense.

Procedure and Standards for the Appointment of Outside Directors

To fully perform the BOD's role in promoting 'checks and balance', we uphold the independence of outside directors pursuant to the stringent requirements set forth by commercial law. Outside director candidates are nominated by the Outside Director Candidate Nominating Committee composed of 3 outside experts, and are selected by the BOD.

BOD Operations

We make decisions on major agenda items through the BOD and integrate stakeholder feedback in decision-making through the general shareholder meeting and IR Events to make deliberation more effective. Pursuant to applicable laws, we allow all directors to participate in the decision-making process by using means of real-time voice communication, and directors in so doing are deemed present in the concerned BOD meetings. Our BOD may host ad-hoc meetings when deemed necessary, and may delegate a portion of its authority to BOD committees for swift and efficient decision-making, in which case thorough reviews are performed and deliberation details and outcomes are reported to the BOD. BOD meetings are assembled when the majority of the all directors are present and decisions are made when the majority of present directors support such decisions. If a quorum with weighted voting is required by laws and regulations, such a quorum is observed. Directors cannot vote by proxy, and directors with personal interests in certain agenda items cannot vote on such items. In 2016, our BOD met 14 times. The attendance of outside directors amounted to 89% on average.

Stakeholder Engagement

Approval of Key Matters

Our Board of Directors (BOD) approves key management issues, including the disposal or transfer of important assets and the borrowing of assets worth a large amount pursuant to the relevant statutes or internal regulations. In 2016, it approved a total of 32 cases that were referred to it, including the 79th annual financial statement and the business report. The details are disclosed in business report and other related documents to ensure transparency.

Evaluation and Compensation

Directors' compensation is determined within the director compensation limit approved by the general shareholder meeting. Outside directors receive basic fixed pay while inside directors receive the compensation package that consists of salary, incentive pay, and severance pay in a fair and transparent manner in accordance with the executive management policy.

Stakeholder Communication

BOD interacts with stakeholders through internal/external communication channels such as disclosures and IR events. To promptly provide management information to shareholders and stakeholders, decisions made at the general shareholder meeting and key decisions made on business operations are disclosed immediately.

We classify our stakeholders into groups according to on the key issues in which they are interested, our direction in responding to such issues, changes in the degree of influence, and similarities. Our key stakeholders include shareholders, investors, customers, employees, suppliers, local communities and governments. We operate a range of communication channels to integrate into our business conduct feedback from stakeholders. The outcome of the stakeholders' participation is reflected in our management activities. The achievements of our major activities are disclosed transparently in the annual CSR report.

Stakeholders	Major Issue	Communication Channel
Customers	<ul style="list-style-type: none"> Handle customer complaints and strengthen customer satisfaction initiatives Improve product quality and strengthen product accountability 	<ul style="list-style-type: none"> VOC Customer satisfaction Surveys Technical review meetings
Shareholders & Investors	<ul style="list-style-type: none"> Participate in the decision-making process through general shareholder meetings Healthy corporate governance 	<ul style="list-style-type: none"> General shareholder meetings IR events Disclosure Website
Employees	<ul style="list-style-type: none"> Job satisfaction and welfare improvement Active organizational communication Build mutually-beneficial labor relations 	<ul style="list-style-type: none"> Employee surveys Corporate newsletters & in-house intranet Labor-Management Council
Local Communities	<ul style="list-style-type: none"> Regularly gather feedback from local communities Support the growth of local communities in the vicinity of worksites 	<ul style="list-style-type: none"> CCI programs Sisterhood ties and partnerships Discussion meetings with local communities
Governments	<ul style="list-style-type: none"> Legal and regulatory compliance Public-private cooperative partnership 	<ul style="list-style-type: none"> Participation in government-led projects Partnership agreements with governmental and public organizations
Suppliers	<ul style="list-style-type: none"> Assist suppliers in strengthening competitiveness and capacity Expand the sharing of information 	<ul style="list-style-type: none"> Cooperative Council Technical review meetings Hot line

Value Created and Distributed	
	Sales ¹⁾ KRW 1.89 trillion
	Dividends KRW 91.3 billion
	Wage and welfare & benefits ²⁾ KRW 290 billion
	Local community investment ³⁾ KRW 7.4 billion
	Tax payment ⁴⁾ KRW 4.4 billion
	Purchase amount KRW 1.3 trillion

1) Sales (Excluding dividend income, based on the non-consolidated financial statements)

2) Employee wage, severance pay, welfare & benefits

3) Including donations and CCI expenditure

4) Taxes & utility charges and corporate tax expenses based on the non-consolidated financial statements

Risk Management

Overview of Risk Management

We manage important risks related to our business areas and sustainability. CEO and executives recognize risk management as one of our key management tasks and are dedicated to promoting and supporting enterprise-wide risk management.

The supreme decision-making bodies concerning risk management are the board of directors and the audit committee that is subordinate to the board. We manage risks related to our management activities at all of our worksites around the world, according to the following key risk items

- Financial risk
 - Market, credit, liquidity and exchange risks
- Non-financial risk
 - Sales, cost, quality, investment, customer, industry, and banking risks
 - Risks related to climate change, environment, health and safety, supply chain, observance, ethics, human rights, reputation and taxes

We make preemptive efforts to control and mitigate key risks. We also make comprehensive efforts to protect our employees, assets and reputation, while pursuing continuous business growth by monitoring them.

Financial Risk Management

We focus on financial risk management with the aim of improving our financial structure and enhancing efficiency in the execution of funds in order to generate stable and continuing management achievements in conditions where risks are likely to arise in connection with market, credit, liquidity and exchange risks.

Financial risk management is primarily led by the Treasury Team, which sets financial risk. Management policies by closely working with other relevant teams while identifying, evaluating and hedging financial risks. Also, we aim to minimize the impact of financial risks that may arise through regular monitoring.

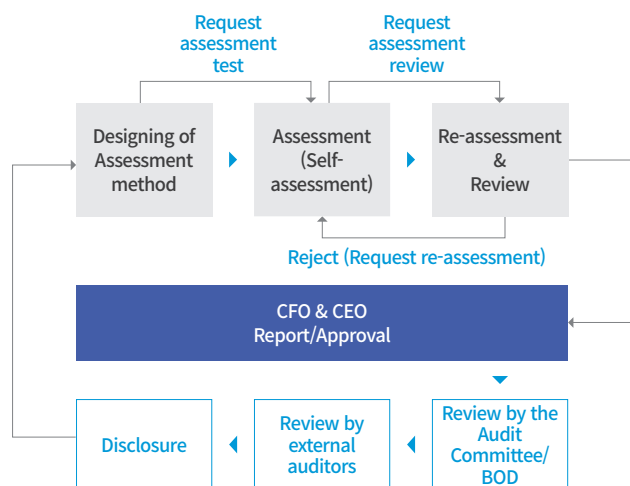
Internal Control System

In line with increasing internal/external needs to strengthen internal accounting and internal control, we developed and are operating our internal control system to improve information transparency and external credibility. An internal control system refers to a system that defines the business execution process and assesses compliance with this process in accordance with the set procedures so as to ensure quality and stability in business management and operation.

Not only do we perform internal control through the internal accounting management system as stipulated by law, we also include operational efficiency and compliance items designed for risk factor management in defining our controls. We also use our own internal control system called DICAS (Doosan Internal Control Assessment System) to conduct assessments across our entire business areas, from finance and procurement to production.

Each team from our BGs and BUs performs self-directed quarterly assessments, and then the Compliance Team reviews their progress. Assessment outcomes are reported to the CFO/CEO and then to the Audit Committee and BOD pursuant to the Act on Internal Accounting Control Systems and External Auditing. In 2017, we plan to manage risks by applying internal control assessment system to our newly started business lines and overseas subsidiaries and branches around the world, including those in America and Europe.

Internal Control Assessment Procedure and Executive Authorization Structure



Non-financial Risk Management

Each business group manages business risks in Doosan Corp., while sustainability risks are managed by the sustainable management team of the business division in collaboration with the relevant departments. The presidents of the business divisions, chiefs of business groups and units, and officers responsible for each segment participate in three annual CSR Committee meetings in order to inspect enterprise-wide activities and achievements related to sustainability risk and to explore and administer areas requiring improvement. In 2016, we carried out improvement activities after selecting risk management related to the supply chain and human rights as one of our main focus tasks.

* Refer to [pages 41 to 43](#) for information related to the management of health and safety risks.

Emerging Risk

The term ‘emerging risk’ refers to a potential yet uncertain risk that is likely to occur in the long run, and that will have a grave impact on business if it arises. To manage emerging risks, we identify them by analyzing the political, economic, social, technological, legal, regulatory, and environmental elements of the macroscopic environment related to our business. We constantly implement and monitor plans to mitigate each risk after determining the priority based on the time of possible occurrence and their potential impact on business.

We reflect key emerging risks to our long-term business strategies by identifying those that may occur, including changes in current technologies, fluctuations in markets and business, procurement of raw materials, changes in population statistics, climate change and environmental risks. Each business group undertakes efforts to mitigate and improve potential risks.

Key Emerging Risks	Potential Impact on Business	Risk Mitigation Activities
<p>Changes in Technologies</p> <ul style="list-style-type: none"> • Changes in markets attributable to new technological trends, including the IoT and electric cars 	<ul style="list-style-type: none"> • Business falling behind on the market as it fails to capture new growth opportunities in a timely manner 	<ul style="list-style-type: none"> • Analysis of market opportunities for technological changes, including IoT and 5G • Introduction of Product Development Roadmap and Technology Development Roadmap reflecting technological trends
<p>Fluctuations in Markets and Business</p> <ul style="list-style-type: none"> • Slow growth of existing main markets • Intensified price competition due to excessive supply • Emergence of new competition elements • Sharp increase of sales from online/mobile platforms 	<ul style="list-style-type: none"> • Decreased sales of existing main products • Decreased profitability due to decline in selling prices and competition for securing of supply volume • Decrease in market share 	<ul style="list-style-type: none"> • Rearrangement of product portfolio: Focus on high value-added products, including OLED and CCL for semiconductor chips • Expansion of business domains: Provision of total solutions based on overall value chain by industrial vehicle service, rental and trading of used equipment • Increased sales in overseas/emerging markets • Development of online strategies • Enhancement of competitiveness of online platform
<p>Procurement of Raw Materials</p> <ul style="list-style-type: none"> • Supply imbalance of imported raw materials (if raw materials export is limited by supplying countries based on their priority on domestic industries) 	<ul style="list-style-type: none"> • Impeded production due to shortage of raw materials • Customer dissatisfaction and damage to corporate image due to failure to deliver ordered products 	<ul style="list-style-type: none"> • Diversification of supply channel of raw materials
<p>Changes in Population Statistics</p> <ul style="list-style-type: none"> • Decrease in birth rate 	<ul style="list-style-type: none"> • Recession of food materials lines due to slow domestic business 	<ul style="list-style-type: none"> • Entry into advanced markets by exploring needs and diversifying suppliers
<p>Climate Change and Environmental Risks</p> <ul style="list-style-type: none"> • Enhanced environmental regulation • Depletion of fossil fuels/ unstable supply 	<ul style="list-style-type: none"> • Market opportunities lost by failing to satisfy environmental regulations 	<ul style="list-style-type: none"> • Update of Product Development Roadmap and Technology Development Roadmap considering environmental impact • Increase of market share in emerging markets • Promotion of product innovation using alternative energy as energy sources

CSR Value Structure

CSR Value Structure

We declared our firm resolution to implement CSR management by establishing the 'Doosan Way' with the aim of establishing a 'Proud Global Doosan' in 2012. In addition, to preemptively responding to the demand for and assessment of diverse CSR management at domestic and international scale, we established the Group CSR Value Structure (CSR Strategy). The Group CSR Value Structure consists of CSR objectives, missions, strategy directions, priority order tasks, and a promotion base, and now practices its CSR management based on that strategy. To perform CSR management more effectively, we have induced active collaboration among our diverse business groups and units by deploying operational systems for the performance of strategic tasks, while operating dedicated organs since 2013.

Composition and Operation of the CSR Committee

We formed the CSR Committee as our supreme decision-making body and assigned it the tasks of developing the company's CSR strategic directions, reviewing our CSR management activities, deriving improvement tasks, and reviewing implementation plans. The CSR Committee is composed of representatives from all business groups and units, business divisions, and the management division, and officers from key departments. It is chaired by the head of the business division, while the relevant officers are responsible for its five subcommittees (i.e. the HR, EHS, R&D, Supply Chain and CSR sub-committees). The heads of its business groups and business units participate in the CSR Committee as members to ensure that each business groups and units actively promotes CSR activities. The CSR Committee holds three meetings per year in March, July and December. The plans and achievements of the tasks performed by each business group or unit are reported at the meeting. Furthermore, the meetings are operated as a forum for designing improvement plans based on in-depth discussion of the key CSR issues.

CSR Execution System

Our CSR programs are operated by our sustainable management team. The sustainable management team diagnoses the CSR of its management activities in order to survey economic, environmental and social risks and opportunities each year, and to report the outcomes to the CSR chairperson and the representatives of our diverse business groups and units.

The team draws up action plans by deriving improvement tasks through subcommittees composed of working-level personnel from business groups and units. The members in charge of the five subcommittees report to the CSR Committee their plans for implementing the tasks after surveying the status of their respective subcommittees. To communicate with the stakeholders in and outside the company on the achievements and plans reported to the CSR Committee each year, we publish the CSR Report after submitting it for review and approval by the committee members and the chairperson.

We have put efforts in the tasks of informing overseas worksites of outstanding CSR factors of each business group. In so doing, we have made a number of significant achievements, including the enhancement of human rights management, the system advancement for assessing suppliers and diffusing CSR to supply chain elements, the advancement in energy unit management system, the development of environmentally-friendly products, the inspection and enhanced awareness of personal information protection practices, and the promotion of participatory CSR programs.



* As announced at the World Economic Forum in Davos, Switzerland

Anti-corruption · Ethical Management

Ethical Standards

We have established ethical standards to be a mandatory principle for our employees' performance of their duties. In addition, we recommend that our suppliers follow our ethical standards in their dealings with us.

* Refer to the following link for further details concerning our ethical standards.

 <http://www.doosan.com/en/csr/csr-code/code-of-conduct/>

Whistle Blowing System

We have implemented a whistle blowing system to establish a transparent and fair system of ethical management. By keeping the details of such reports confidential, we protect informants from any possible disadvantages. Significant issues are investigated and reported to the CEO and the Audit Committee. We accept reports from external persons concerning violations of the ethical standards and statutes and unfair acts committed by our employees through Cyber Accusation Center operated on its website. Anyone can submit a report, either in their real name or anonymously, through diverse channels including by phone, e-mail, letter, fax or personal visit. In 2016, we received one report concerning alleged corruption and a violation of the code of ethics, but the subsequent investigation proved it to be a false allegation.


Anti-corruption · Ethics Education

We conduct ethical business education to enhance our employees' perception of ethical management. In 2016, we conducted diverse ethics education programs, including cyber and collective education courses and workshops, etc. We expanded the scope of ethics education to overseas subsidiaries by implementing on-line courses. In 2017, we plan to further enhance the foundation of ethics education by extending it to newly acquired suppliers and subsidiaries.

Furthermore, we conducted an anonymous survey of 178 suppliers to prevent corruption or malpractice while surveying the status of the ethical business practices of their employees, with the ultimate aim of raising their standard of ethical management. The outcome of the survey was used to promote programs linked with process operations, including enhancing communication with suppliers and expanding ethical education. In 2017, we plan to conduct a survey on the ethical management level of our employees and reflect the outcome in our policies for ethical management.

Sustainable Supply Chain

We strive to enhance our value chain and the CSR level of all our businesses by managing sustainable supply chain. With this effort, we can participate in win-win cooperation between small and large businesses, a key area of government policy, as well as preemptively surveying and addressing risk factors that may arise in business operations. We operate our 'supply-chain standard CSR processes' based on 'strategies for promoting supply chain CSR activities'. This in turn will provide us with a foundation for boosting enterprise-wide integrated supply chain CSR activities while considering the conditions of supply chains consisting of diverse business groups.

* Refer to  pages 50 to 53 of this Report for the detailed information on our sustainable supply chain management.

Human Rights Management

We respect the basic human rights of all people irrespective of their origin, religion, gender, race or any other condition, and believe that human rights constitute the basis for sustainable development. As such, our respect for human rights is duly reflected in Doosan Credo and Ethical standards. To prevent human rights risks and violations throughout entire value chain, we have deployed an elaborate system of managing risks related to human rights.

In 2016, we trained internal instructors from each business group on human rights and provided human rights education for all of its employees. To assess the status of human rights within the company, we conducted interviews in two consecutive years from 2015. The outcome of the interviews was shared with the heads of the business groups and the units and members of its subcommittees by the CSR Committee. In 2017, we plan to reflect the outcome of the interview and the details of the CSR Committee's discussion on human rights in our programs for improving human rights education. To prevent risks related to human rights throughout our entire value chain, we have carried out the task of 'deploying an effective system for the management of human rights risks'. It has also deployed an adequate system for assessing the status of human rights at all elements of the business value chain by promoting collaboration among all the related departments throughout the company, including CSR, HR, Compliance, EHS, and the supply chain. As a result, we plan to intensively manage our 'labor environment' and 'supply chain management' in 2017 by developing comprehensive plans for improving them, and further intend to upgrade the enterprise-wide level of human rights-oriented management by steadily monitoring the achievements of the plans.

Summary of Core Issues

		Major Activities in 2016	Plans for 2017
<p>Products for Tomorrow</p>	<p>R&D</p>	<ul style="list-style-type: none"> • Introduction of enterprise-wide technology sessions: PRM/TRM* • Deployment of R&D field management system • Enterprise-wide IP process standardized 	<ul style="list-style-type: none"> • Enhanced operation of PRM/TRM processes • Securing visible R&D achievements • Deployment of enterprise-wide IP systems
	<p>Quality innovation</p>	<ul style="list-style-type: none"> • Advancement in quality management system certification • Deployment of global standard analyzing methods • Deployment of monitoring system to improve customer satisfaction 	<ul style="list-style-type: none"> • Enhancement of quality management ability of suppliers • Establishment of processes reflecting VOC products • Expansion and enhancement of customer satisfaction survey
	<p>Responsible Products</p>	<ul style="list-style-type: none"> • Deployment of systems for verifying reliability • Selection of indicators for assessing green products • Reflection of sustainability in PRM/TRM 	<ul style="list-style-type: none"> • Upgrading of safety design and management • Introduction of reliability verification systems • Enhancement of sustainability factors in PRM/TRM
<p>Green & Safe Sites</p>	<p>Environmental management</p>	<ul style="list-style-type: none"> • Replacement of hazardous chemicals • Enhanced reuse of waste materials by process improvement • Vigorous engagement in reduction energy consumption 	<ul style="list-style-type: none"> • Improvement of facilities that handle hazardous chemicals • Enhancement of recycling of wastes • Reasonable response to the certified emission reduction (CER) trading system
	<p>Safe Green Worksites</p>	<ul style="list-style-type: none"> • EHS leadership activities and enhancement of EHS education • Re-establishment of standards for assessing health and safety performance • Support for EHS of suppliers 	<ul style="list-style-type: none"> • Increase of support for EHS of suppliers • Expansion of EHS leadership activities and education • Introduction of programs maintaining the EHS basics
<p>Talent Communication & Development</p>	<p>Employee Communication</p>	<ul style="list-style-type: none"> • Increase of communication efficiency through Doosan Way • Increase of channels for counseling on grievance • Education conducted on human rights and grievance handling 	<ul style="list-style-type: none"> • Searching and sharing of outstanding examples of the Doosan Way • Increase of communication channels among employees • Enhancement of feedback concerning grievance counseling
	<p>Talent Attraction and Human Capital Development</p>	<ul style="list-style-type: none"> • Enhancement of capabilities • Development of leadership ability by BG/job grade • Implementation of leadership courses for female managers 	<ul style="list-style-type: none"> • Implementation of education programs for technicians • Expansion of leadership courses for female managers and each business group • Implementation of junior MBA courses
<p>Shared Growth Supply Chain</p>	<p>Sustainable Supply Chain</p>	<ul style="list-style-type: none"> • Enhanced assessment of sustainability of supply chain • Expansion of supply chain CSR to overseas corporations and new business lines • Operation of education programs and development of action plans for consulting program 	<ul style="list-style-type: none"> • Enhancement of systems for securing sustainable supply chain • Expansion of overseas suppliers subject to application • Enhanced support for education and consulting program
<p>Local Community Engagement & Development</p>	<p>Growth of local community through participation</p>	<ul style="list-style-type: none"> • Development of a curriculum composed of representative CCI programs • Evaluation of representative CCI programs • Organization of an operational council and regular meeting 	<ul style="list-style-type: none"> • Renewal of the curriculum of representative CCI programs • Elevation of the level of programs (enhancement of communication of operational council) • Expansion of beneficiaries of representative CCI programs

* PRM/TRM: Product Road Map/Technology Road Map

* IP: Intellectual Property

Mid- and long term plans

Core performance Index

- Preemptive R&D based on technology platform
- Advancing of global R&D cooperation structure
- Possession of market-leading IP portfolio



R&D investment to sales
2.5%



Key development items commercialized:
31 projects



Patents filed
159 applications

- Upgrading of quality management system
- Enhancement of systems reflecting customer needs
- Upgrading of processes for managing satisfaction



Defect improvement rate*
2%
* Doosan Corporation Mottrol



Customer satisfaction index*
3.8 points
* Doosan Corporation Mottrol

- Augmentation of reliability verification
- GMP certification of new businesses
- Updating of road map for the development of green products



Number of employees trained for product safety service
702 persons
* Industrial Vehicle BG



Sales ratio of eco-friendly products*
42.1%
* Electro-materials, Industrial Vehicle, Mottrol, Glonet BG

- Enhanced efforts to improve the environment by business unit
- Response to systems for managing performance in resource recycling
- Attainment of reduction target of GHG/energy consumption



Environmental investment
KRW 10.1 billion



Reduction of hazardous chemicals
2,439 t



Reduction of waste generated*
939 t

* Based on volumes discharged by Doosan Corporation Electro-Materials, Industrial Vehicle, Mottrol, or Glonet (Exclusive of additional discharged volumes attributable to newly started business projects)

- Amendment of guidelines on evaluating EHS performance
- Development of employee-led EHS activities
- Deployment of EHS communication channels at overseas sites



Occupational accident rate
0.15%

- Enhancement of business efficiency among teams and divisions through communication
- Internalization of the Doosan Way in company operations
- Enhancement of feedback concerning grievance counseling



Doosan Way Time
4,900 hours



Change Agent
82 persons



Number of grievance officially handled
14 cases

- Enhancement of customized job training programs
- Improvement of programs based on evaluation of education effects



Training hours per capita
82 hours



Total training investments
KRW 5.7 billion

- Linking of supply chain CSR management with objectives of enterprise-wide management
- Enhancement of supply chain CSR collaboration



Number of suppliers subject to sustainability assessment
121



Total purchases from SMEs
KRW 630.9 billion



Total amount of support for suppliers*
KRW 45.8 billion

* Including the amount of support for Network Loan

- Dissemination of representative CCI programs



CCI Investment
KRW 7.4 billion



Employee volunteering
2,564 persons



Volunteer hours
9,199 hours

Sustainability Performance

Economic Performance

Financial Performance

Category	Unit	2013	2014	2015	2016
Balance Sheet	Total assets	*3,319,134	3,509,598	3,478,223	3,744,673
	Current assets	*569,387	639,610	713,534	810,638
	Non-current assets	*2,749,748	2,869,988	2,764,689	2,934,035
	Total liabilities	1,323,744	1,399,060	1,368,966	1,632,123
	Current liabilities	487,660	742,714	870,354	1,042,961
	Non-current liabilities	836,084	656,346	498,612	589,161
	Total equity	*1,995,330	2,110,538	2,109,256	2,112,550
	Capital stock	132,894	134,838	134,838	134,838
	Capital surplus	638,682	667,085	668,082	678,233
	Other capital adjustments	*-340,530	-368,143	-426,551	-428,592
	Other accumulated income (loss)	39,434	35,661	42,963	39,338
	Earned surplus	1,524,910	1,641,097	1,689,925	1,688,734
	Total liabilities and equity	*3,319,134	3,509,598	3,478,223	3,744,673
	Income Statement	Operating income	KRW million **1,652,024	**1,995,372	1,873,556
Sales		1,549,828	1,825,125	1,759,222	1,887,802
Dividend profit		102,196	170,247	114,334	179,334
Operating expenses		**1,456,583	**1,738,924	1,660,155	1,841,764
Cost of sales		1,187,253	1,434,886	1,377,076	1,476,840
Selling, general and administrative expenses		269,330	304,038	283,079	364,924
Operating profit		195,441	256,448	213,401	225,371
Non-operating profit		37,631	32,647	44,342	42,678
Non-operating expense		74,657	83,015	97,708	113,753
Net income before income taxes		158,415	206,080	160,035	154,297
Corporate tax expense		19,173	19,680	36,711	495
Income from continuing operations		139,242	186,399	123,324	153,802
Income (loss) from discontinued operations		10,446	0	0	0
Net income		149,688	186,399	123,324	153,802

* Data for 2013 was modified due to the adjustments made in the financial statements

** Data was modified due to the adjustments in the data collection method

Credit Rating

Category	Unit	2013	2014	2015	2016
Credit Rating	Korea Investors Service Inc.	A ⁺	A ⁺	A	A ⁻
	Korea Ratings Corporation	A ⁺	A	A	A ⁻
	NICE Information Service Co.	A ⁺	A	A	A ⁻

Distribution of Economic Outcomes

		Unit	2013	2014	2015	2016	
Distribution of Economic Outcomes	Investors	Interest expenses	KRW billion	37.5	41.4	38.2	38.2
	Shareholders	Dividend		74.3	73.5	72.3	91.3
	Customers	Sales (excluding dividend payouts)		1549.8	1825.1	1759.2	1887.8
	Suppliers	Purchasing expenditure		1279.4	1188.2	1071.8	1300.3
	Employees	Salary, severance pay, benefits, etc.		282.8	281.6	267.4	289.6
	Government	Taxes and utility charges, corporate tax expenses		22.4	24.5	40.8	4.4
	Local community	Donations, corporate community involvement expenses		8	8.1	17.1	7.4
		Total		3254.2	3442.4	3266.8	3618.7

R&D

		Unit	2013	2014	2015	2016
R&D*	R&D investment	KRW billion	43.6	47.5	45.3	47.4
	R&D investment to sales	%	2.8	2.6	2.6	2.5

* Based on investment and sales volume of Electro-Materials, Industrial Vehicle, Mottrol, Fuel Cell, and Glonet BG, which require R&D activities

Customer Satisfaction

	Unit	2013	2014	2015	2016
Customer Satisfaction Index (Mottrol BG)	point	3.6	3.6	3.4	3.8

Economic Performance

Anti-corruption/Ethical Management

Category		Unit	2013	2014	2015	2016
Ethical management education	Per capita education hours	No. of hours/ persons	0.95	0.99	1.76	1.00
	No. of participants	No. of persons	2,353	2,117	1,890	2,295

Sustainable Supply Chain

Sustainability of supply chain	No. of key suppliers		227	278	365	342
	No. of suppliers subject to sustainability assessment	No. of suppliers	60	364	279	*121
	Total purchases from suppliers		1,279	1,188	1,072	1,300
	Purchases from key suppliers		824	908	737	747
	Total purchases from SMEs	KRW billion	657	590	506	631
	Early payments made to SMEs for national holidays		**41	36	25	27

* In 2016, we toughened the requirements of our supplier evaluation program with the addition of educational training for audits and evaluations. A pilot test of the revised program was carried out on some of our critical suppliers. This action temporarily reduced the number of suppliers that were deemed qualified for partnership renewals. However, we intend to gradually increase the number of suppliers in our evaluation pool. When we select a supplier, it takes into consideration the nature of the business of each BG and its analysis of the suppliers according to the following six factors: 1)strategic importance, 2)negotiation/discussion group, 3)company size (whether the size exceeds a minimum level), 4)where it supplies its products, 5)availability of alternative suppliers, and 6)whether it is a sub-supplier. More detailed information regarding the partnership renewal evaluation is described on [page 52](#) of the report.

** The erroneous figure in Early payments made to SMEs for national holidays in 2013 published in the previous year's report has been corrected.

Environmental Performance

Climate Change

GHG Emissions (Domestic/Overseas)

Category	Unit	2013	2014	2015	2016
GHG Emissions		92.8 (83.7 / 9.1)	86.1 (78.9 / 7.2)	165.6 (77.5 / 88.1)	172.4 (81.6 / 90.8)
Scope 1	thousand tCO ₂ e	30.0 / 4.8	26.0 / 4.0	29.2 / 10.5	28.9 / 10.1
Scope 2		53.7 / 4.3	52.9 / 3.3	48.3 / 77.5	52.7 / 80.6
GHG Intensity (GHG emissions/sales)	tCO ₂ e/ KRW 100 million	5.7 (5.4 / 13.5)	4.6 (4.3 / 10.8)	7.8 (4.4 / 24.7)	7.4 (4.3 / 20.2)
Electro-Materials		73.6	64.2	138.2	139.9
Industrial Vehicle		1.5	4.3	4.3	4.2
GHG Emissions by Major BG	thousand tCO ₂ e				
Mottrol		9.8	9.0	7.5	7.5
Fuel Cell		-	-	7.6	9.8
Glonet		2.5	2.1	1.9	1.9

* The amount of Scope 1 emission and total GHG emissions in 2015 was adjusted as the national guidelines for GHG factors changed

Energy Consumption (Domestic/Overseas)

Energy Consumption		1,809 (1,716 / 93)	1,674 (1,592 / 82)	2,209 (1,563 / 646)	2,290 (1,624 / 665)
Electricity consumption	TJ	1,131 / 48	1,089 / 37	995 / 513	1,061 / 533
Fuel consumption		585 / 45	503 / 45	568 / 133	564 / 133
Energy Intensity (energy consumption/sales)	TJ/KRW billion	1.1 (1.1 / 1.4)	0.9 (0.9 / 1.2)	1.0 (0.9 / 1.8)	1.0 (0.9 / 1.5)

* Data coverage was expanded (Changshu, CFL, FCA)

Pollutants

Discharge of Air Pollutants

NOx Emissions	t	-	55.1	56.7	58.2
SOx Emissions		-	1.6	0.3	1.2

Discharge of Wastewater

Discharge of Wastewater	thousand t	227 (220 / 7)	219 (212 / 7)	401 (181 / 220)	415 (168 / 247)
Chemical Oxygen Demand (COD)	ppm	24	17	20	21
Biochemical Oxygen Demand (BOD)		17	11	12	18

* Data coverage for discharge of wastewater was expanded (Changshu, CFL, DLE, DMJC)

Environmental Performance

Environmental Efficiency

Consumption of Resources

Category	Unit	2013	2014	2015	2016
Consumption of Key Raw Materials		79,785	65,440	52,486	56,589
Copper foil		9,598	8,544	6,651	6,501
Glass fabric		24,559	19,930	17,852	20,125
Epoxy resin		12,517	11,168	10,190	10,066
Steel plate		4,549	4,114	3,993	3,503
Casting materials		24,476	18,572	13,201	16,196
Egg yolk powder	t	295	100	99	104
Ethanol		213	58	26	19
Acetone		293	84	37	32
Steel use stainless plate		-	14	32	19
Steel use stainless tube		-	2	9	5
Steel sheet		-	10	31	18
Use of Recycled Materials*					
Consumption	t	447	125	56	45
Consumption rate	%	55.8	51.7	34.57	28.8

* Use of Recycled Materials: Based on the consumption of ethanol and acetone of Glonet BG

* Although phenol and methanol have been used in previous years, they are no longer in use beginning in 2016.

Water Use (Domestic/Overseas)

		2013	2014	2015	2016
Water Use (Domestic/Overseas)		702 (609 / 93)	670 (576 / 93)	1,008 (559 / 449)	967 (500 / 467)
Total	Water supply	381 / 93	386 / 93	383 / 379	427 / 414
Water Withdrawal	Groundwater	228 / 0	190 / 0	176 / 0	73 / 0
	All other sources	0 / 0	0 / 0	0 / 70	0 / 53
Total Amount of Water Reused or Recycled		475 (389 / 86)	451 (364 / 87)	607 (378 / 229)	552 (332 / 220)

* Data coverage was expanded (Changshu, CFL, DLE, DMJC)

Waste Generation and Disposal (Domestic/Overseas)

		2013	2014	2015	2016
Total Waste Generation		17.5 (16.4 / 1.1)	18.0 (17.1 / 0.9)	19.4 (16.6 / 2.8)	18.1 (15.1 / 3.0)
	General waste	7.5 (7.1 / 0.4)	9.2 (8.8 / 0.4)	10.6 (8.7 / 1.9)	10.1 (8.1 / 2.0)
	Designated waste	10.0 (9.3 / 0.7)	8.8 (8.3 / 0.5)	8.8 (7.9 / 0.9)	8.0 (7.0 / 1.0)
Total Waste Generation by Discharge Method	Recycle	12.7 / 1.1	11.6 / 0.8	10.4 / 2.6	9.7 / 2.8
	Landfill	0.2 / 0.01	0.8 / 0.02	1.0 / 0.03	0.7 / 0.03
	Incineration	3.5 / 0.04	4.7 / 0.05	5.2 / 0.1	4.7 / 0.2
	Others	0 / 0	0 / 0.003	0 / 0.002	0 / 0.01

* Data coverage was expanded (Doota and Yonkang Building in the Domestic region, Changshu, CFL, DLE, DIVC, DMJC FCA in the overseas region)

Environmental Investment

Environmental Investment (Domestic/Overseas)

	Unit	2013	2014	2015	2016
Total Environmental Investment and Expenditures	KRW billion	9.3 (8.4 / 0.9)	9.7 (8.8 / 0.9)	8.0 (5.3 / 2.7)	10.1 (7.3 / 2.9)

* Data coverage was expanded (Changshu, CFL, DMJC, FCA)

Social Performance

Human Resources Management

Composition of Human Resources

Category	Unit	2013	2014	2015	2016
Total Employees		4,029	3,929	3,942	4,165
Employees by BG/BU	Electro-Materials	1,477	1,338	1,313	1,265
	Industrial Vehicle	528	576	535	520
	Mottrol	592	516	500	484
	Information & Communications	569	539	486	464
	Corporate Office/CC/ Administration Center	498	486	527	433
	FM	263	330	420	376
	Doota Duty Free	-	-	-	327
	Fuel Cell	-	71	91	223
	Glonet	102	73	70	73
	Employment Type	Full-time	3,716	3,593	3,645
Contract		313	336	297	443
Gender	Male	3,477	3,441	3,703	3,479
	Female	552	488	239	686

Employment and Turnover

New Recruit	Full-time		124	216	76	371
	Contract	No. of persons	294	247	163	226
Employment Diversity	Disabled		39	51	37	50
	Veteran		33	45	29	32
Employment Turnover	%	3.3	8.1	4.3	5.8	

Labor Practices

Ratio of unionized workers	%	38.5	39.2	39.7	36.0
----------------------------	---	------	------	------	------

* Due to the revised method of calculation, a discrepancy exists when compared to past disclosed values.

- Existing calculation method: Proportion of employees who belong to a labor union = the number of employees who belong to a labor union/the number of employees eligible to join a labor union.

- Revised calculation method: Proportion of employees who belong to a labor union = the number of employees who belong to a labor union/total number of employees.

In 2016 we launched a number of new businesses including duty free shop business. This led to an increase in the number of employees who are not members of a labor union, causing the 2016 values to decline slightly.

Health and Safety

Workplace Safety	Occupational accident rate		0.24	0.18	0.12	0.15
	LTIFR ¹⁾	%	1.88	2.19	0.79	0.35

1) LTIFR : Lost Time Injury Frequency Rate

Assessment of Achievements

Ratio of Employees Who Received Formal Performance Evaluation ²⁾	%	99.3	99.5	99.3	99.8
---	---	------	------	------	------

2) Subject to office workers

Social Performance

Human Resource Management

Human Capital Development

Category	Unit	2013	2014	2015	2016
Total training expenses	KRW million	11,791	9,616	7,328	5,685
Total training hours	No. of hours	253,026	272,205	243,900	189,532
Training expenses per capita	KRW thousand/person	2,927	2,447	1,859	1,365
Training hours per capita		100	127	118	82
Employee education	General education	91	118	111	71
	Ethical management education	0.9	1.0	1.8	1.0
	Anti-sexual harassment education	1.1	1.3	1.2	1.3
	Compliance Program education	13.3	6.1	*4.7	2.1
	Information security education	5.8	6.3	3.2	5.4

* Data was modified to due changes in employees subject to mandatory education

* The total training hours per person is not equivalent to the sum of training hours per person by specific training course

Parental Leave and Pension

Parental Leave	Employees who took parental leave		11	22	36	33
	Employees reinstated after taking parental leave	No. of persons	10	16	24	24
	Employees who worked for 12 months or longer since their reinstatement following parental leave		8	8	10	13
Pension	Funds under management (excluding funds converted to the National Pension System)	KRW million	51,580	81,641	102,364	122,749
	Defined Benefit (DB)	No. of persons	3,656	3,507	3,490	3,329
	Defined Contribution (DC)		3	18	39	29

Corporate Community Involvement

CCI Investment	KRW million	7,972	8,078	17,058	7,400
Employee Volunteering	No. of persons	1,684	2,371	3,131	2,564
Volunteer Hours	No. of hours	9,241	10,379	17,166	9,199

Human rights

Number of hours of human rights education	No. of hours	-	-	-	2,753
Percentage of employees participating in human rights education	%	-	-	-	*100
Percentage of suppliers subject to human rights assessment		-	-	-	6

* The corporation began to collect indicators related to human rights management from 2016 in consideration of strengthened human rights management system.

* Human rights education sessions were held for all employees in Korea (with 30 sessions held to date), excluding those employees stationed overseas and those on leave of absence. The few employees who were unable to participate in the education sessions for whatever reason were given the relevant educational materials and instructed to study by themselves at home.

GRI G4 Content Index (Core)

General Standard Disclosures

Aspect	Index	Page	
Strategy and Analysis	G4-1	Statement from the most senior decision-maker of the organization	2~5
	G4-2	Key impacts, risks, and opportunities	2~5, 12~19
	G4-3	Name of the organization	10
	G4-4	Primary brands, products and services	10, 12~19
	G4-5	Location of the organization's headquarters	10
	G4-6	Number of countries where the organization operates and names of countries where either the organization has significant operations or that are specifically relevant to the sustainability topics covered in the report	11
Organizational Profile	G4-7	Nature of ownership and legal form	7, 10
	G4-8	Report the markets served	10~19
	G4-9	Scale of the organization	10~19
	G4-10	Total number of employees	73
	G4-11	Percentage of total employees covered by collective bargaining agreements	73
	G4-12	Description of the organization's supply chain	51~53, 65
	G4-13	Significant changes during the reporting period regarding size, structure, ownership, or supply chain	5, 18
	G4-14	Whether and how the precautionary approach or principle is addressed by the organization	62~63
	G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses	80
	G4-16	Memberships of associations (such as industry associations) and national or international advocacy organizations	80
	G4-17	Entities included in the organization's consolidated financial statements or equivalent documents	About this report, 10
Identified Material Aspects and Boundaries	G4-18	Process for defining the report content and the Aspect Boundaries	20~21
	G4-19	Material aspects identified in the process for defining report content	20
	G4-20	Report the Aspect Boundary within the organization	21
	G4-21	Report the Aspect Boundary outside the organization	21
	G4-22	Effect of any restatements of information provided in previous reports, and the reasons for such restatements	40, 70~71, 73~34
	G4-23	Significant changes from previous reporting periods in the Scope and Aspect Boundaries	About this report
	G4-24	List of stakeholder groups engaged by the organization	61
Stakeholder Engagement	G4-25	Basis for identification and selection of stakeholders with whom to engage	61
	G4-26	Organization's approach to stakeholder engagement	61
	G4-27	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns	61, 66~67
Report Profile	G4-28	Reporting period for information provided.	About this report
	G4-29	Date of most recent previous report	About this report
	G4-30	Reporting cycle (such as annual, biennial)	About this report
	G4-31	Contact point for questions regarding the report or its contents	81
	G4-32	The 'in accordance' option the organization has chosen	75~77
	G4-33	Organization's policy and current practice with regard to seeking external assurance for the report	78~79
Governance	G4-34	The governance structure of the organization	60~61, 64
	G4-35	The process for delegating authority for economic, environmental and social topics from the highest governance body to senior executives and other employees	64
	G4-36	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	64
	G4-37	Processes for consultation between stakeholders and the highest governance body on economic, environmental and social topics.	64
	G4-38	Composition of the highest governance body and its committees	60~61
	G4-39	Report whether the Chair of the highest governance body is also an executive officer	60~61

GRI G4 Content Index (Core)

General Standard Disclosures

Aspect	Index	Page	
Governance	G4-40	The nomination and selection processes for the highest governance body and its committees, and the criteria used for nominating and selecting highest governance body members	60~61
	G4-41	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	60~61
	G4-42	Processes for the highest governance body to ensure conflicts of interest are avoided and managed	60~61, 64
	G4-43	Measures taken to develop and enhance the highest governance body's collective knowledge of economic, environmental and social topics	64
	G4-45	The highest governance body's role in the identification and management of economic, environmental and social impacts, risks, and opportunities	60~61, 64
	G4-46	The highest governance body's role in reviewing the effectiveness of the organization's risk management processes for economic, environmental and social topics	60~61, 64
	G4-47	The frequency of the highest governance body's review of economic, environmental and social impacts, risks, and opportunities	60~61, 64
	G4-48	The highest committee or position that formally reviews and approves the organization's sustainability report and ensures that all material Aspects are covered	64
	G4-50	Process for communicating critical concerns to the highest governance body	60~61
	G4-51	Remuneration policies for the highest governance body and senior executives for the below types of remuneration	60~61
Ethics and Integrity	G4-54	Ratio of the annual total compensation for the organization's highest-paid individual in each country of significant operations to the median annual total compensation for all employees	Ratio of median salary to compensation for the highest-paid: 2.61%
	G4-56	Organization's values, principles, standards and norms of behavior	8, 65
	G4-57	Internal and external mechanisms for seeking advice on ethical and lawful behavior, and matters related to organizational integrity	65
	G4-58	Internal and external mechanisms for reporting concerns about unethical or unlawful behavior, and matters related to organizational integrity	65

Specific Standard Disclosures

Aspect	Index	Page	
Economic			
Economic Performance	DMA	Disclosure on Management Approach	12~19
	G4-EC1	Direct economic value generated and distributed	61, 69
	G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	16, 39
	G4-EC3	Coverage of the organization's defined benefit plan obligations	74
Indirect Economic Impacts	G4-EC4	Financial assistance received from government	Business Report 283
	G4-EC7	Development and impact of infrastructure investments and services supported	55~58
Procurement Practices	G4-EC8	Significant indirect economic impacts, including the extent of impacts	51~53, 55~58
	DMA	Disclosure on Management Approach	51~53, 65
Environmental	G4-EC9	Proportion of spending on local suppliers at significant locations of operation	51, 70
	Environmental		
Materials	G4-EN1	Materials used	72
	G4-EN2	Percentage of materials used that are recycled input materials	72
	G4-EN3	Energy consumption within the organization	71
Energy	G4-EN5	Energy intensity	71
	G4-EN6	Reduction of energy consumption	39
	G4-EN7	Reductions in energy requirements of products and services	34~35

GRI G4 Content Index (Core)

Specific Standard Disclosures

Aspect	Index	Page
Water	G4-EN8 Total water withdrawal by source	72
	G4-EN10 Percentage and total volume of water recycled and reused	72
	DMA Disclosure on Management Approach	37~39
Emissions	G4-EN15 Direct greenhouse gas (GHG) emissions (scope 1)	71
	G4-EN16 Energy indirect greenhouse gas (GHG) emissions (scope 2)	71
	G4-EN18 Greenhouse gas (GHG) emissions intensity	71
	G4-EN21 NOx, SOx, and other significant air emissions	71
Effluents and Waste	DMA Disclosure on Management Approach	37~39
	G4-EN22 Total water discharge by quality and destination	71
	G4-EN23 Total weight of waste by type and disposal method	72
Products and Services	DMA Disclosure on Management Approach	32
	G4-EN27 Extent of impact mitigation of environmental impacts of products and services	34~35
Compliance	G4-EN29 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	no cases
Overall	G4-EN31 Total environmental protection expenditures and investments by type	72
Environmental Grievance Mechanisms	G4-EN34 Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms	no cases
Labor Practices and Decent Work		
Employment	G4-LA1 Total number and rates of new employee hires and employee turnover by age group, gender and region	73
	G4-LA3 Return to work and retention rates after parental leave, by gender	74
	DMA Disclosure on Management Approach	41~43
Occupational Health and Safety	G4-LA6 Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities, by region and by gender	41~42, 73
	G4-LA7 Workers with high incidence or high risk of diseases related to their occupation	43
Training and Education	DMA Disclosure on Management Approach	48~49
	G4-LA9 Average hours of training per year per employee by gender, and by employee category	48, 74
	G4-LA11 Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	73
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	73
Equal Remuneration	G4-LA13 Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	Business Report 457~458
Labor Practices Grievance Mechanisms	DMA Disclosure on Management Approach	45
	G4-LA16 Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	45, 47
Human Rights		
Investment	G4-HR2 Total hours of employee training on human rights policies, and the percentage of employees trained	74
Non-discrimination	G4-HR3 Total number of incidents of discrimination and corrective actions taken	Number of incidents of discrimination: 0
Indigenous Rights	G4-HR8 Violations involving rights of indigenous peoples	no cases
Society		
Local Communities	DMA Disclosure on Management Approach	55~58
	G4-SO1 Percentage of operations with implemented local community engagement, impact assessments, and development programs	55~58
Anti-corruption	G4-SO3 Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	65
	G4-SO4 Communication and training on anti-corruption policies and procedures	65, 70
	G4-SO5 Confirmed incidents of corruption and actions taken	65
Compliance	G4-SO8 Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	Business Report 494
Product Responsibility		
Customer Health and Safety	DMA Disclosure on Management Approach	32~35
	G4-PR1 Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	32~35
	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	no cases
Product and Service Labeling	G4-PR3 Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	34~35
	G4-PR5 Results of surveys measuring customer satisfaction	31, 69
Compliance	G4-PR9 Non-compliance with laws and regulations concerning the provision and use of products and services	no cases

* All items of GRI Content index have been verified by a third party.

Independent Assurance Statement

To the Stakeholders of Doosan Corporation,

The Korea Productivity Center (the “Assurer”) was asked by Doosan Corporation to provide independent assurance of the “Doosan Corporation CSR Report 2016” (the “Report”) and hereby provides the following assurance statement.

Responsibility and Independence

Doosan Corporation is entirely responsible for all information and opinions presented in this Report. The Assurer is solely responsible for the assurance statement on the content of the Report. As an independent assurance agency, the Assurer was neither involved in the process of preparing this Report nor in any conflicts of interest that may undermine our independence.

Assurance Standards

The independent assurance was performed in accordance with Type 2 and moderate level of assurance engagement based on the AA1000AS (2008) assurance standards. The assurance statement checked the suitability of inclusivity, materiality, and responsiveness by following the AA1000APS (2008) assurance principles. Moreover, it verified whether the information on the Report complies with the GRI G4 Guidelines.

Limitations

The Assurer conducted an assurance engagement on Doosan Corporation’s 2016 performance by following the assurance standards above. We verified the reliability of Doosan Corporation’s performance in the Report in the following manner: financial data were verified through the financial statement and disclosed documents audited by an auditing agency, and other data including GHG data and homepage linkage, etc. were verified using the existing assurance results. Furthermore, the on-site inspection was limited to the Seoul headquarters. The Assurer states that if an additional assurance process is performed in the future, the results may be different.

Methodology

The following method was used to provide the assurance about the Report:

1. Verified whether requirements from the Core Option of the GRI G4 Guidelines were fulfilled.
2. Verified consistency with the principles dictating the content and quality of sustainability reports based on the GRI G4 Guidelines.
3. Verified the objectivity and appropriateness of the material issues selected and the content of the Report by conducting media research and a benchmark analysis.
4. Verified the suitability of the information and expression errors through a comparison analysis with other publications.
5. Verified the evidence of data and information, internal process, and system through an on-site inspection of the Seoul headquarters.
6. The scope and boundaries of the assurance process have been conducted according to the boundaries of the time period, region, and value chain of the Report. Therefore, the scope of the assurance process meets 100 percent coverage of the non-consolidated revenue of the company. Unless there are any special remarks, data regarding the supply chain beyond the boundaries of Doosan Corporation in the value chain has not been included in the scope of direct assurance.

Findings & Conclusion

The Assurer verified that the Report accurately and fairly illustrates Doosan Corporation’s sustainability management activity and performance. Moreover, through the assurance, the Assurer verified that Doosan Corporation’s Report fulfilled the requirements of the GRI G4 Guidelines’ Core Option.

In the case of General Standard Disclosures, the Assurer verified that the Report is written in compliance with the requirements of the Core Option. For the Specific Standard Disclosures, the Assurer reviewed the Disclosure on Management Approach (DMA) and indicators about material issues by using the reporting criteria process below. The Assurer also reviewed the indicators regarding the non-material aspects of the Specific Standard Disclosures.

Contents in the Report	Material Issue	G4 Major Aspect	Reporting Indicator
Business Strategy	Sustainable business strategy	Economic Performance	DMA, EC1, EC2, EC3, EC4
	Product safety	Customer Health and Safety	DMA, PR1, PR2
Products for Tomorrow	Maximizing customer value through quality innovation	(-)	-
	R&D investment and activity	(-)	-
	Development of eco-friendly products and services	Products and Services	DMA, EN27
Green and Safe Sites	Management of hazardous chemicals	(-)	-
	Health and safety of business sites	Industrial Health and Safety	DMA, LA6, LA7
	Management of environmental pollutants	Air Emissions, Effluent and Waste	DMA, EN15, EN16, EN18, EN21, DMA, EN22, EN23
Talent Communication and Development	Communication with employees	Labor Practices Grievance Mechanisms	DMA, LA16
	Attracting human resources and developing human capital	Education and Training	DMA, LA9, LA11
Shared Growth Supply Chain	Supporting suppliers for win-win growth	Procurement Practice	DMA, EC9
Local Community Engagement and Development	Social contribution considering local community needs	Local Communities	DMA, SO1

Independent Assurance Statement

1. Inclusivity: Stakeholder Engagement

The principle of inclusivity articulates that organizations should include stakeholders in the process of developing strategic responses to and achieving sustainability. In this regard, the Assurer could verify that Doosan Corporation made various efforts to abide by the principle of inclusivity for communication through various channels with stakeholders. The Assurer verified that Doosan Corporation categorizes its major stakeholders into nine groups, including shareholders, customers, employees, and suppliers, and that the company collects stakeholders' opinions by actively communicating with them.

2. Materiality: Significant Issue Identification and Reporting

The principle of materiality articulates that organizations should focus on issues relevant and material to both the organization and its major stakeholders. The Assurer found that Doosan Corporation successfully identified issues relevant and material to the company and its major stakeholders based on a reasonable materiality analysis process. Doosan Corporation identified strategic significance of issues through interviews with the management. In 2017, the company deduced 12 core issues as a result of evaluation. The Assurer verified that the activities and key performances of the core issues are evenly covered in each page of the Report.

3. Responsiveness: Response to Issues


The principle of responsiveness articulates that organizations should be responsive to issues that may influence the performance of their stakeholders. The Assurer found that Doosan Corporation successfully identified issues which may impact stakeholders' performance, implemented measures to address them, and adequately presented relevant information in the Report. Doosan Corporation monitors any change in core issues and responds to those issues by establishing detailed strategies. The company appropriately presents the direction of response by showing strategic tasks and targets for reporting content.

Recommendations


Upon appraising Doosan Corporation's various efforts and performance for enhancing its sustainability, the Assurer makes the following proposals for future publications of the Report and a higher standard of sustainability.

1. Measuring external social and environmental effects: There is a need to calculate and manage the financial impact of the positive and negative social and environmental effects occurring from business activities. Through this effort, stakeholders will be able to recognize Doosan Corporation's sustainability management activities as financial information and appropriately evaluate the company's value.
2. Expanding the data management scope: Sustainability management issues can be diverse for each country.
There is a need for Doosan Corporation to review significant issues for each country where the company carries out business activities and consider the expansion of reporting not only for sustainability management activities in terms of the global market, but also region-based sustainability management activities.
3. Review for UN SDGs: It is recommended to connect sustainability development goals (SDG) presented by the UN with Doosan Corporation's sustainability management activities. This process will allow presentation of a clearer target for the positive impact of Doosan Corporation's sustainability management on society.



June 2017 
CEO Sun-jick Hong

Dong-soo Kim, Director 

Yang-ho Lee, Team Manager 

Dae-kwon Yang, Senior Fellow 

The Sustainability Management Center of the Korea Productivity Center is an assurance agency officially certified by AccountAbility [the organization that established AA1000, the international standard for stakeholder participation and verification] and is qualified to conduct independence assurance engagements. Our Assurance Committee consists of competent experts who have in-depth experience in sustainability management consulting and assurance and have completed the relevant training.

* AA1000AS (2008): The AA1000 Assurance Standard (2008) is an international assurance standard, set by AccountAbility, that provides the method of reporting sustainability management issues by evaluating the organization management on performances, compliance with principles, and reliability of performance information.

* AA1000APS (2008): The AA1000 AccountAbility Principles Standard (2008) is an international assurance standard set by AccountAbility that provides the principles of the AA1000 standards.

Major Memberships/Participation Principle

UN Global Compact

We at Doosan Corporation joined the UN Global Compact in 2014 and have been abiding by its 10 principles in the four areas of human rights, labor, environment, and anti-corruption. By integrating international standards on socially-responsible management into our business conduct and by standing firm on our commitment to socially-responsible management, we aim to fulfill our social responsibility and role as Korea's leading company in global sustainable management.

Category	Principles	GRI Indicator	Page
Human Rights	1. Businesses should support and respect the protection of internationally proclaimed human rights.	G4-HR2, HR7, HR8, HR9, HR12, SO1, SO2	55-58, 74
	2. Businesses should make sure that they are not complicit in human rights abuses.	G4-HR1, HR10, HR11	47
	3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.	G4-11, HR4, LA4	73
Labor	4. Businesses should uphold the elimination of all forms of forced and compulsory labor.	G4-HR6	49
	5. Businesses should uphold the effective abolition of child labor.	G4-HR5	47
	6. Businesses should uphold the elimination of discrimination in respect of employment and occupation.	G4-10, EC5, EC6, LA1, LA3, LA9, LA11, LA12, LA13, HR3	73~74
Environment	7. Businesses should support a precautionary approach to environmental challenges.	G4-EC2, EN1, EN3, EN8, EN15, EN16, EN17, EN20, EN21, EN27, EN31	16, 34~39, 71~72
	8. Businesses should undertake initiatives to promote greater environmental responsibility.	G4-EN1~EN34	34, 34~39, 71~72
	9. Businesses should encourage the development and diffusion of environmentally friendly technologies.	G4-EN6, EN7, EN19, EN27, EN31	34~39, 72
Anti-corruption	10. Businesses should work against corruption in all its forms, including extortion and bribery.	G4-56, 57, 58, SO3~SO6	8, 65

Membership

Category	Associations and Organizations
Doosan Corporation	Maekyung SEL Club, KISANHYUP, Korean Industrial Hygiene Association, Korea Chamber of Commerce and Industry, Federation of Korean Industries, Korea Employers' Federation, Korea Economic Research Institute, Korea Advertisers Association, Korea Management Association, Korea Mecenat Association, Fair Competition Federation, Korea Listed Companies Association, Korea IR Service, Korea Fire Safety Association, Korea Industrial Technology Association, Korea-Japan Economic Association
Electro-Materials BG	Korea Industrial Technology Promotion Association, Korea Printed Circuit Association, Korea Electronics Association, Korea Display Industry Association, Institute of Microelectronics Packaging, Macromolecular Research, Korea Chemical Society, Materials Research Society of Korea, Yokohama Jisso Consortium of Japan, Reliability Association of Korea, HDP User Group, SEMI Printed Electronics Advisory Committee (PEAC), Society of Polymer Science of Japan (SPSJ), Korea Industrial Safety Association, The Korean Information Display Society (KIDS), Korea Chemicals Management Association, Iksan Chamber of Commerce and Industry, Iksan Corporate Environment Council, Iksan Regional Fire and Hazard Managers' Council, Jeonbuk Regional Chemical Plants Council, Energy Engineers' Association, Gimcheon Police Promotion Association, Association, Korea Environmental Preservation Association-Jeonbuk Regional District, Jeonbuk Environmental Management Association, Chungbuk Regional Korea Nurses Association, Korean Industrial Health Association North Chungbuk Division, Korea Environmental Preservation Association, Korea Nurses Association, Korean Association of Occupational Health Nurses, Cheongju Chamber of Commerce and Industry, Korea Customs Logistics Association, Gyeongbuk Employers Federation, Gimcheon Chamber of Commerce and Industry, Korea Electric Engineers Association, Gimcheon Regional Fire Managers' Council, Daegu-Gyeongbuk process safety Management Council, Western Gyeongbuk Environmental Engineers Association, Gumi-Gimcheon Safety Management Association
Industrial Vehicle BG	Fork Lift Truck Association, World Industrial Truck Statistics (WITS), China Fork Lift Truck Association (CITA), North America Fork Lift Truck Association, Korea Industrial Safety Association, Korea Construction Equipment Association, Korea Industrial Technology Promotion Association, Korea Construction Equipment Manufacturers Association
Mottrol BG	GyeongNam Employers Federation, Changwon Chamber of Commerce and Industry, Korea Association of Machinery Industry, Korea Construction Equipment Manufacturers Association, Korean Nurses Association (Gyeongnam Nurses Association), Korea Industrial Safety Association, Korea Customs Logistics Association, Volvo Construction Machine, Korea Society of Fluid Power and Construction Equipment, Japan Fluid Power Society, Korea Defense Industry Association, Korea Industrial Complex Corp, Mini-cluster project annual fee, Commercial Association, Military Defense Co-development Business Council
Fuel Cell BG	Korea Hydrogen Association, Korea Renewable Energy Association, Korea International Trade Association, Korea Industrial Technology Association, Korea Economic Certification Center (quality management system certification), Korea Electrical Contractors Association, Korea Industrial Safety and Health Association, Fuel Cell Promotion Association
Glonet BG	Korean Society for Horticultural Science, Korea Post-harvest Management, KOITA R&D Directors' Council, Korean Society for Biotechnology and Bioengineering, Korea Electric Engineers Association, Iksan Chamber of Commerce and Industry, Jeonbuk Conference of Environmental Engineers, Iksan Business Environment Council, Jeonbuk Regional Chemical Plant Council, Iksan Safety and Health Managers' Council, Iksan Regional Fire and Hazard Managers' Council, Korean Industrial Health Association, Energy Engineers' Association, Suwon Chamber of Commerce and Industry
Duty Free BG	Korea Electric Engineers Association
Information & Communication BU	Korean Personnel Improvement Association, Korea Information and Communication Contractors Association, Korea SW Quality Council, Seoul Chamber of Commerce and Industry, Federation of Korean Information Industries, Korean Federation of Smart Manufacturing Industries
FM BU	Korea Building Owners & Managers Association, Korean Society for Facility Management, Korean Foundation for Quality membership, Korea Building Hygiene Management Association, Korea Facility Maintenance and Management Association, Korea Construction Engineers Association, Korea Mech. Const. Contractors Association, Korea Fire Facility Association, Korea Electric Engineers Association

Key Awards and Assessment in 2016

Name of Award	Name of Award	Host Organization	Date of Awarding
Doosan Corporation Electro-Materials	Won the Minister of Public Safety and Security Award	Ministry of Public Safety and Security	2016. 11
	Won Commendation of Korean Red Cross	Korean Red Cross Blood Services, Jeonbuk branch	2016. 11
	Won Commendation of Minister of Industry, Commerce, Energy Award at 7th Display Day Won Commendation for distinguished contribution to development of display	Korea Display Industry Association Korean Information Display Society	2016. 10
	Won commendation of volunteer firefighters	Mayor of Iksan city	2016. 9
Doosan Corporation Industrial Vehicle	Won Silver Tower, Order of Industrial Service Merit	Ministry of Employment and Labor	2016. 4
	FLTA Awards for Excellence 2016	Fork Lift Truck Association	2016. 2
Doosan Corporation Mottrol	Selected as a distinguished member of the Defense Industry Association	Korea Defense Industry Association	2016. 4
Doosan Corporation Doota Duty Free	Won Commendation of Seoul Main Customs	Seoul Customs	2016. 12

TF Members

Category	Team
Electro-Materials	Biz Strategy, HR, Labor Relations, Strategic Purchasing, EHS, Quality Planning, Business Management, Technology & Strategy Planning
Industrial Vehicle	Biz Strategy, HR, Technology HR, EHS, Quality Assurance, Domestic Sales, Overseas Marketing, R&D Strategy Team, Management
Mottrol	Biz Strategy, HR, Technology HR, Purchasing, EHS Management, Quality Management, Domestic Sales, R&D 1 Team, Defence Business Management Team
Fuel Cell	Change management, FA, HR, Business management, EHS, Quality, Sales, RD&E
Glonet	Financial Analysis, HR, Management, EHS, QA, Sales & Marketing Team, Product Development Team 1
Information & Communications	Strategy, HR, Business Management Purchasing, Quality Innovation
FM	FA, General Administration, Sales HQ
CC	Doosan Way, Business Strategy 1 & 2 Team HRM, HRD, EHS, OE, BD & Technology Strategy, Compliance, Distribution CSO Strategy and Planning, Business Development Team
Administration Center	Communication, Accounting 1 team, IR, Planning & management, Management Support, Financing
Corporate Office	Legal, HR, CR

BUILDING YOUR TOMORROW TODAY

Contact

Sustainability Team, CC, Doosan Corporation
7th Fl. Yonkang Building,
15, Jong-ro 33-gil, Jongno-gu,
Seoul, 03129 Republic of Korea

✉ E-mail | doosancsr@doosan.com

☎ Phone | +82-2-3670-5021

📄 Doosan Corporation Corporate Social Responsibility Report 2016 |

🌐 www.doosan.com



This report is printed on paper that has received the FSC® (Forest Stewardship Council®) certification. This certification is given to paper products manufactured using forested wood developed and managed according to a responsible process. The printing was done with soy ink by a company that holds the FSC® Chain of Custody certification (license code: C005448).



Building your tomorrow today