

Sustainability Report

LOTTE Engineering & Construction
2017



About This Report

Features of the Report

LOTTE E&C has been publishing the Sustainability Report every year since 2013 as a means to disclose transparently the company's sustainable management activities and performance results to its stakeholders. This report covers the linkage between LOTTE E&C's strategies and sustainability management as well as its activities based on the UN Sustainable Development Goals (SDGs), and thus reflects the commitment and endeavor of LOTTE E&C, as a corporate citizen, to grow together with the community.

Reporting Period and Scope

This report covers financial and non-financial activities and performance from January 1 to December 31, 2016. On some material issues, information prior to 2016 and up to August 2017 has been included for the readers' better understanding. Regarding quantitative data, performance over the past three years is reported for comparison purposes.

As for the scope, this report covers our 231 domestic sites including the head office and the Construction Management (CM) Division. Activities in overseas sites have also been included for some major data.

There has not been any significant changes to the size and structure of the organization in 2016, and all modifications to the reported contents have been specified with notes on the relevant page.

Reporting Standards

This report has been prepared in accordance with the Core Option¹⁾ suggested by the GRI (Global Reporting Initiative) G4 guidelines. The issues reported herein have been selected based on materiality tests performed with the stakeholders, and some major issues on global industry trends have also been selected and included.

1) One of the methods used to prepare the sustainability report, dealing with an organization's economic, environmental and social impacts and governance performance

Reporting Assurance

This report was assured independently by a third-party entity to ensure the level of credibility and reliability. The related information on reporting assurance is described in pages 101-102 in this report.

Additional Information

This report can be downloaded at LOTTE E&C website (<http://www.lottecon.co.kr/eng>), and please contact the below for any inquiries.

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2017 Cover Story

We have expressed our commitment to a new start for becoming a sustainable 100-year company by presenting LOTTE Group's new vision 'Lifetime Value Creator', declared to mark the 50th anniversary of the group, along with the image of LOTTE World Tower, proudly displaying LOTTE E&C's technology in super high-rise buildings.

Information on Participants in the Report

Type	Department	Participant
Housing Works	Housing Works Planning Team, Housing Works Division	Bo Yeon Kim
	Building Works Planning Team, Building Works Division	Se Jong Park
Building Works	High-Rise Buildings Department	In Seok Seo
	Civil Works Planning Team, Civil Works Division	Shoi Don Park
Civil Works	Civil Works Planning Team, Civil Works Division	Shoi Don Park
Plant Works	Plant Works Planning Team, Plant Works Division	Sang Su Lim
Overseas Works	Overseas Planning Team, Overseas Business Division	Su Ki Im
Safety and Climate Change Response	Safety and Health Management Department	Chung Hwan Han
	Safety and Health Management Department	Tae Wan Kim
Human Resource Management	HR Team, HR Department	Jin Hyung Lee
	Welfare Team, HR Department	Je Hoon Yoo
Customer Satisfaction	CS Department, Housing Works Division	Jeong Ho Lee
	Design Research Institute, Housing Works Division	Eun Jung Hyun
	Competitiveness and Innovation Team, Strategic Planning Department	Min Sung Kim
Win-Win Partnership	Procurement Planning Team, Sourcing and Procurement Division	Ji Hye Jeong
Expanding Social Contribution	Competitiveness and Innovation Team, Strategic Planning Department	Seong Hun Ku
Ethical Management	Ethical Management Department	Min Kyu Lee
	Legal Affairs Department	Sol Bi Kim
High Value-Added Technologies	Technology Research Institute	Jin Woo Kim
Mega Trends in the Construction Industry	Biz-Transformation Task Force / Competitiveness and Innovation Team, Strategic Planning Department	Won Jik Lee
Supervised by	Secretariat for Sustainability Management and Development / Competitiveness and Innovation Team, Strategic Planning Department	Gi Beom Nam

English revision by: Tae Hoon Kim, Keon Hyung Joo, Taek Jin Chang from the Overseas Business Division

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Note on Exchange Rates

The monetary numbers in this report were initially expressed in Korean Won (KRW). In this English version of the same report, the following exchange rates have been used to convert KRW into United States Dollars (USD):

- Past three year performances (2014 to 2016): Yearly KRW-USD average exchange rate for the respective years

- Past revenue and order volume in the Profile / History section, 2017 goals in Issue 1 section, and legal standards: KRW-USD average exchange rate for the year 2016 (for comparison purposes)

* Year 2014: 1 USD = 1,053.22 KRW

* Year 2015: 1 USD = 1,131.49 KRW

* Year 2016: 1 USD = 1,160.50 KRW

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Company Profile

Established in 1959, LOTTE E&C pursues endless technical development and management innovation with the belief that only the best quality and services will realize the valuable dreams of the customers.

We enrich people’s lives by providing superior products and services that our customers love and trust, and develop as a company that grows together with the society based on principles, fundamentals, a win-win approach and the spirit of sharing.

We have been actively expanding our business in both domestic and overseas markets. Our business performance for 2016 was USD 6.1 billion in orders received, USD 4.0 billion in revenue and USD 217 million in operating profit.

General Information

Corporate Name	LOTTE Engineering & Construction Co., Ltd. (LOTTE E&C)
Establishment Date	February 3, 1959 (acquired by LOTTE Group in 1978)
Chief Executive Officer	Suk Joo Ha (inaugurated in March, 2017)
Head Office	29, Jamwon-ro 14-gil, Seocho-gu, Seoul, Korea
Overseas Operations	20 countries
Main Business	Housing, Building, Civil and Plant Works
Credit Rating	'A' by Korea Investors Service (June 2017)

LOTTE Group’s Mission, Vision and Management Policy

Mission

We enrich people’s lives by providing superior products and services that our customers love and trust

Vision

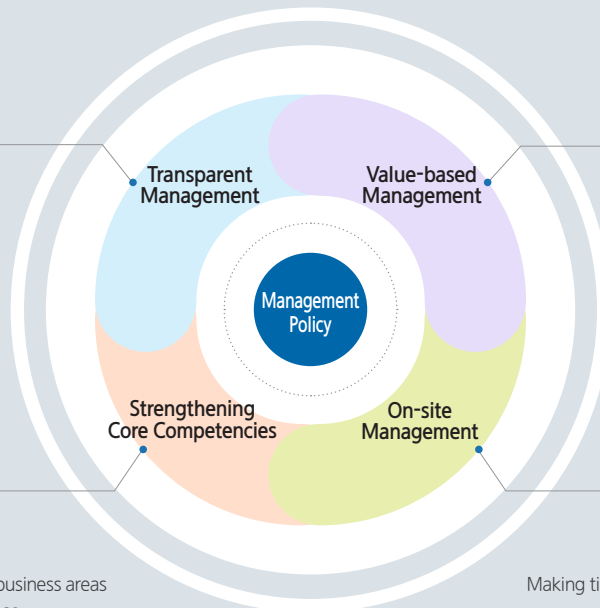
**Lifetime
Value Creator**



Fulfilling duties and responsibilities for the society with transparency and integrity



Securing utmost competence in core business areas and expanding into other relevant areas



Creating and enhancing customer value along with sustainable profitability



Making timely decisions from accurate judgments through on-site management

※ Declared a new vision on April 3, 2017, marking the Group’s 50th anniversary

History

1959 ~ 1977



1978 ~ 1997

1998 ~ 2003

Foundation

- 1959. 02 Pyoung Hwa Construction, Inc. established
- 1962. 05 Acquired Dae Young Construction, Inc.
- 1975. 11 Expanded overseas, receiving order for Road 61-B Construction Work in Saudi Arabia
- 1977. 10 Acquired an overseas construction business license (No. 34 from the Ministry of Construction)

LOTTE Group's Acquisition and Business Structure Reorganization

- 1978. 09 Management right acquired by the LOTTE Group
- 1986. 09 Established the LOTTE E&C Technology Research Institute
- 1990. 02 Completed construction of Jamsil LOTTE World
- 1992. 07 Established the Tokyo branch office in Japan
- 1994. 01 Established the Beijing branch office in China
- 1995. 06 Acquired the ISO 9001 certification (TUV, Germany)
- 1996. 11 Acquired the ISO 14001 certification (BVQI, UK)

External Growth and Brand Management

- 1998. 04 CEO Seung Nam Im inaugurated
- 1999. 03 Launched the LOTTE Castle brand (Sales initiated for Seocho LOTTE Castle 84)
- 2000. 11 Established the Ethics Secretariat
- 2001. 03 Enacted the Standards of Ethical Code
- 2001. 11 Revenues exceeded KRW 1 trillion (approx. USD 862 million)
- 2002. 05 Received grand prize at Korea Service Awards (apartment housing category) from the Korean Standards Association (KSA)
- 2002. 07 Acquired the KOSHA 18001 certification
- 2003. 07 Ranked 8th in the Construction Capability Evaluation determined by the Construction Association of Korea (First time entering the top 10)
- 2003. 12 Acquired the OHSAS 18001 certification
- 2003. 12 Revenues exceeded KRW 2 trillion (approx. USD 1.72 billion)

2004 ~ 2013



2014 ~ Present



Introduction and Implementation of the Corporate Vision

- 2004. 10 CEO Chang Bae Lee inaugurated
- 2005. 10 Established the Vision 2010
- 2005. 12 Revenues of KRW 3 trillion (approx. USD 2.59 billion) and order volume of KRW 5 trillion (approx. USD 4.31 billion) achieved
- 2006. 08 Established the Moscow branch office in Russia
- 2007. 10 Established LOTTE E&C India Pvt. Ltd
- 2008. 01 Established LOTTE E&C Vietnam Co., Ltd
- 2008. 07 Established the Gold Coast branch office in Australia
- 2008. 12 Order volume exceeded KRW 10 trillion (approx. USD 8.62 billion) (over USD 1 billion from overseas)
- 2009. 02 Acquired LOTTE E&M's construction business division
- 2009. 03 CEO Chang Kyoo Park inaugurated
- 2009. 09 Established the Vision 2015
- 2010. 02 Established the Jakarta branch office in Indonesia
- 2010. 08 Acquired the certification for the Quality Assurance Program from KEPIC
- 2010. 11 Commenced construction of LOTTE World Tower
- 2011. 03 Acquired the certification for the ASME Nuclear Power Component certification
- 2011. 10 Established the Islamabad branch office in Pakistan
- 2012. 09 Established LOTTE E&C Malaysia Sdn. Bhd.
- 2012. 11 Launched the CSR Committee (the name changed to LOTTE E&C Sustainability Council)
- 2012. 12 Established the Vision 2018
- 2013. 07 Published the first Sustainability Report
- 2013. 12 Revenues exceeded KRW 4 trillion (approx. USD 3.45 billion)

Changes and Challenges for the Future

- 2014. 03 CEO Chee Hyun Kim inaugurated
- 2014. 05 Established a Task Force for competitiveness improvement
- 2014. 10 Opened LOTTE World Mall
- 2014. 12 Declared the LOTTE Code of Conduct
- 2015. 04 Re-established the brand identity of LOTTE Castle
- 2015. 07 Acquired the order for Kota Kasablanka - Phase 2 in Indonesia
- 2015. 12 Re-established the LOTTE Castle design identity
- 2015. 12 Completed superstructure works (123F) for LOTTE World Tower (Topping-out Ceremony)
- 2016. 01 Established the Vision 2020
- 2016. 01 Established the Rental Housing Business Department to initiate the 'New Stay' project
- 2016. 04 Renewed the LOTTE Castle website

- 2017. 03 CEO Suk Joo Ha inaugurated, Acquired the order for the Residential Renewal Project of Daechi-dong Gumaeul No.2
- 2017. 04 50th anniversary of LOTTE Group, Opened LOTTE World Tower, Acquired the order for the Riau IPP Combined Cycle Power Plant in Indonesia
- 2017. 07 Received grand prize at Korea Service Awards (apartment housing category) (16 consecutive years), Ranked 2nd in the apartment housing category in the National Customer Satisfaction Index (NCSI)
- 2017. 08 Acquired certification in the Information Security Management System, Ranked 77th among the ENR Top 250 International Contractors

CEO's Message

Dear distinguished stakeholders,

Established in 1959 and having become an affiliate company of LOTTE Group in 1978, LOTTE E&C has been striving to improve the quality of life in different parts of the world by acting on the Group's mission of 'We enrich people's lives by providing superior products and services that our customers love and trust' and the vision of being a 'Lifetime Value Creator'.

We have been operating the Sustainability Council since 2012 while disclosing our annual performances through the sustainability report.

In spite of the recent challenges in the business environment both domestically and internationally, we have seen a consistent increase in our business performance including order volume, revenue and profit.

In terms of business structure, we deliver projects at home and abroad in four main areas: housing, building, civil and plant works. We create competitive differentiation in all stages of the project life cycle, including the initial planning, designing, procurement, construction, project management, post-completion operation, financing, and equity participation for investment-development projects.

We continue to enhance our technology, quality and services in our main areas such as housing, with LOTTE Castle - Korea's first-ever premium apartment brand introduced in 1999 - and also high-end rental housing in line with the changes in living trends, super high-rise buildings, multipurpose retail facilities, power/petrochemical/industrial plants, ground transportation works including long-span bridges and tunnels, and water treatment systems.

We also pay great attention to safety and environment issues by making sustainable improvements in our processes and systems for accident prevention for workers at site, minimization of environmental burdens, and responses to climate changes from greenhouse gas reduction.

On the social aspect, all of our employees comply with the 'LOTTE Code of Conduct' as the criteria for value judgment in all regions. In addition, we continue to strengthen fair trade and shared growth with our partner companies as well as corporate social responsibility activities that we can engage ourselves in as a construction company.

We support our employees in every way we can so that they can enjoy their work, achieve self-realization and work-life balance, and play a pivotal role in the corporate sustainability. These supports include a variety of training programs across all levels of employees, differentiated welfare benefits such as mandatory child-care leaves for males, and communication-based corporate culture.

We promise to provide better value to our customers with the same passion and energy that we demonstrated through LOTTE World Tower. We further pledge to fulfill our role as a corporate citizen by contributing to the sustainable growth of local communities in the countries with our presence.

Thank you.

August 2017
Chief Executive Officer **Suk Joo Ha**





“ We promise to provide better value to our customers with the same passion and energy that we demonstrated through LOTTE World Tower. We further pledge to fulfill our role as a corporate citizen by contributing to the sustainable growth of local communities in the countries with our presence. ”



LOTTE Castle Gold Park Block 1 (Nov. 2013 ~ Nov. 2016)

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 2 stories below ground and 25 to 35 stories above, 11 buildings, 1,743 units



HOUSING WORKS

In March 1999, LOTTE E&C introduced a brand apartment housing for the first time in the Korean construction market. The 'Seocho LOTTE Castle 84' was built in Seocho-gu, Seoul, which is an area of high demand in the city. Since then we have established our brand identity as 'Prestige of Life' and have been leading the housing culture of Korea. Along with the LOTTE Castle apartments, we have diversified our portfolio to include residential & commercial complexes and studio apartments with various methods such as urban improvement projects (redevelopment/reconstruction), self-financed projects and contracted projects. LOTTE E&C has also implemented project planning, feasibility studies, sales, marketing, design & interior work, construction and maintenance work to provide differentiated quality and service to our customers. We are also strengthening our rental housing business, which is the future growth engine in line with the paradigm changes in the housing market.

Apartments



1



2



3



4

1 Sindongbaek LOTTE Castle Eco (Dec. 2009 ~ Jun. 2013)

- Location: Giheung-gu, Yongin, Gyeonggi-do
- Summary: 3 stories below ground and 17 to 40 stories above, 26 buildings, 2,770 units
- Features:
 - An eco-friendly residential complex with a landscape area accounting for 40% of the total area
 - A 6-hole, par 3 golf course, the first of its kind in an apartment complex

2 Suseong LOTTE Castle The First (Apr. 2013 ~ Aug. 2015)

- Location: 1-ga Suseong-dong, Suseong-gu, Daegu
- Summary: 2 stories below ground and 7 to 25 stories above, 15 buildings, 979 units
- Features:
 - Open pilotis built around the pleasant surroundings of Sincheon Riverside Park
 - A grand community center at the center of the complex equipped with child-friendly facilities including kids cafe and children's library

3 Hwamyeong LOTTE Castle Kaiser (Mar. 2009 ~ Jun. 2012)

- Location: Hwamyeong-dong, Buk-gu, Busan
- Summary: 4 stories below ground and 35 stories above, 48 buildings, 5,239 units
- Features:
 - 840,000 trees of different species and 12 parks with different themes in the grand residential complex, blurring the lines between home and nature.

4 Daeyeon LOTTE Castle Legend (Nov. 2014 ~ Feb. 2018[expected])

- Location: Daeyeon-dong, Nam-gu, Busan
- Summary: 6 stories below ground and 35 stories above, 30 buildings, 3,149 units
- Features:
 - An impressive urban landscape created by the skyline of the 30 apartment buildings



5

5 LOTTE Castle Gold Park Block 1 (Nov. 2013 ~ Nov. 2016)

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 2 stories below ground and 25 to 35 stories above, 11 buildings, 1,743 units
- Features:
 - A complex with a three-dimensional exterior design, equipped with grand eco-friendly plaza and walkways
 - Buildings arranged in a way that allows all units to face south (abundant access to daylight)



6

6 Songdo LOTTE Castle (Jan. 2010 ~ Nov. 2012)

- Location: Songdo-dong, Yeonsu-gu, Incheon
- Summary: 2 stories below ground and 23 to 32 stories above, 6 buildings, 643 units
- Features:
 - A three-dimensional facade at the lower level
 - Distance between buildings maximized from intersectional arrangement of the buildings



7

7 Godeok LOTTE Castle Beneluce (May 2017 ~ Dec. 2019[expected])

- Location: Sangil-dong, Gangdong-gu, Seoul
- Summary: 4 stories below ground and 29 stories above, 20 buildings, 1,859 units
- Features:
 - Naturally surrounded by two forests - Myeongil Park and Sangil Park
 - Buildings arranged in a way that allows all units to face south, maximizing access to daylight
 - Designs applied to reinforce reduction of noise between floors



8

8 Wonju LOTTE Castle The First Block 2 (Jan. 2016 ~ Aug. 2018[expected])

- Location: Gagok-myeon, Wonju, Gangwon-do
- Summary: 4 stories below ground and 30 stories above, 10 buildings, 1,116 units
- Features:
 - Great views and pleasant living conditions due to the adjacent green area to the north and community park to the south
 - Balcony area per unit maximized by applying the three-sided balcony
 - Long-life housing designed for convenient maintenance



9

9 Dongtan 2 LOTTE Castle New Stay (May 2016 ~ Jun. 2018[expected])

- Location: Dongtan New Town 2, Hwaseong, Gyeonggi-do
- Summary: 1 story below ground and 15 to 20 stories above, 612 units, 9 buildings
- Features:
 - High-end rental housing for the upper middle class
 - A new residential culture with amenities such as breakfast delivery and car sharing

Residential and Commercial Complexes



1

**1 Cheongna LOTTE Castle
(May. 2009 ~ Feb. 2013)**

- Location: Gyeongseo-dong, Seo-gu, Incheon
- Summary: 2 stories below ground and 43 to 50 stories above, 8 buildings, 1,326 units (828 units for the apartments and 498 units for the studios)
- Features:
 - A rhythmic skyline from the hybrid design (flat type and tower type)
 - An environmentally cleaned up forest (Castle Forest), an artificial waterway (Castle Canalway), walkways and rooftop gardens

**2 Songdo Campus Town
(Aug. 2012 ~ Mar. 2016)**

- Location: Songdo-dong, Yeonsu-gu, Incheon
- Summary: 3 stories below ground and 55 stories above, 8 buildings, 3,065 units (1,230 units for the apartments and 1,835 units for the studios)
- Features:
 - A 55-story landmark and a pedestrian-centered complex with piloti designs and the parking lot built entirely underground



2

**3 Haeundae LOTTE Castle Star
(Mar. 2017 ~ Sep. 2020[expected])**

- Location: Jung-dong, Haeundae-gu, Busan
- Summary: 4 stories below ground and 49 stories above, 4 buildings, 906 units (828 units for the apartments and 78 units for the studios)
- Features:
 - A 49-story high-rise complex with a distinctive yacht-shaped exterior design and a view of the Haeundae Beach
 - Haeundae's landmark providing resident convenience by applying a one-pass card system and designs for noise reduction between floors



3

**4 Seongbok Station LOTTE Castle Gold Town
(Nov. 2015 ~ Jun. 2019[expected])**

- Location: Seongbok-dong, Suji-gu, Yongin, Gyeonggi-do
- Summary: 6 stories below ground and 22 to 34 stories above, 14 buildings, 2,746 units (2,356 units in 13 buildings for the apartment, and 390 units for the studios)
- Features:
 - A grand multipurpose complex that includes residential facilities of around 2,700 units, a shopping mall, a hypermarket and a multiplex cinema
 - A landmark equipped with a mega shopping mall (Maximum height: 99.4m / Gross floor area: Approximately 160,000m²) and the Castlian Center that provides an easygoing, healthy life with communities organized by lifestyle, culture and sports



4

LOTTE Castle Gold Park

A multipurpose complex on the scale of a new town, located in Geumcheon-gu (southwestern Seoul) and comprised of apartments, studios, offices and a hotel (A total of 4,409 units)

1 LOTTE Castle Gold Park Block 1 (Nov. 2013 ~ Nov. 2016)

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 2 stories below ground and 25 to 35 stories above, 11 buildings, 1,743 units
- Features:
 - A complex with a three-dimensional exterior design, equipped with grand eco-friendly plaza and walkways
 - Buildings arranged in a way that allows all units to face south (abundant access to daylight)

2 LOTTE Castle Gold Park Block 2 (Apr. 2014 ~ Sep. 2017)

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 5 stories below ground and 14 to 41 stories above, 4 buildings, 470 units (292 units for the apartments and 178 units for the studios)
- Features:
 - Newly designed floor planning applied to maximize access to daylight, ventilation, openness and the balcony area

3 LOTTE Castle Gold Park Block 3 (Mar. 2015 ~ Sep. 2018[expected])

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 5 stories below ground and 43 to 47 stories above, 6 buildings, 1,236 units
- Features:
 - A 40-meter wide court-type central plaza with a sky lounge on the top floor

4 LOTTE Castle Gold Park Tower 960 (Sep. 2015 ~ Mar. 2019[expected])

- Location: Doksan-dong, Geumcheon-gu, Seoul
- Summary: 5 stories below ground and 15 to 39 stories above, 3 buildings, 960 units for the studios
- Features:
 - A complex of a hotel, offices and studios that completes LOTTE Castle Gold Park by connecting studios and the hotel with a bridge and the entire complex to the nearby cafe block as well as the Siheung main road





BUILDING WORKS

We engage in construction and renovation works for urban buildings including super high-rise buildings such as the LOTTE World Tower, multipurpose and retail buildings, offices, facilities for education, medical service, logistics, leisure, sports and religious activities.

While most of the domestic and international companies with high-rise building project experience limit themselves to only construction activities, LOTTE E&C, in collaboration with the LOTTE Group affiliates, provide differentiated solutions including project development and planning, technical and economic feasibility studies, tenant marketing, design & engineering, construction and operation, all adding value to the customers' real estate assets.





LOTTE World Tower (Nov. 2010 ~ Feb. 2017)

- Summary: 6 stories below ground and 123 stories above, height of 555m, gross floor area of 420,310m² (805,872m² in total)

LOTTE World Mall (Nov. 2010 ~ Oct. 2014)

- Summary: 6 stories below ground and 12 stories above, gross floor area of 385,562m² (805,872m² in total)

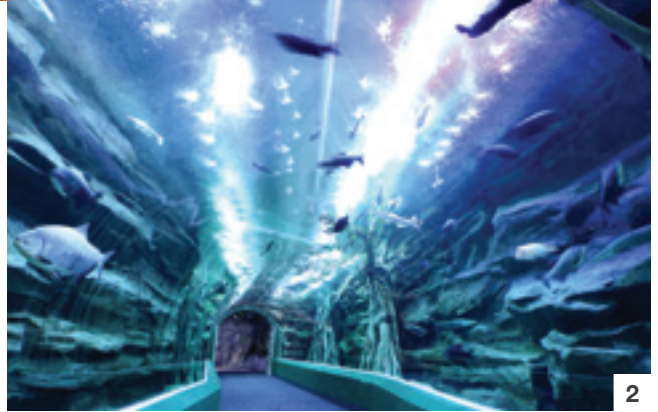
High-Rise Buildings



1



2



2

1 LOTTE World Tower (Nov. 2010 ~ Feb. 2017)

- Location: Sincheon-dong, Songpa-gu, Seoul
- Summary: 6 stories below ground and 123 stories above, height of 555m, gross floor area of 420,310m² (805,872m² in total)
- Features:
 - Korea's landmark as well as the world's 6th tallest building, presenting Korea's traditional beauty in both cutting-edge technology and nature

2 LOTTE World Mall (Nov. 2010 ~ Oct. 2014)

- Location: Sincheon-dong, Songpa-gu, Seoul
- Summary: 6 stories below ground and 12 stories above, gross floor area of 385,562m² (805,872m² in total)
- Features:
 - Eco-friendly complex equipped with various facilities including a duty-free shop, shopping mall, hypermarket, cinema, aquarium and concert hall

3 Busan LOTTE Town (Feb. 2001 ~ Dec. 2019[expected])

- Location: Jungang-dong, Jung-gu, Busan
- Summary: 8 stories below ground and 107 stories above, height of 510m, gross floor area of 581,871m²
- Features:
 - A futuristic complex of shopping, cultural, residential, hotel and office facilities that restores Busan's urban functions



3

Multipurpose Facilities



1 LOTTE Center Hanoi in Vietnam (May. 2010 ~ Jun. 2014)

- Location: Hanoi, Vietnam
- Summary: 5 stories below ground and 65 stories above, height of 272m, gross floor area of 253,134m², 258 units for the service residence, 318 rooms for the hotel with commercial facilities and offices
- Features:
 - The first high-rise building by LOTTE E&C abroad
 - The first foreign company in Vietnam ever to win the High Quality Construction Prize from the Ministry of Construction and the Excellent Site Safety Award from the Ministry of Labor, Invalids and Social Affairs

2 Phase 2 of Kota Kasablanka in Indonesia (Oct. 2015 ~ May. 2018[expected])

- Location: Jakarta, Indonesia
- Summary: 5 stories below ground and 41 to 43 stories above, gross floor area of 365,251m², 2 buildings (1,211units) for the apartments and 1 building for the office
- Features:
 - LOTTE E&C's first building work in Indonesia





3



4



5

3 LOTTE World Shenyang in China (Nov. 2011 ~ Oct. 2019[expected])

- Location: Shenyang, China
- Summary: 4 stories below ground and 43 stories above, gross floor area of 1,516,694m²
- Features:
 - LOTTE E&C's first multipurpose facility development project in China (residential and commercial facilities, offices, a hotel, a theme park, etc.)

4 LOTTE Mall Chengdu in China (Nov. 2013 ~ Dec. 2018[expected])

- Location: Chengdu, China
- Summary: 2 stories below ground and 40 stories above, gross floor area of 568,595m²
- Features:
 - LOTTE Group's second landmark project in western China
 - Multipurpose building with commercial (shopping mall, hypermarket, multiplex cinema, hotel, offices) and residential facilities

5 New Arbat Multipurpose Building in Russia (Sep. 2003 ~ Aug. 2010)

- Location: Moscow, Russia
- Summary: 4 stories below ground and 21 stories above, gross floor area of 142,641m²
- Features:
 - LOTTE E&C's first building work in Russia equipped with a department store, offices and a hotel



6

6 Moscow LOTTE Business Center (Jan. 2011 ~ Feb. 2013)

- Location: Moscow, Russia
- Summary: 2 stories below ground and 22 stories above, gross floor area of 58,660m²
- Features:
 - LOTTE E&C's first real estate development project in Russia

7 Hwaseong Dongtan New Town 2 C11 Block Residential and Commercial Complex (Jul. 2017 ~ Jun. 2021[expected])

- Location: Central Anchor Block C11 BL, Dongtan New Town 2, Hwaseong, Gyeonggi-do
- Summary: 6 stories below ground and 49 stories above, gross floor area of 505,189m²
- Features:
 - The signature multipurpose building in the central commercial district of Dongtan New Town 2
 - Equipped with residential facilities, offices, a department store, a shopping mall, a hypermarket and a multiplex cinema



7

Retail Facilities



1 LOTTE Mall Suwon (May, 2012 ~ Sep. 2014)

- Location: Gwonseon-gu, Suwon, Gyeonggi-do
- Summary: 3 stories below ground and 8 stories above, gross floor area of 213,566m²
- Features:
 - Gyeonggi-do's signature shopping mall that has applied eco-friendly facilities such as solar power generation and a rooftop ecological park

2 LOTTE Premium Outlets Icheon (Aug. 2012 ~ Feb. 2014)

- Location: Hobeop-myeon, Icheon, Gyeonggi-do
 - Summary: 3 stories below ground and 2 stories above, gross floor area of 183,711m²
 - Features:
 - A grand outlet mall consisted of Baekja¹⁾ Building and Cheongja²⁾ Building that fully reflect the features of Icheon, an area well known for potteries
- 1) Baekja: white porcelain 2) Cheongja: blue porcelain

3 LOTTE Mall Eunpyeong (Dec. 2014 ~ Dec. 2016)

- Location: Jingwan-dong, Eunpyeong-gu, Seoul
- Summary: 2 stories below ground and 9 stories above, gross floor area of 161,188m²
- Features:
 - A multicomplex with a shopping mall, a hypermarket, a multiplex cinema, a children's park and a sports & entertainment facility



Medical Service / Office / Accommodation Facilities and Resorts



1



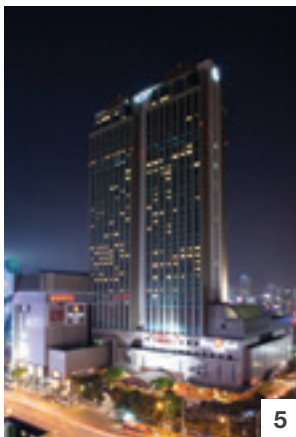
2



3



4



5



6



7

1 Yonsei Cancer Center (Jul. 2010 ~ Mar. 2014)

- Location: Sinchon-dong, Seodaemun-gu, Seoul
- Summary: 7 stories below ground and 15 stories above, gross floor area of 105,201m²
- Features:
 - A specialized cancer treatment hospital equipped with 510 beds and 64 doctor's offices

2 Busan Bank Head Office (Dec. 2011 ~ Jul. 2014)

- Location: Munhyeon-dong, Nam-gu, Busan
- Summary: 3 stories below ground and 23 stories above, gross floor area of 59,826m²
- Features:
 - A landmark building located in the Busan financial complex, well known as an eco-friendly and hi-tech building

3 BNK Financial Group IT Center (Jan. 2016 ~ Jan. 2018[expected])

- Location: Gurang-dong, Gangseo-gu, Busan
- Summary: 2 stories below ground and 9 stories above, gross floor area of 44,204m²
- Features:
 - A broadcasting and communications center for big data processing

4 Gwangmyeong KTX Station Area International Trade Center (Jun. 2017 ~ Jun. 2019[expected])

- Location: Area around Gwangmyeong Station, Gwangmyeong, Gyeonggi-do
- Summary: 4 stories below ground and 18 stories above, gross floor area of 67,144m²
- Features:
 - A business and commercial facility located near KTX Gwangmyeong Station

5 LOTTE Hotel Busan (Jul. 1992 ~ Nov. 1997)

- Location: Bujeon-dong, Jin-gu, Busan
- Summary: 6 stories below ground and 42 stories above, 650 rooms
- Features:
 - Korea's highest hotel (at the time of construction) located at the center of Busan

6 LOTTE City Hotel Myeong-dong (May. 2013 ~ Dec. 2015)

- Location: Myeong-dong (Janggyo-dong), Jung-gu, Seoul
- Summary: 4 stories below ground and 27 stories above, 430 rooms
- Features:
 - A four-star premium business hotel located within the Four Great Gates in Seoul

7 LOTTE Resort Sokcho (Dec. 2014 ~ Jul. 2017)

- Location: Daepo-dong, Sokcho, Gangwon-do
- Summary: 3 stories below ground and 9 stories above, 392 rooms (173 rooms for the hotel, and 219 rooms for the condominium)
- Features:
 - LOTTE Hotel's resort facilities surrounded by the beautiful East Sea on three sides for all guests to enjoy the view

Airport Logistics Facilities



1

1 Incheon International Airport Terminal 2 Frontal Area (Superstructure and Finishing Works) (Aug. 2014 ~ Oct. 2017[expected])

- Location: Within Incheon International Airport in Unseo-dong, Jung-gu, Incheon
- Summary: 4 stories below ground and 2 stories above, gross floor area of 139,038m²
- Features:
 - A traffic center (transit facilities, bus platforms, KTX station lobby) for Incheon International Airport Passenger Terminal 2, part of the government-run project for the 2018 Pyeongchang Winter Olympic Games
 - Irregular space frame structure applied



2

2 Incheon Port International Passenger Terminal (Dec. 2016 ~ May 2019[expected])

- Location: Songdo-dong, Yeongsu-gu, Incheon
- Summary: 5 stories above ground, gross floor area of 66,690m²
- Features:
 - An international passenger terminal that integrates the existing Yeonan Pier's domestic and international terminal

3 LOTTE Mart Online Mall Gimpo Center (Jun. 2014 ~ Feb. 2016)

- Location: Within the Gochon Logistics Center in Gimpo, Gyeonggi-do
- Summary: 1 story below ground and 5 stories above, gross floor area of 30,869m²
- Features:
 - A logistics center responsible for delivery of LOTTE Mart's online orders
 - Convenience in customer deliveries enhanced by applying the latest automated system



3



4

4 Yeongjeong-do Integrated Logistics Center 2 (Sep. 2013 ~ Aug. 2014)

- Location: Free Trade Zone, Unseo-dong Jung-gu, Incheon
- Summary: Gross floor area of 50,439m²
- Features:
 - Work ordered by an employer group of five major duty free shops
 - New technologies applied including ACT columns, HYFO beams and siphonics

Educational and Research Facilities



1



2



3

1 Yonsei University School of Business (Jan. 2014 ~ Sep. 2015)

- Location: Sinchon-dong, Seodaemun-gu, Seoul
- Summary: 3 stories below ground and 6 stories above, gross floor area of 20,135m²
- Features:
 - An eco-friendly, smart building based on the concept 'Harmony with nature and tradition'

2 Dongduk Women's University Multipurpose Hall (Nov. 2013 ~ Aug. 2016)

- Location: Hawolgok-dong, Seongbuk-gu, Seoul
- Summary: 4 stories below ground and 9 stories above, gross floor area of 24,666m²
- Features:
 - A multi-functional educational facility suited to the latest trends of universities, including an auditorium, a book cafe, multi-media rooms, special lecture rooms, study rooms, a lab and a dormitory

3 LOTTE R&D CENTER (Feb. 2015 ~ Jun. 2017)

- Location: Magok-dong, Gangseo-gu, Seoul
- Summary: 3 stories below ground and 8 stories above, gross floor area of 82,929m²
- Features:
 - An open-type building with a central courtyard
 - The comprehensive R&D center for LOTTE Group affiliate companies engaged in the food & beverage business (LOTTE Confectionery, LOTTERIA, LOTTE Chilsung Beverage, LOTTE Food, LOTTE Chemical)

LOTTE World Tower

Design and Technologies for LOTTE World Tower



Fire Protection System

- ▶ Fire protection system based on the International Building Code (IBC) and the National Fire Protection Association (NFPA)
- 19 evacuation elevators and 5 refuge areas → total evacuation time of 63 minutes
- Over 160,000 sprinklers and over 30,000 fire detectors installed, and capable of supplying for maximum 300 minutes

Structural Safety Management Technology

- ▶ Structural Health Monitoring System

Wind-resistant and Seismic Design

- ▶ World-class wind-resistant and seismic design
- Wind-resistant design: Withstanding a strong wind of 80m/sec, the highest typhoon level, at the height of 555m
- Seismic design: Withstanding over 9.0 magnitude earthquakes
- ▶ Core wall and 8 mega columns: Scaffolding the vertical gravity with the central backbone of the tower
- ▶ Outriggers and best truss: Withstanding lateral pressure of wind and earthquakes
- ▶ Diagrid structure for the highest floors: A structure to withstand the weight of a building without additional column or scaffold besides the core column by using a diagonal steel scaffold repeatedly, being highly capable of bear horizontal shocks such as typhoons and earthquakes
- * Diagrid: A compound word of 'diagonal' and 'grid'

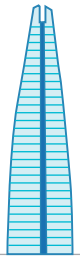
Green Complex

- ▶ Eco-friendly design: Received a Gold rating in the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) system
- Optimization of energy plans: Green rooftop, high-insulation glass, recycling of heavy water and rainwater, and use of high-efficiency facilities and equipment
- Introduction of new and renewable energies: Photovoltaics (PV), solar energy, wind power, geothermal cooling/heating, domestic sewage, and recovery of waste heat
- * Implementation effect: The effect of planting 8.5 million 20-year-old pine trees each year by self-producing the annualized electricity volume of 51,168Mwh, that is, 14.5% of the total amount of energy used, and reducing CO₂ emissions by 23,113t

Mat Foundation

- ▶ Mat Foundation
- The weight of LOTTE World Tower upon its completion was 750,000 tons, and the mat foundation to sustain it was robustly made with concrete with the length and width of 72m and height of 6.5m
- ▶ Cut-off Wall
- Blocking the inflow of groundwater by establishing the concrete cut-off wall with the thickness of 1m and depth of 27m down to the bedrock around the building

Key Figures of LOTTE World Tower



Number of floors

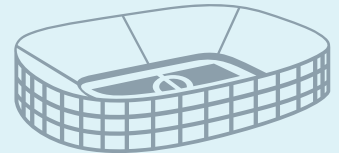
123

Gross floor area

805,872 m²

LOTTE World Tower 420,310m² / LOTTE World Mall 385,562m²

Equivalent to the size of 115 soccer fields



Weight of the tower steel frame

App.

50,000 tons

Equivalent to the volume required to construct seven Eiffel Towers in Paris

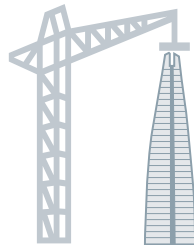


Weight

750,000 tons



Setting up a seismic and wind-resisting system to withstand a strong earthquake with magnitude of 9 at 80m/sec



Height

555 m

Amount of concrete for the tower

220,000 m³



Volume required for 3,500 households (105m²-sized)
(App. 400,000 trucks with ready-mixed concrete)

Economic effect

KRW 10 trillion

(approx. USD 8.62 billion) per year



Number of employment induced

21,000



Accumulated number of workers involved in construction site per year

5 million



Number of foreign tourists visiting the tower

3.5 million per year



5 million per year with LOTTE World Mall included

Eco-friendly building certification

Gold rating (U.S.)

Top excellence in the main accreditation for green buildings (Korea) and a Gold rating in LEED (U.S.)



Conversion of new and renewable energy produced from LOTTE World Tower to electricity

8.5 million pine trees

Equivalent to planting 8.5 million 20-year-old pine trees every year



Amount of CO₂ which can be reduced by generating new and renewable energy

23,000 tons

CIVIL WORKS

—

LOTTE E&C contributes to the national land development and infrastructure expansion at home and abroad including transportation and logistical facilities (roads, railways, subways, airports and ports), landfill and site renovation (housing site, industrial complexes, and port hinterlands), water treatment systems (water supply, water-cleaning, sewage and wastewater treatment), and irrigation facilities (dams, waterways and hydro power plants). We provide total solutions in public financing projects (turnkeys, technical proposals and contracted works) and private investment projects (PPP, BOT, BTO, BOO, BTL, etc.) ranging from project planning, technical & economic feasibility analysis, financing & direct investment, design & construction to post-construction facility maintenance.

Eulsukdo Grand Bridge - Private Investment Project (Jan. 2005 ~ Jan. 2010)

- Location: Sinpyeong-dong Saha-gu ~ Myeongji-dong Gangseo-gu, Busan
- Summary: 5.205km in total, width of 25.5 ~ 35m, six-lane
- Features: A maritime bridge that contributes to a smooth flow of trading volumes between Busan New Port and the existing Busan Port as well as logistics cost reduction



Ground Transportation



1

1 Ulsan~Pohang Expressway Section 4 (Jun. 2009 ~ Dec. 2015)

- Location: Gyeongju, Gyeongsangbuk-do
- Summary: Total 5.41km, 4-lane, 2 bridges (408m), 1 tunnel (3.094km), 1 service area
- Features:
 - Constructed in preparedness for increasing traffic volume in the eastern coast
 - Logistics support system secured and balanced regional development sought by connecting Daegu, Pohang, Ulsan and Busan



2

2 5 Sections for the National Expressway Route 30 - Sangju ~ Yeongdeok (Section 3, 4, 5, 15 and 18) (Jul. 2010 ~ Dec. 2016)

- Location: Uiseong-gun to Yeongdeok-gun, Gyeongsangbuk-do
- Summary: Total 34.86km, 4-lane, 32 bridges (5.091km), 9 tunnels (10.953km), 1 service area
- Features:
 - Extension of one of the six east-west corridors under the National Expressway Plan (Cheongwon~Sangju)
 - Enhanced accessibility between the underdeveloped northwestern and eastern areas of Gyeongsangbuk-do by connecting the central expressway and National Road Route 7

3 Gangnam Beltway (Expressway) Section 6-2 (Private Investment Project) (Apr. 2009 ~ Jul. 2016)

- Location: Gwanak-gu, Seoul
- Summary: 1 tunnel (2.2km, 4-lane), 1 underpass (197m), 2 ramp bridges (80m)
- Features:
 - Purpose to disperse traffic in Nambu Beltway and Olympic Expressway
 - Traffic problems resolved in southwest Seoul and Gangnam area by establishing an integrated urban expressway network linked with the existing expressway



3



4

4 Yen Vien-Lao Cai Railway Upgrading Project Construction Package No.3 (Mar. 2013 ~ Jul. 2015)

- Location: Lao Cai Province, Vietnam
- Summary: Improvement of the existing railway (L=73.9km) and bridges (5 in total), slope protection, communications & signaling system
- Features:
 - LOTTE E&C's first civil work in Vietnam, contributing to the development of tourism resources and transport of resources between Hanoi and Lao Cai

5 Incheon Metro Line 2 Section 215 (Jun. 2009 ~ Oct. 2016)

- Location: Namdong-gu, Incheon
- Summary: Total 2.277km (excavation section of 1.217km, bridge section of 0.715km, etc.), 1 station (three stories above ground)
- Features:
 - Connecting the north-south railway with the existing east-west urban railway in Incheon
 - Residents' living conditions improved from enhanced convenience and eased traffic congestions



5



6

6 Seoul Metro Line 9 Phase 3 Section 920 (Dec. 2009 ~ Mar. 2018[expected])

- Location: Seokchon-dong to Bangi-dong, Songpa-gu, Seoul
- Summary: Total 1.391km (TBM shield 945m, Open-cut box 119m, etc.), 1 station
- Features:
 - As part of the Metro Line 9 Phase 3 Project, the entire section constructed under the TBM shield method



7

7 Gwangsan Bridge (Dec. 1994 ~ Dec. 2002)

- Location: Suyeong-gu to Haeundae-gu, Busan
- Summary: Total 7.42km (suspension bridge 0.9km, trust bridge 0.72km, approach bridge 5.8km), width of 18~25m, 4-lane, double-deck structure
- Features:
 - A maritime bridge for efficient transportation of shipped goods and industrial trade volumes in Busan



8

8 Banghwa Grand Bridge (Dec. 1995 ~ Nov. 2000)

- Location: Gangseo-gu, Seoul to Goyang-si, Gyeonggi-do
- Summary: Total 2.559km, width of 27.8m, six-lane
- Features:
 - The 27th bridge crossing the Han River, and the Seoul starting point of the Incheon International Airport Expressway



9

9 Busan LOTTE Town Yeongdo Bridge Improvement • Restoration Works (Jul. 2007 ~ Jul. 2014)

- Location: Jung-gu to Yeongdo-gu, Busan
- Summary: Total 0.215km, 6-lane (bascule bridge)
- Features:
 - Korea's first land-connecting bridge and the only single-leaf bascule bridge
 - Lanes expanded and bascule functions restored following Busan Metropolitan Government's designation of the bridge as Monument No.56

10 Donggi Bridge (Jeokseong~Jeongok National Road Section 2) (Jul. 2009 ~ Jan. 2016)

- Location: Yeoncheon-gun, Gyeonggi-do
- Summary: Total 2.34km, width of 20.0m, four-lane, 1 bridge (cable-stayed, length of 0.4km, width of 20.9m), 1 interchange
- Features:
 - Yeoncheon's landmark bridge and Korea's longest earth-anchored steel composite cable-stayed bridge
 - Structural stability secured by gravity-type anchorage and water pollution reduced from the ground erection method



10

Water Treatment Systems



1



1



1 Treated Sewage Recycling Facilities in Pohang (Private Investment Project) (Feb. 2012 ~ Jul. 2014)

- Location: Sangdo-dong, Nam-gu, Pohang (within the Pohang Sewage Treatment Plant)
- Summary: Site area of 16,122m², building area of 2,282m², recycling facilities of 100,000 tons/day, concentrate stream of 9,000 tons/day, supply pipeline of 11.5km (D200~900), Ultra Filtration (U/F) + Reverse Osmosis (R/O)
- Features:
 - Korea's first and largest project to recycle 100,000 tons of water per day as industrial water to resolve the water shortage and secure water resources in Pohang

2 Nongso Sewage Treatment Plant (Private Investment Project) (Feb. 2013 ~ Feb. 2016)

- Location: Sangan-dong, Buk-gu, Ulsan
- Summary: Sewage treatment plant (100,000 tons/day), 2 pumping stations, interceptor of 7.5km, recycling pipeline of 2.2km, discharge pipeline of 0.4km, MSBR¹⁾ + tertiary treatment (biofilm filtration, ultraviolet sterilization)
- Features:
 - Purpose to expand the sewage treatment capacity in line with regional developments in Ulsan's Jung-gu and Buk-gu
 - Sewage treatment stabilized, water quality improved in the discharge area, and water for river maintenance secured

1) MSBR: Modified Sequence Batch Reactor



2

Ports / Golf Courses / Dams / Site Renovation



1



2



3



4



5



6

1 Incheon North Port General Cargo Terminal (1 Berth - 20,000 DWT) (Apr. 2007 ~ Dec. 2009)

- Location: Weonchang-dong, Seo-gu, Incheon
- Summary: 1 berth - 20,000 DWT, quay wall of 201m, bank protection works of 225m, site renovation of 37,800m², 1 building
- Features:
 - Local contributions made (reduction of logistics cost and traffic congestion) from enhanced capacity to handle cargo in the metropolitan area

2 Seetech Berth Facilities in Daesan Port (Berth #6) (Oct. 2012 ~ Oct. 2014)

- Location: Seosan, Chungcheongnam-do
- Summary: 1 cargo handling wharf, 4 breasting dolphins, 4 mooring dolphins
- Features:
 - Extension works of the shipping/unloading wharf that handles logistics services for the Daesan Petrochemical Complex, increasing logistics quantity and capacity

3 Cheongna Bear's Best Country Club (Sep. 2009 ~ Jan. 2012)

- Location: Gyeongseo-dong, Seo-gu, Incheon
- Summary: Total area 1,360,105m², 27 holes, 28 greens, 116 tee boxes, club house
- Features:
 - A golf course with 27 holes selected from 290 courses worldwide and designed by Jack Nicklaus
 - Masterpiece courses including the European Course, the American Course and the Australasian Course

4 LOTTE Skyhill Buyeo Country Club (Jun. 2010 ~ Apr. 2013)

- Location: Buyeo-gun, Chungcheongnam-do
- Summary: Total area 950,640m², 18 holes, 18 greens, 58 tee boxes, club house
- Features:
 - An eco-friendly golf course where players can experience the nature together with the Baekjae Dynasty culture (General Gyebaek Course and King Uija Course)

5 Heightening Work of the Agricultural Reservoir Embankment at Damyang Lake (Sep. 2011 ~ Mar. 2014)

- Location: Damyang-gun, Jeollanam-do
- Summary: Embankment (W=20m, L=306m), overflow weir (L=62m), drainage canal (L=293.5m), road relocation (L=1.89km)
- Features:
 - Heightening the existing reservoir by 2m to secure the bank's safety and increasing the flood control capacity, thereby reducing flood damage

6 Housing Site Development in Ungcheon District (Apr. 2004 ~ Jun. 2016)

- Location: Yeosu, Jeollanam-do
- Summary: A total area of 2,800,000m², ground cutting of 8,523,919m³, ground fill-up of 6,281,776m³, water supply pipe of 50,015m, rainwater pipe of 41,492m and sewage pipe of 26,320m
- Features:
 - Resolving the housing shortage in the Yeosu by developing a new downtown area with eco-friendly, multipurpose residential functions
 - Expanding land for various facilities including amenity, tourism and industrial research, and achieving balanced regional development by constructing the region's signature park



LOTTE Chemical IP Project (Dec. 2014 ~ Oct. 2016)

- **Location:** Jungheung-dong, Yeosu, Jeollanam-do (within the Yeosu National Industrial Complex)
- **Summary:** A production plant of IPM¹⁾ 32,000MTA, DCPD²⁾ 12,000MTA, PIP³⁾ 46,000MTA⁴⁾
- **Features:** EPC project / Isoprene plant
 - 1) IPM: Isoprene Monomer
 - 2) DCPD: Dicyclopentadiene
 - 3) PIP: Piperylene
 - 4) MTA: Metric Tons per Annum

PLANT WORKS

LOTTE E&C is involved in establishing national and industrial infrastructure in many areas at home and abroad: petrochemical (product manufacturing and facilities for raw material storage in upstream and downstream), industrial plants (tire, steel, food & beverage and wastewater treatment) and power generation projects (community energy supply system, cogeneration, LNG combined cycle power, coal-fired thermal power, diesel engine, and renewable energies including SRF, wind energy and PV).

We provide one-stop services as the Project Manager, EPC Contractor and IPP Developer throughout the value chain covering project planning, technical & economic feasibility studies, design and engineering, procurement, construction, commissioning and O&M.



Petrochemical Plants / Industrial Plants



1



2



3



4

1 LOTTE Chemical B Project (Jul. 2009 ~ Oct. 2010)

- Location: Jungheung-dong Yeosu, Jeollanam-do (within the Yeosu National Industrial Complex)
- Summary: A production plant of Butadiene 130,000MTA¹⁾
- Features:
 - EPC project / Butadiene plant

2 LOTTE Chemical P2 Project (Sep. 2010 ~ Jun. 2012)

- Location: Jungheung-dong, Yeosu, Jeollanam-do (within the Yeosu National Industrial Complex)
- Summary: A production plant of PE 250KTA/PP 200KTA²⁾ and an automated warehouse (25,640 cells)
- Features:
 - EPC project / HDPE & PP plant (LOTTE Chemical License)

3 MSR R1 Project in Malaysia (Jan. 2013 ~ Sep. 2014)

- Location: Johor, Malaysia
- Summary: A Poly-Butadiene Rubber 50KTA production plant
- Features:
 - EPC project / Butadiene Rubber plant

4 LPG Tank Project in Jordan (Sep. 2008 ~ Nov. 2010)

- Location: Zarqa, Jordan
- Summary: Installation of 4 units of 2,000 ton LPG storage tanks and subsidiary facility construction
- Features:
 - EPC project / LPG storage tank

1) MTA: Metric Tons per Annum

2) KTA: Kilo Tons per Annum



5



6

5 LOTTE Chilsung Liquor's Chungju Beer Factory (Jun. 2012 ~ Oct. 2014)

- Location: Chungju, Chungcheongbuk-do
- Summary: Beer production facilities (50,000KL)
- Features:
 - Production facilities for 'Kloud' and 'Fitz Super Clear', LOTTE Chilsung Liquor's beer brands

6 LOTTE Chilsung Liquor's Chungju Beer Factory 2 (Feb. 2015 ~ Mar. 2018[expected])

- Location: Chungju, Chungcheongbuk-do
- Summary: Beer production facilities (200,000KL)
- Features:
 - Extension of a production facilities for 'Kloud' and 'Fitz Super Clear', LOTTE Chilsung Liquor's beer brands

7 LOTTE Chilsung Liquor's Cheongju Soju Factory (Jun. 2014 ~ Dec. 2015)

- Location: Cheongju, Chungcheongbuk-do
- Summary: Soju (Korean alcoholic beverage) production facilities (Bottle 1,000 BPM/ PET 150 BPM)
- Features:
 - Extension of a production plant for 'Chumchurum', a soju (Korean alcoholic beverage) brand of LOTTE Chilsung Liquor's



7

8 Hankook Tire's Plant 1-2 in Indonesia (Jun. 2011 ~ Jul. 2015)

- Location: Cikarang, Indonesia
- Summary: PCR (passenger car radial) 15,000 pieces/day, and 16,000 pieces/day with extension works
- Features:
 - A tire manufacturing plant



8

9 Hyundai Steel's Dangjin Steel Mill (Jan. 2008 ~ Mar. 2011)

- Location: Dangjin-gun, Chungcheongbuk-do
- Summary: A production plant for coking property (3,138,000 tons/year), sintering (12,000,000 tons/year), and steel making (8,000,000 tons/year)
- Features:
 - Simultaneous construction of Dangjin Steel Mill's (phase 1 and 2) main processes - coking property, sintering and steel making



9

10 LOTTE Confectionery's Neman Plant in India (Aug. 2008 ~ Dec. 2010)

- Location: Chennai, India
- Summary: A production plant for chewing gum, pies and biscuits
- Features:
 - An overseas industrial plant implemented in line with LOTTE Group's entry into the Indian market



10

Power Plants



1



2



3



4



5

1 Seoul Combined Cycle Power Plant 1 and 2 (Oct. 2015 ~ Nov. 2018[expected])

- Location: Hapjeong-dong, Mapo-gu, Seoul
- Summary: 2 units of 400MW(800MW) (2 units each for GT 267.5MW, ST 127.9MW and HRSG 256Gcal/h)
- Features:
 - The world's first underground combined cycle power plant project

2 Andong Combined Cycle Power Plant (Apr. 2012 ~ Jun. 2014)

- Location: Andong, Gyeongsangbuk-do
- Summary: 417MW (1 unit each for G/T 277MW and S/T 140MW)
- Features:
 - A power plant that resolved the energy blind spot issue in the northern part of Gyeongsangbuk-do and secured the basis for thermal power supply in the region as LOTTE E&C's first project with Korea Electric Power Corporation
 - The building exterior designed with the Korean traditional housing concept, seeking cultural harmony

3 Daegu Cogeneration Power Plant (Oct. 2012 ~ Dec. 2014)

- Location: Yulam-dong, Dong-gu, Daegu
- Summary: LNG Combined Cycle Power 415MW (single shaft system) (1 unit each for GT 274MW, ST 141MW and HRSG 150Gcal/h)
- Features:
 - A natural gas-powered cogeneration power plant supplying energy to Sinseo Innovation City in Daegu

4 Al Qatrana Combined Cycle Power Plant in Jordan (Jordan IPP2) (Jul. 2008 ~ Aug. 2011)

- Location: Al Qatrana, Jordan
- Summary: 377MW (2 units of GT¹⁾ 130MW, 1 unit of ST²⁾ 120MW and 2 units of HRSG³⁾ 105T/H⁴⁾)
- Features:
 - LOTTE E&C's first overseas EPC power plant project, serving as the stepping stone for entry into the overseas power generation market

5 Al Manakher Diesel Engine Power Plant in Jordan (Jordan IPP3) (Sep. 2012 ~ Sep. 2014)

- Location: Al Manakher, Jordan
- Summary: 573MW (38 units of 16MW diesel engine power generators)
- Features:
 - The world's largest diesel engine power plant implemented in EPC

1) GT: Gas Turbine
2) ST: Steam Turbine
3) HRSG: Heat Recovery Steam Generator
4) T/H: Ton per Hour



6

**6 Cogeneration Plant for Gwangju and Jeollanam-do CES¹⁾
(Apr. 2015 ~ Dec. 2017[expected])**

- Location: Naju, Jeollanam-do
- Summary: 22MW power generation facilities, heating facilities of 45Gcal/h
- Features:
 - Cogeneration power facilities ordered by Korea District Heating Corporation utilizing SRF²⁾



7

**7 Cogeneration Plant for Naepo New Town CES
(Sep. 2016 ~ Aug. 2019[expected])**

- Location: Yesan-gun, Chungcheongnam-do
- Summary: 1 unit of 66MW SRF and 1 unit of 160Gcal/h HOB³⁾
- Features:
 - A community energy supply project using new and renewable energy sources for fuel
 - LOTTE E&C's first investment-development new and renewable energy



8

**8 Yeongheung Thermal Power Plants 5 & 6
(Apr. 2010 ~ Dec. 2014)**

- Location: Ongjin-gun, Incheon
- Summary: 2 units of 870MW plants (coal burning, ultra super-critical once-through thermal power plants)
- Features:
 - An eco-friendly power plant that supplies a significant amount of power in the metropolitan area, complying with strict environmental regulatory standards by using coal (bituminous coal) which are inexpensive compared to LNG
 - Allowing LOTTE E&C to enter the coal power plant market home and abroad by securing experience in the 100MW-above works



9

9 Gunsan GE4 Coal-fired Power Plant (May. 2013 ~ May. 2016)

- Location: Soryong-dong, Gunsan, Jeollabuk-do (within the Gunsan Local Industrial Complex)
- Summary: 250MW (1 unit each for CFBC⁴⁾ Boiler 950T/H and STG 250MW)
- Features:
 - Purpose to increase energy supply in the Gunsan Local Industrial Complex

1) CES: Community Energy Supply System
 2) SRF: Solid Refuse Fuel
 3) HOB: Heat Only Boiler
 4) CFBC: Circulating Fluidized Bed Combustion

OVERSEAS WORKS

LOTTE E&C has project experience in 20 countries in 6 regions i.e. Southeast Asia (Indonesia, Malaysia, Vietnam, Brunei, Cambodia, Myanmar, Laos and Philippines), Northeast Asia (China, Japan and Mongolia), Southwest Asia (India, Pakistan, Bangladesh and Sri Lanka), CIS (Russia and Uzbekistan), Africa / Middle East (Jordan and Qatar) and Oceania (Australia).

We provide differentiated values to customers and carry on our solid growth momentum based on our strategies of selection and concentration, focusing on flagship products by business area which include high-rise buildings, multipurpose and retail facilities, power plants, petrochemical and industrial plants, ground transportation facilities (roads, railways and subway), water treatment systems, hydro power plants and housing, etc.



Africa / Middle East | Jordan, Qatar



Southwest Asia | India, Pakistan



Southeast Asia | Indonesia, Vietnam, Malaysia



CIS | Russia



Northeast Asia | Republic of Korea, China, Japan

Southeast Asia



1 Phase 2 of Kota Kasablanka in Indonesia (Oct. 2015 ~ May, 2018[expected])

- Location: Jakarta, Indonesia
- Summary: 5 stories below ground and 41 to 43 stories above, gross floor area of 365,251m², 2 buildings (1,211units) for the apartments and 1 building for the office
- Features:
 - LOTTE E&C's first building work in Indonesia

2 Hankook Tire's Plant 1-2 in Indonesia (Jun, 2011 ~ Jul, 2015)

- Location: Cikarang, Indonesia
- Summary: PCR (passenger car radial) 15,000 pieces/day, and 16,000 pieces/day with extension works
- Features:
 - A tire manufacturing plant

3 MSR R1 Project in Malaysia (Jan, 2013 ~ Sep, 2014)

- Location: Johor, Malaysia
- Summary: A Poly-Butadiene Rubber 50KTA production plant
- Features:
 - EPC project / Butadiene Rubber plant





4

4 Titan Project-T in Malaysia (May, 2011 ~ Oct, 2012)

- Location: Johor, Malaysia
- Summary: TBA¹⁾ Plant (110KTA)
- Features:
 - LOTTE E&C's first EPC project in Malaysia

5 LOTTE Center Hanoi in Vietnam (May, 2010 ~ Jun, 2014)

- Location: Hanoi, Vietnam
- Summary: 5 stories below ground and 65 stories above, height of 272m, gross floor area of 253,134m², 258 units for the service residence, 318 rooms for the hotel with commercial facilities and offices
- Features:
 - The first high-rise building by LOTTE E&C abroad
 - The first foreign company in Vietnam ever to win the High Quality Construction Prize from the Ministry of Construction and the Excellent Site Safety Award from the Ministry of Labor, Invalids and Social Affairs



5

6 Yen Vien-Lao Cai Railway Upgrading Project Construction Package No.3 (Mar, 2013 ~ Jul, 2015)

- Location: Lao Cai Province, Vietnam
- Summary: Improvement of the existing railway (L=73.9km) and bridges (5 in total), slope protection, communications & signaling system
- Features:
 - LOTTE E&C's first civil work in Vietnam, contributing to the development of tourism resources and transport of resources between Hanoi and Lao Cai



6

1) TBA: Tertiary Butyl Alcohol

Northeast Asia



1



2



3



4



5

1 Lotte World Shenyang in China (Nov. 2011 ~ Oct. 2019[expected])

- Location: Shenyang, China
- Summary: 4 stories below ground and 43 stories above, gross floor area of 1,516,694m²
- Features:
 - LOTTE E&C's first multipurpose facility development project in China (residential and commercial facilities, offices, a hotel, a theme park, etc.)

2 Lotte Mall Chengdu in China (Nov. 2013 ~ Dec. 2018[expected])

- Location: Chengdu, China
- Summary: 2 stories below ground and 40 stories above, gross floor area of 568,595m²
- Features:
 - LOTTE Group's second landmark project in western China
 - Multipurpose building with commercial (shopping mall, hypermarket, multiplex cinema, hotel, offices) and residential facilities

3 Consular Office of the Korean Embassy in China (Expansion Works) (Feb. 2015 ~ Aug. 2017)

- Location: Beijing, China
- Summary: 2 stories below ground and 5 stories above, gross floor area of 4,599m²
- Features:
 - Ordered by the Korean government (Ministry of Foreign Affairs)

4 Korean Embassy in Japan (May. 2010 ~ May. 2013)

- Location: Tokyo, Japan
- Summary: Office building (1 story below ground and 7 stories above), house (3 stories below ground and 2 stories above), gross floor area of 17,512m²
- Features:
 - Marking LOTTE E&C's 100th project in Japan, the delicate image of Hanbok (Korean traditional costume) visualized in the building

5 Mary's Chocolate Factory in Japan (Aug. 2014 ~ Aug. 2015)

- Location: Chiba, Japan
- Summary: 5 stories above ground, gross floor area of 12,258m²
- Features:
 - A design-build project jointly performed with a local contractor, Shimizu Corporation

CIS



1

1 New Arbat Multipurpose Building in Russia (Sep. 2003 ~ Aug. 2010)

- Location: Moscow, Russia
- Summary: 4 stories below ground and 21 stories above, gross floor area of 142,641m²
- Features:
 - LOTTE E&C's first building construction project in Russia (a department store, offices, a hotel)



2

2 Moscow LOTTE Business Center (Jan. 2011 ~ Feb. 2013)

- Location: Moscow, Russia
- Summary: 2 stories below ground and 22 stories above, gross floor area of 58,660m²
- Features:
 - LOTTE E&C's first real estate development project in Russia



3

3 LOTTE Hotel St. Petersburg (Interior Works) (Feb. 2015 ~ Aug. 2017)

- Location: St. Petersburg, Russia
- Summary: 1 story below ground and 6 stories above, 154 rooms, spa, banquet, restaurant, etc.
- Features:
 - Renovating the existing hotel to turn it into a 5-star hotel while maintaining the historical characteristics as the building is located in a place where the city itself is designated as a UNESCO World Heritage

Southwest Asia and Africa / Middle East



1 LOTTE Confectionery's Neman Plant in India
(Aug. 2008 ~ Dec. 2010)

- Location: Chennai, India
- Summary: A production plant for chewing gum, pies and biscuits
- Features:
 - An overseas industrial plant implemented in line with LOTTE Group's entry into the Indian market

2 Al Manakher Diesel Engine Power Plant in Jordan
(Jordan IPP3) (Sep. 2012 ~ Sep. 2014)

- Location: Al Manakher, Jordan
- Summary: 573MW (38 units of 16MW diesel engine power generators)
- Features:
 - The world's largest diesel engine power plant implemented in EPC



3 Al Qatrana Combined Cycle Power Plant in Jordan
(Jordan IPP2) (Jul. 2008 ~ Aug. 2011)

- Location: Al Qatrana, Jordan
- Summary: 377MW (2 units of GT 130MW, 1 unit of ST 120MW and 2 units of HRSG 105T/H)
- Features:
 - LOTTE E&C's first overseas EPC power plant project, serving as the stepping stone for entry into the overseas power generation market

4 LPG Tank Project in Jordan (Sep. 2008 ~ Nov. 2010)

- Location: Zarqa, Jordan
- Summary: 4 units of 2,000-ton LPG storage tanks and its subsidiary facilities
- Features:
 - EPC project / LPG storage tank



5 Gulpur Hydropower Plant in Pakistan
(Sep. 2014 ~ Mar. 2019[expected])

- Location: Kashmir, Pakistan (Poonch River)
- Summary: Power plants of 102MW (2 units of 51MW), dam (H=66.5M, L=205M)
- Features:
 - Acquiring know-how in performing overseas hydropower projects and securing a gateway to enter the southwestern Asian region



6 Qatar Metro Red Line North Elevated and At-grade Sections
(Dec. 2014 ~ Jun. 2018[expected])

- Location: Doha, Qatar
- Summary: Total 6.7km (viaduct of 2.3km, elevated section of 1.8km, open-cut tunnel of 0.3km, trough of 1.9km, 2 stations)
- Features:
 - Jointly performed with an international contractor with proven track records in overseas elevated metro projects



SUSTAINABILITY REPORT

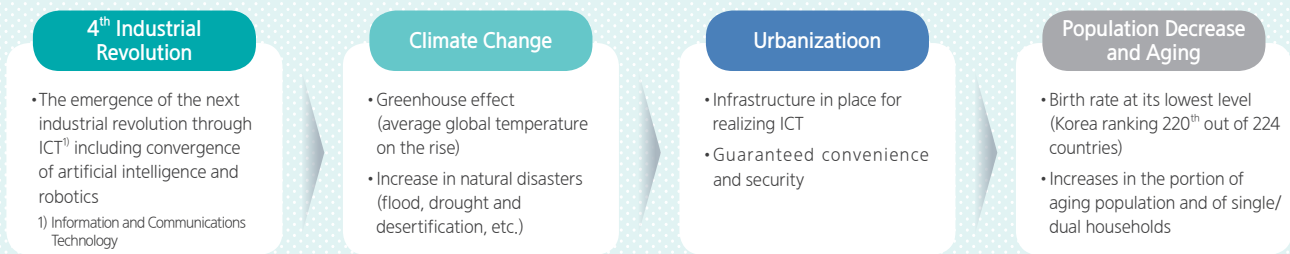


48	Mega Trends in the Construction Industry	63	Human Resource Management
49	Stakeholder Engagement and Materiality Test	68	Customer Satisfaction
50	Sustainable Development Goals	74	Win-Win Partnership
52	Strengthening Competitiveness	77	Expanding Social Contribution
56	Safety and Climate Change Response	80	Ethical Management

Mega Trends in the Construction Industry

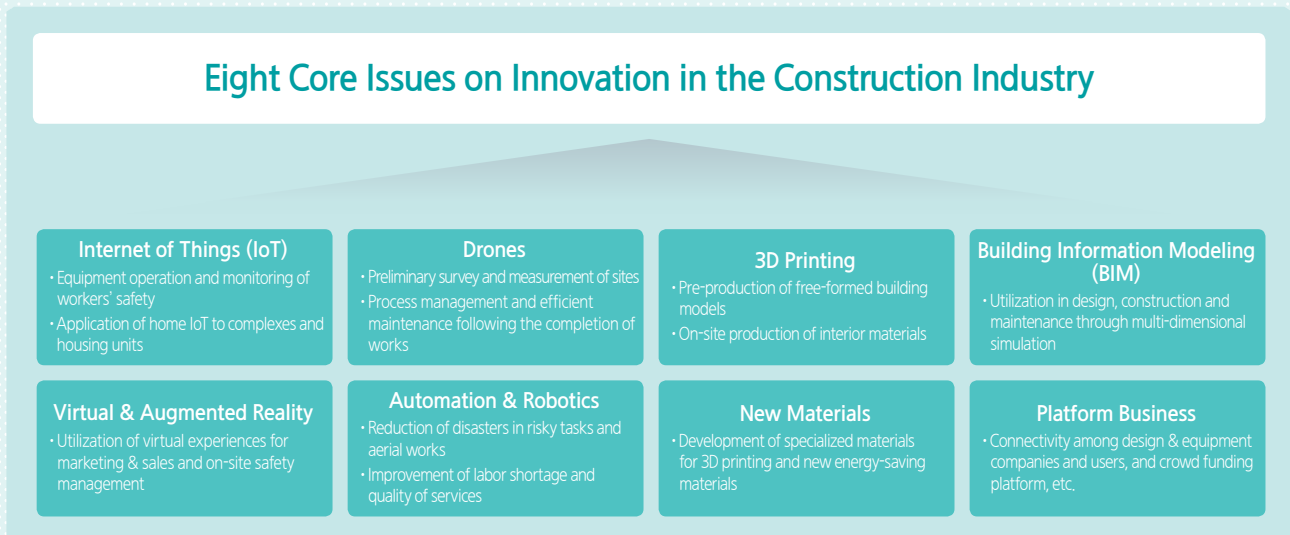
LOTTE E&C strives to become the market leader by analyzing and devising preemptive measures for not only the conventional changes in the domestic and international construction market but also the changes in the global mega trends that have impact across the construction industry, i.e., the 4th industrial revolution based on information and communications technology (ICT), climate change, population decrease and aging, urbanization and etc. Particularly since January 2017, LOTTE E&C has organized a task force of related departments in marketing & sales, design, procurement, construction, health & safety, R&D, finance, HR and strategic planning to establish company-wide strategies for these mega trends and to implement them stage by stage.

Outlook for the Mega Trends



Material Issues in Innovation in the Construction Industry

The existing companies in the construction industry are improving products and services and changing their methods of production by adopting ICT. Furthermore, business models driven by new entrants in the industry are emerging. LOTTE E&C's task force analyzed domestic and international stakeholder trends within the industry. As a result, we came up with eight core issues related to innovation in the construction industry including IoT, drones and 3D printing.



Outlook of the Construction Industry and LOTTE E&C's Response

While the existing products in the construction industry are expected to be continually available in the future, qualitative and quantitative changes are expected in the market along with transformations in the competitive landscape. Historically, the nature of the construction industry is to develop by applying other industries' innovation outcomes. Therefore, it would be advantageous for construction companies to monitor market changes, explore promising fields and respond by collaborating with external specialists.

In this context, LOTTE E&C is boosting competitiveness in products and services in response to such global mega trends as the 4th industrial revolution. We will also explore promising business in the future while steadily boosting our competitiveness in our existing business.

Stakeholder Engagement and the Materiality Test

Stakeholder Engagement

LOTTE E&C gathers stakeholders' opinions through seamless communication and reflects those opinions in management activities. We strive to proactively respond to issues of significant interest to stakeholders by continuously expanding our online and offline communication channels.

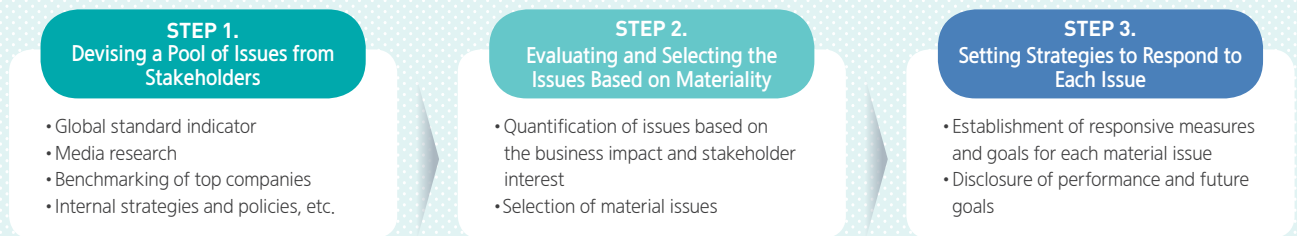


- Employees**
 - Operating an Ombudsman channel online and offline at all times
 - Conducting a diagnosis of the organizational effectiveness once a year
 - Organizing regular and occasional meetings of the labor-management council
 - Awarding the Best Prize on a quarterly basis
- Partners**
 - Organizing regular meetings on shared growth
 - Operating a portal site for partners and the website of shared growth
 - Holding the CEO meeting by inviting high-performing partner companies
- Customers**
 - Operating the LOTTE Castle website with improved customer convenience (providing the same content via PC and mobile)
 - Operating the Happy Call Center (customer hotline)
- Communities**
 - Engaging in volunteering teams by region where we do business at home and abroad (Charlotte Volunteering Group)
 - Running iconic social contribution programs
 - Management of a program on educational donation

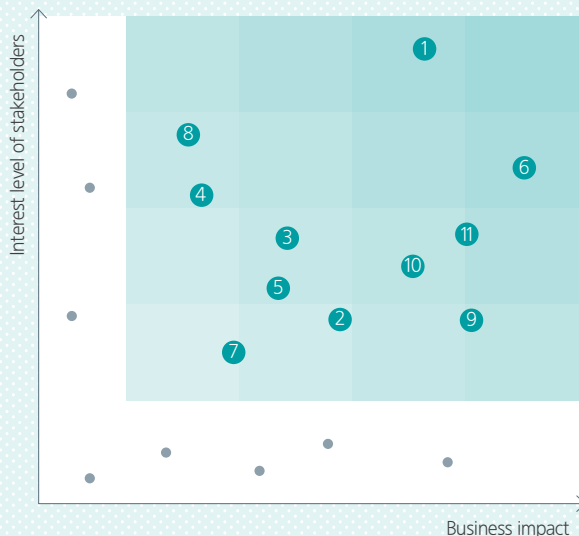
Materiality Test

LOTTE E&C conducts a materiality test on a yearly basis to select issues which are considered to be significant by stakeholders. We have analyzed the Global Reporting Initiative (GRI), the standard of writing the sustainability report, requirements in global standards such as ISO 26000 - the corporate social responsibility, reporting items of top-notch companies in sustainable management, media research and internal and external issues on LOTTE E&C in order to devise a pool of stakeholder issues. We seek to transparently disclose the performance and goals of material issues which are likely impact our business in the sustainability report.

Results of the Materiality Test



Results of the Materiality Test



Category	Material Issues in 2017	GRI Aspect	Relevant Section in this Report
Economy	1 Strengthening business competitiveness	Economic performance	Issue 1 Strengthening competitiveness
	2 Expanding global business	Economic performance	
	3 Managing brand and corporate images	Non-GRI	
Environment/ Safety	4 Intensifying R&D	Non-GRI	Issue 2 Safety and climate change response
	5 Spreading a culture and awareness of safety	Occupational Health and Safety	
	6 Engaging in preemptive safety management activities	Occupational Health and Safety	
Employees	7 Striking a work-life balance (family-friendly management, etc.)	Employment	Issue 3 Human resource management
	8 Strengthening employees' competencies (education and training, etc.)	Training and education	
Customers	9 Realizing customer satisfaction by raising quality	Product service and labeling	Issue 4 Customer satisfaction
	10 Designing products and designs in consideration of customers' health/safety	Product service and labeling	
Social Contribution	11 Conducting on-site community-focused activities	Indirect economic impacts, Local Communities	Issue 6 Expanding social contribution
Shared Growth	Internal management issues	Selection of transparent partner	Issue 5 Win-win partnership
Ethics		Strengthen infrastructure to practice ethical management	Issue 7 Ethical management

1) Covered in a separate section

Sustainable Development Goals

In September 2015, the UN adopted 17 Sustainable Development Goals (SDGs) to ensure a sustainable future for the Earth and mankind. The international community is making efforts to offer respect and opportunities to people around the world, through 17 goals and 169 targets for 2030. These include the elimination of poverty and the ability to have gender equality and access to quality education.

LOTTE E&C will do its best to empathize deeply with such global movements and pursue the same direction. We are committed to steadily exploring SDG-related businesses and community engagement programs. We will also explore specific tasks and transparently disclose the results of such efforts internally and externally.

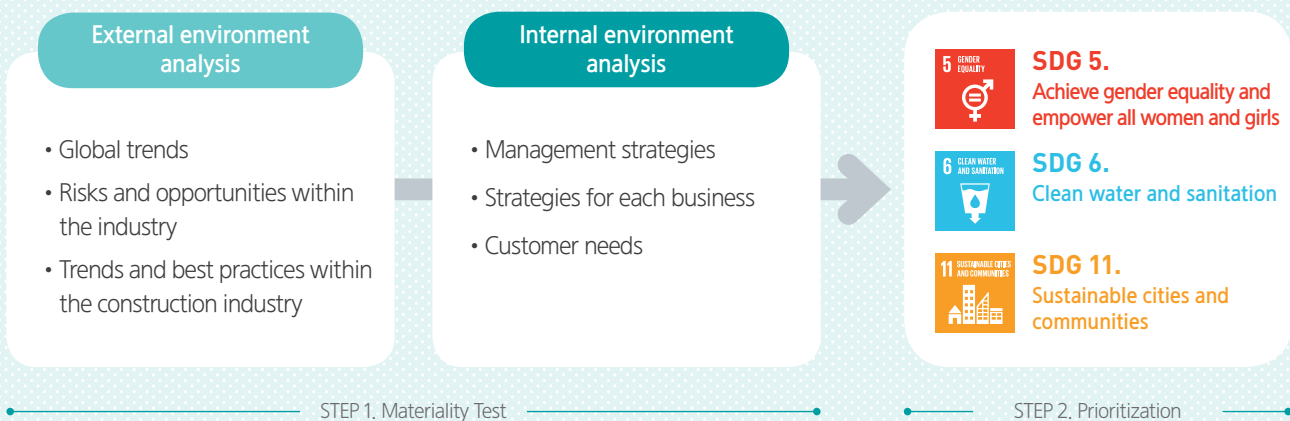


- 1** End poverty in all its forms everywhere.
- 2** End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
- 3** Ensure healthy lives and promote well-being for all at all ages.
- 4** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.
- 5** Achieve gender equality and empower all women and girls.
- 6** Ensure availability and sustainable management of water and sanitation for all.
- 7** Ensure access to affordable, reliable, sustainable and modern energy for all.
- 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- 10** Reduce income inequality within and among countries.
- 11** Make cities and human settlements inclusive, safe, resilient and sustainable.
- 12** Ensure sustainable consumption and production patterns.
- 13** Take urgent action to combat climate change and its impacts.
- 14** Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
- 15** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.
- 16** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
- 17** Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Prioritization of the SDGs

LOTTE E&C selected three priorities aligned with the nature of its business through a materiality test based on the 17 SDGs.

We performed a materiality test comprised of an external environmental analysis that included a benchmark of global trends and markets, as well as an internal environmental analysis to comprehensively review the adequacy of each business, goal and corporate strategies. By doing so, we selected three priorities: SDG 5 (Achieve gender equality and empower all women and girls), SDG 6 (Clean water and sanitation) and SDG 11 (Sustainable cities and communities). We will create KPIs based on the prioritization, continue to practice them and contribute to solving social issues.





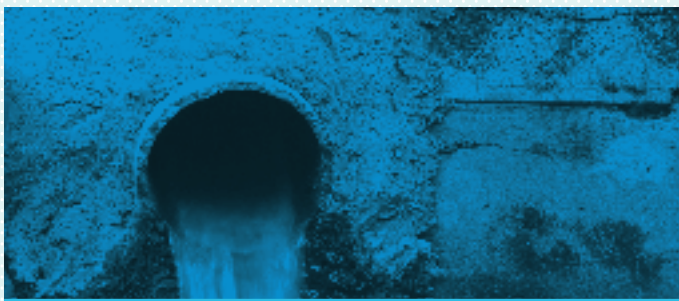
SDG 5. Achieve gender equality and empower all women and girls

Gender equality is the basic human right which should not be infringed. And yet, many women suffer from violence and discrimination. They undergo quite a high level of discrimination in terms of education and wages. There must be steady efforts at the social and national levels for women to be guaranteed with equal opportunities in equal access to all infrastructure and social engagement.

Implementing Tasks for Diversity

LOTTE E&C established the 'Diversity Committee' in 2016 to spread a culture of pursuing diversity as well as a culture of creativity and innovation. The committee also intensified maternal protection schemes including the adoption of fertility treatment leave and expansion of childcare leave. In addition, we have established a mutual corporate culture based on the

understanding of gender diversity by adopting communication programs on diversity. In 2017, the 'Diversity Committee' was expanded into the 'Corporate Culture Task force' to carry on the activities. We also introduced a childcare leave for parents with a new elementary school student. As such, we continue to complement maternal protection schemes,



SDG 6. Clean water and sanitation

Water resources which are not hygienic cause chronic diseases. As such, there is global consensus on the fact that acquiring accessibility to water resources and hygienic facilities is directly linked to universal human rights. We will invest in infrastructure for water resources so that all people can utilize clean water and hygiene facilities over the long term. We will also contribute to improving the management level of sewage and effluent treatment.

LID Water Management System

The Low Impact Development (LID) Water Management System is a technology to resolve the distortion of the water circulation resulting from urbanization, climate and so forth. It is an efficient rainwater management technology. We installed and have operated the testing facilities in the test bed by developing the groundwater-aligned rainwater utilization system, a related technology for the LID water management system since 2012.

Sewage Treatment Plant

LOTTE E&C wishes to contribute to increases in the sewage treatment capacity and improvement in the quality of water in the discharge area by expanding sewage treatment plants in areas of water shortage. We efficiently treat most of the sewage which occurs in Ulsan, having completed the Nongso Sewage Treatment Plant in 2016 to restore the ecosystem by supplying the treated water to the Dongcheon River and improving the water quality.



SDG 11. Sustainable cities and communities

Urbanization lowers the likelihood of negative issues including concentration of population, shortage of residential infrastructure, non-hygienic living environment and inducement of environmental pollution, while creating new opportunities for income generation for people and improving accessibility to various services a city can offer. As such, there is a higher need to form a stable and constructive city.

Eco-friendly Design and Technology

LOTTE E&C continues to develop and apply eco-friendly designs and technologies to reduce negative impacts from urbanization - overconsumption of energy and greenhouse gas (GHG) emissions. Eco-friendly designs and technologies are enhanced and applied by utilizing new and renewable energies such as wind energy and PV and adopting energy-saving high-efficiency equipment.

Driven by such efforts, projects such as LOTTE World Mall and LOTTE Concert Hall have acquired the highest green building certifications. We plan to engage in efforts to acquire the Gold rating of LEED[®] of the U.S. as well as the highest green building certification for LOTTE World Tower.

1) LEED (Leadership in Energy & Environmental Design): a system developed by U.S. Green Building Council which quantifies the eco-friendly and energy efficiency performance of buildings

Issue. 1

Strengthening Competitiveness

Significance of Issue

In order to proactively respond to the rapidly changing construction market and establish a basis for sustainable growth, we launched the Competitiveness and Innovation Team within the Strategic Planning Department in May 2014. We also have established and practiced competitiveness enhancing measures in each field in cooperation with each division i.e. housing, architecture, civil works, plant and overseas.

LOTTE E&C's measures to boost competitiveness were devised by benchmarking leading construction companies abroad and domestic competitors, and comparing its current status with theirs throughout the value chain in the construction industry in areas including marketing, sales, design, quotation, procurement, construction and business management. The measures are continuously implemented by setting targets, tasks to fulfill and a timeline.

2016 Key Performance

Revenue

2016 Performance	2017 Goals	
USD 4.00 billion	USD 4.31 billion	

Orders Acquired

2016 Performance	2017 Goals	
USD 6.10 billion	USD 6.55 billion	

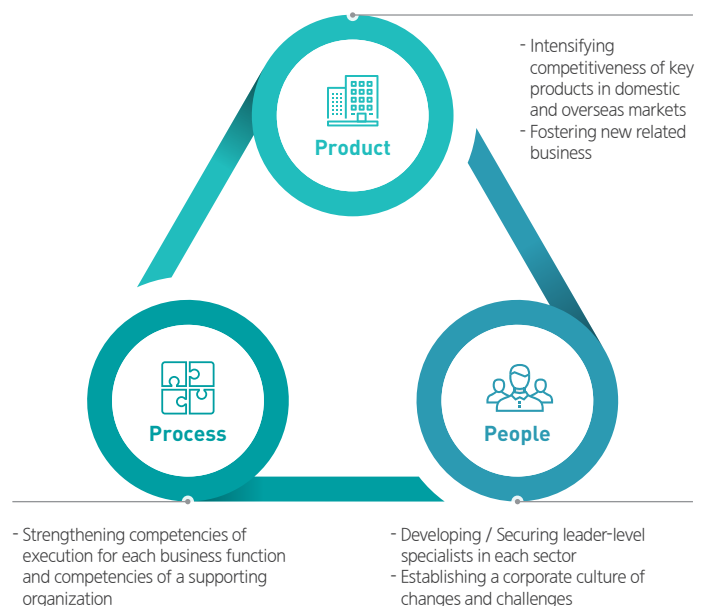


System for Strengthening Competitiveness

The Korean construction market is in a stage of entering a low-growth paradigm, and the global market is expected to continuously take an upturn driven by the economic growth in developing countries and newly emerging ones.

Korean construction companies simply maintain the status quo of their domestic business, and have continued to expand their overseas business to overcome the limitations of the domestic market. However, they have recently intensified risk management due to failure of large projects. In addition, although we have initiated expanding forward and backward value-chain business in the existing constructing projects including development and management projects the companies have newly entered. And yet, most of the companies do not have crystal clear outcomes.

LOTTE E&C pursues substantial growth instead of reckless external expansion, and complements overall competencies throughout an entire project by intensifying competitiveness, and proceeds with new projects which are related in full swing including housing rentals and the overseas housing business.



Setting Directions to Strengthen Competitiveness



Directions to Strengthen Competitiveness in Housing Works



Housing Works

LOTTE Castle has won the grand prize from Korea Service Awards by the Korean Standards Association (KSA) for 16 consecutive years as it has adopted a branded apartment concept for the first time in the Korean housing market. It has led the residential culture in Korea in various manners including in-house projects, redevelopment, reconstruction and subcontracting.

The housing market in Korea has witnessed fundamental changes in its paradigm with the increase in the number of middle-aged consumers increase in nuclear families, and aging population.

These changes have led to a greater need for housing to play the role as a living place rather than merely an investment target. In alignment with the recent changes of the market, LOTTE E&C has been making efforts to re-position LOTTE Castle in the volatile market.

LOTTE E&C realigned the brand identity of LOTTE Castle in 2014, and upgraded designs in 2015, reinterpreting the existing flashy and decorative elements in mild and sophisticated forms. As such, we pursue modern, simple and pragmatic designs whilst preserving the classical appeal. The new design of LOTTE Castle has been adopted for new projects since 2016.

LOTTE E&C is wholeheartedly operating the rental housing business such as 'New Stay' in response to market changes. These changes include lifestyle transformations illustrated by a higher percentage of individuals that prefer to rent housing and of monthly rent payers due to low interest rates. In particular, we are leading the industry by setting up a system for the rental housing service in order to provide a safe and convenient residential life to tenants.

We make ourselves fully ready in the overseas housing business in countries because of higher demand for upscale housing in the global market with the presence of LOTTE E&C including Vietnam and Indonesia.

Directions to Strengthen Competitiveness in Building Works



Leader in High-rise and Multipurpose Facilities

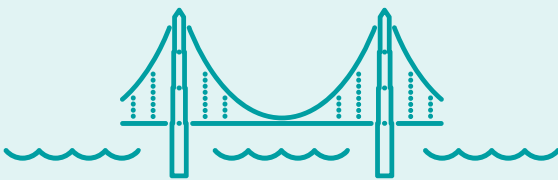
Risks

- Intensified price competition among companies with high-rise building technologies
- Standardization of technologies among construction companies
- Intense competition in the general building sector at home and abroad
- Risks in executing business depending on the level of localization abroad

Opportunities

- Increase in the number of mega cities due to urbanization (over 10 million)
- A higher demand for high-rise buildings, multipurpose and retail facilities for urban efficiency
- Having experiences throughout the entire processes of business planning, construction and management of high-rise buildings

Directions to Strengthen Competitiveness in Civil Works



Differentiated Competitiveness in Ground Transportation and Water Treatment Systems

Risks

- Shrinkage in the market scale due to the saturated infrastructure stock
- Intensified competition abroad
- Difficulties in maintaining competitive advantages without differentiated technologies and business competencies

Opportunities

- Increasing demand for investing in infrastructure in developing and emerging markets
- Rapidly growing markets of our competencies such as ground transportation and water treatment sectors

Building Works

We will intensify our technological prowess for high-rise buildings based on our experiences with LOTTE World Tower and take part in domestic and overseas projects of the LOTTE Group’s affiliates including LOTTE Hotel and LOTTE Shopping. This will make the already established project execution competencies even more systematic. As a result, we will rise higher as a topnotch construction company in the field of multipurpose and retail facilities using our expertise in the construction of high-rise buildings at home and abroad.

With regard to high-rise buildings, the lowest price bidding is the norm among construction companies with relevant construction experiences. We offer differentiated services including project planning, pre-construction services to review the adequacy of technologies, methods and cost, tenant marketing, project management, construction and post-construction management.

As for multipurpose and retail facilities, our multi-faceted experiences are proven by domestic and overseas projects as well as LOTTE World Tower, development of promising projects in consultation with affiliates in the LOTTE Group, inducement of tenants in advance, business planning including permits & approvals, feasibility studies, design & engineering, construction and maintenance.

Civil Works

We have strengthened project model-specific planning, feasibility studies and technologies in various forms of business schemes including build-only, turnkey, BTL, BTO and PPP. Here, we have a particular focus on marketable and differentiated products including ground transportation facilities such as roads, railways, subways, site renovation, water treatment systems and ports, all products in which we have abundant experience and strengths.

For ground transportation facilities, in particular, we have increased our competencies for long-span bridges and tunnels. We have developed various water treatment technologies such as water supply, water cleaning and wastewater treatment, both exclusively at our own Technology Research Institute and jointly with external specialized companies and institutions. We are striving to exert our differentiated competitiveness driven by technological prowess at home and abroad.

Directions to Strengthen Competitiveness in Plant Works



Differentiated EPC / IPP capabilities in the entire power plant sector and strengthening the higher value-added petrochemical plant sector

Risks

- Power Plants
 - Possibility of investment shrinkage due to sufficient reserve rate of domestic electricity supply
 - Signals to strengthen regulations against coal fired-power generation to reduce fine dust
 - A tendency to intensify safety regulations on nuclear power generation
- Petrochemical Plants
 - Limitation of the domestic captive market and features of the cycle in the global market

Opportunities

- Power Plants
 - Continued demand for investment in developing and newly industrialized countries amid economic and industrial development
 - Policies to expand the generation of new and renewable energies
- Petrochemical Plants
 - An increasing need for higher value-added petrochemicals in the global market
 - Expansion of chemical affiliates under the LOTTE Group (LOTTE Advanced Materials, LOTTE Fine Chemical and LOTTE BP Chemicals)

Directions to Strengthen Competitiveness in Overseas Works



Focusing on prioritized target countries (LOTTE Group's target and their neighboring countries) with key products for feasible projects

Risks

- Intense competition with domestic, international, and local companies
- Increase in self-financing projects due to financial problems in target countries
- Possibilities of major insolvencies from contractual and construction risks

Opportunities

- Continued growth of the construction industry in developing and emerging countries owing to economic and industrial development
- Utilization of brand awareness in the LOTTE Group's target countries
- Improvement of localization capabilities from implementing LOTTE Group-related projects

Plant Works

Our plant business, making forays into the fields of power plants, petrochemical and industrial plants, has strengthened our competencies by sophisticating the EPC process including project exploration, design, procurement, construction and project management, and by securing and developing personnel at the leaders' level.

As for the power plant business, we have built our global capacity through diverse project implementation methods such as project exploration and feasibility studies, financing-involved IPP¹⁾, EPC and build-only for LNG cogeneration, coal-fired generation and diesel internal generation, as well as expanding to the renewable energy sector such as SRF (Solid Refuse Fuel), wind energy and photovoltaic solar energy in order to respond to the fast-changing power plant market at home and abroad.

For petrochemical and industrial plant works, we focus on improving our capacity for the higher value-added petrochemical products such as special rubber, as well as steadily expanding our strong market including food & beverage and tire production.

1) IPP: Independent Power Plant

Overseas Works

Since overseas business has as many risks as opportunities, LOTTE E&C has focused on boosting competencies for execution in the entire business from marketing & sales to completion of construction under a goal for robust and stable growth instead of short-term external growth. We have established competencies to localize key products in countries in which the LOTTE Group has a presence as well as advance into promising adjacent countries based on our project experiences.

In 2014, we have reestablished our business strategies in the LOTTE Group's six key target countries, i.e., Vietnam, Indonesia, Russia, Pakistan, China and Japan, and have successfully reinforced local human resources for marketing and engineering in Vietnam and Indonesia.

In 2015, we additionally conducted detailed market surveys in Cambodia and Myanmar, etc. and in 2016 and 2017, we did so on Taiwan, Bangladesh, Malaysia, Laos, Iran, Philippines and Sri Lanka. In addition, our overseas housing business strategies have been specified to be implemented for Vietnam and Indonesia.

Issue. 2

Safety and Climate Change Response

Significance of Issue

Safety accidents may not only critically impact corporate management due to the suspension of construction and statutory sanctions but also claim precious lives and devastate the families of victims. Systematic systems and processes are required to prevent such accidents, whilst raising site workers' awareness of safety.

Meanwhile, environmental regulations of the government have been reinforced because Korea has been obliged to reduce GHG emissions under the Paris Agreement. In the construction industry, efforts are being made to reduce GHG emissions from the construction stage and the efforts to reduce GHG emissions are effectively managed by establishing the relevant infrastructure.

2016 Key Performance

Industrial accident rate

0.26%



Achieving the reduction target (5.3%) against Business As Usual (BAU)

48,740 tCO₂eq



* Business As Usual (BAU): projections of total amount of GHGs expected to be emitted without taking countermeasures to reduce GHGs



Establishment of the System for Safety Environment

We operate the Safety and Environmental Management Subcommittee under the Sustainability Council to devise strategies for safety and the environment, and provide relevant information and training to employees. The Safety and Environmental Management Subcommittee identifies international trends and implements tasks to execute company-wide safety environmental management in good faith.

To identify in advance the impact and risks in the safety and environment sector and to manage them properly, we have acquired and have been duly managing KOSHA 18001 and OHSAS 18001, which are certifications for the safety and health management system, and ISO 14001, the certification for the environmental management system.

Safety Environment System

The Safety and Environmental Management Subcommittee under the Sustainability Council implements tasks including devising safety and environmental strategies, and conducting researches regarding industrial trends and materiality issues. It also minimizes environmental impacts and related risks by operating the environmental management system (ISO 14001).

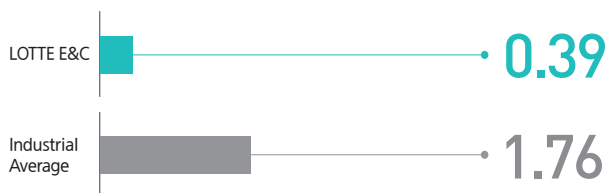
<p>Department in charge of the environment</p> <ul style="list-style-type: none"> • On-site inspection and evaluation • GHG and energy management • Operation of the environmental management system 	<p>Department in charge of technologies</p> <ul style="list-style-type: none"> • Adequacy in technical safety • Compliance with construction plans • Status of the installation of safety facilities 	<p>Department for support</p> <ul style="list-style-type: none"> • Working conditions (employee welfare) • Hygienic condition of dining facilities on construction sites • Consensus of suggestions from employees and partners
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Safety Management System

We manage risks in advance by acquiring the certifications for the safety and health management system (KOSHA 18001 and OHSAS 18001) and maintaining the risk evaluation system. In addition, we established a support system for sites lacking in safety management, with consideration of the construction period by adopting the 'Safety Support Group System Managed by the Head Office' - a system to trace and improve on risks by dispatching safety monitoring managers to construction sites for the first time in the construction industry. Moreover, large-scale accidents such as collapses and fires are prevented by setting up a system for technical safety management for high-risk tasks in each construction stage in partnership with related departments. Safety management tasks per construction stage are managed and monitored by each division/site and as well as at the company level. The Technical Safety Committee consisting of executives or above holds monthly meetings to execute a review process for high-risk task and response strategies at the company, division and technical-specific levels.

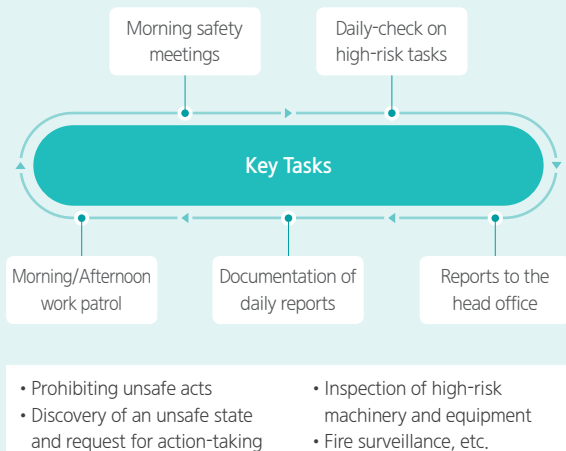
The death rate per 10,000 workers stood at 0.39 in 2016 as a result of the safety management system, being the lowest among top 10 construction companies in Korea.

Recording the lowest death rate per 10,000 workers among top 10 construction companies



Operation of the Safety Support Group System Managed by the Head Office

The Safety Support Group System Managed by the Head Office is in operation to establish a prompt support system for high-risk sites and other sites requiring critical safety management.



Safety and Health Committee

The Management of Safety and Health Committee held by the CEO on a monthly basis is in place for sites where construction costs exceed a certain amount, in order to listen to suggestions of the workers on safety and health. The committee consists of workers and users in the same number, discussing matters related to employees' safety and health. Furthermore, efforts are made to form a safety and health-oriented culture within the company by discussing the performance of safety and health management as well as improvement plans to prevent accidents.

Revision of the Risk Evaluation System

We have clarified the guideline on the selection criteria for risks by revising the risk evaluation tool for high-risk tasks, and segmented the management standards for each risk rating. At the same time, objective and absolute risk evaluation is in place as we have adopted quantitative evaluation methods based on the frequency and intensity of occurrence, deviating from the existing method of qualitative evaluation resorting to judgment of individual sites.

Intensifying the Safety Management System for Sites

LOTTE E&C prevents all accidents from minor to severe through intensive safety inspections throughout site management, intensifying inspections of whether or not the safety and health management system is implemented, and scaling up inspections on off-days. In 2016, we made improvements for matters requiring complementary actions by reinforcing site inspections on weekends and in small scales, and site inspection consigned to a third party as well as the regular and routine one.

Expanding Implementation of the Safety Communication Day

LOTTE E&C has expanded implementation of the 'Safety Communication Day' since 2016 to spread a safety culture and facilitate communication between the head office and sites. Executives and team directors from the head office visit sites to conduct safety-focused activities, including on-site safety inspections, and listen to the feedback and complaints of site workers. A total of 44 cases for on-site suggestions were handled throughout 2016 through the Safety Communication Day as we were engaged in site-oriented management activities.



Safety Communication Day

Preemptive Safety and Health Management Activities

Various programs are up and running to create an environment for systematic safety management throughout the company and to prevent safety accidents whilst strengthen competencies for safety and health of LOTTE E&C and partners.

Safety Management System and Tools

Since 2016, we have implemented the Safety Street Light System that displays the safety levels at sites with four colors. These colors are determined by three evaluation criteria - systems, administration and execution - so that employees can intuitively figure out the safety level of each site. We have also launched a mobile application for safety management for accumulating and analyzing data and ensuring smooth communication on safety. Furthermore, on-site risks are detected and managed and safety information is shared among on-site safety managers.

Safety Street Light System

Safety Street Light Scoring System

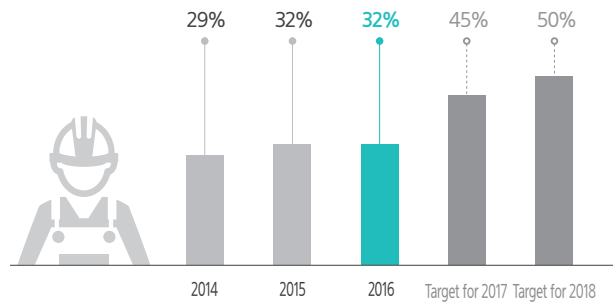
Grade	Points	Benefits and Supplementary Measures
A	86 points or higher	<ul style="list-style-type: none"> Incentivizing by exempting the routine safety inspection Awarding the CEO commendation upon maintaining it for three consecutive times
B	80~85 points	<ul style="list-style-type: none"> Implementing regular and routine safety inspections
C	70~79 points	<ul style="list-style-type: none"> Implementing monthly safety inspections and guidance of the head office and external specialized institutions until reaching Grade A or B
D	Below 70 points	<ul style="list-style-type: none"> Implementing monthly safety inspections and guidance of the head office and external specialized institutions until reaching Grade A or B * But upon being stagnant in Grade D for three months or more, the project manager and the head of their safety team are replaced.

Strengthening the Equipment Safety Management Activities

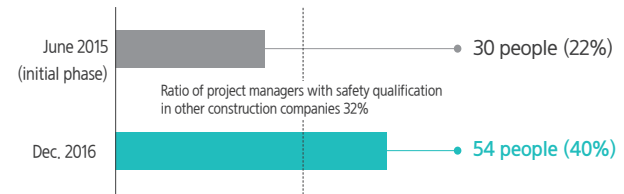
Beginning in 2016, we pre-assigned a minimum of one safety engineer with 10 years or more experience in the field of equipment inspection to a project with a contract amount greater than KRW 220 billion (approx. USD 190 Million)¹⁾, preventing, to large extent, sources of large-scale disasters caused by equipment. We also limit the duration of use for equipment at sites to less than 10 years. We have adapted the baseline to assign sufficiently experienced engineers to projects on a preferential basis by the professional careers of engineers in charge of managing tower-crane installation and dismantlement.

1) According to the Industrial Safety and Health Act, one or more safety managers is required to have a career of 10 years or more, and LOTTE E&C adopts the law in a more stringent manner by obliging the position to have 10 years or more in the equipment inspection career.

Ratio of Full-time Safety Managers (%)



Mandatory Safety Qualification System for Project Managers



Having adopted the 'Mandatory Safety Qualification System for Project Managers' in 2015, we foster engineers' expertise of safety management in construction. LOTTE E&C's total ratio of safety qualification holders is 40% as of 2016-end, surpassing the average ratio of construction companies. We demand all project managers to hold safety qualification, preventing those without the qualification to be appointed as project managers after the grace period¹⁾ is over.

1) The grace period is until July, 2019.

Setting up the Mobile Safety Management System

We have addressed tempo-spatial constraints by establishing a mobile safety management system since September 2016, and increase work efficiency by providing safety information in real time.

Safety Magnifier

- Setting up a database on complementation derived from safety inspection
- Reporting to the management on the occurrence of a disaster and disseminating the news to all sites

Communication Plaza

- Checking out notices of the head office in real time
- Notifying safety levels in sites (Safety Street Light)
- Sharing safety information among sites

Information Space

- Searching for information on sites (outline of construction, site organization and location, etc.)
- Inquiring safety guidelines and training materials
- Inquiring about the inventory stock volume for temporary safety equipment

Safety Training

LOTTE E&C implements a more intensive safety training to raise safety awareness among employees and their understanding of the safety system. Training sessions are practice-oriented based on skill enhancement to detect direct risks and devise countermeasures. In 2016, we launched three training courses for newly appointed project managers, civil engineering supervisors and CEOs of excellent partners, which were attended by 330 people. In 2017, we plan to improve effectiveness of training and spread the safety culture throughout the company by launching online courses and reinforcing courses for employees who are scheduled to work abroad.

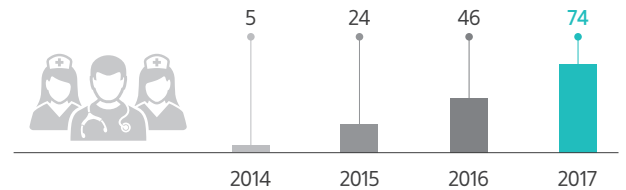
Managing Workers' Health

According to the Industrial Safety and Health Act, health managers are appointed to sites at which the subcontracting amount exceeds a certain threshold (KRW 80 billion, approx. USD 69 Million). Therefore, we plan to increase the number of health managers up to 150 by 2020. In 2017, in particular, we have enhanced the company-wide health management level through mentoring program with experienced health managers for junior managers with less than three years of experience. In addition, we have put in place a system for healthcare operations by installing air ventilation facilities, managing the working environment and managing the presence of detection of hazardous gases.

Current Status of Safety Training Courses



Current Status of Health Managers



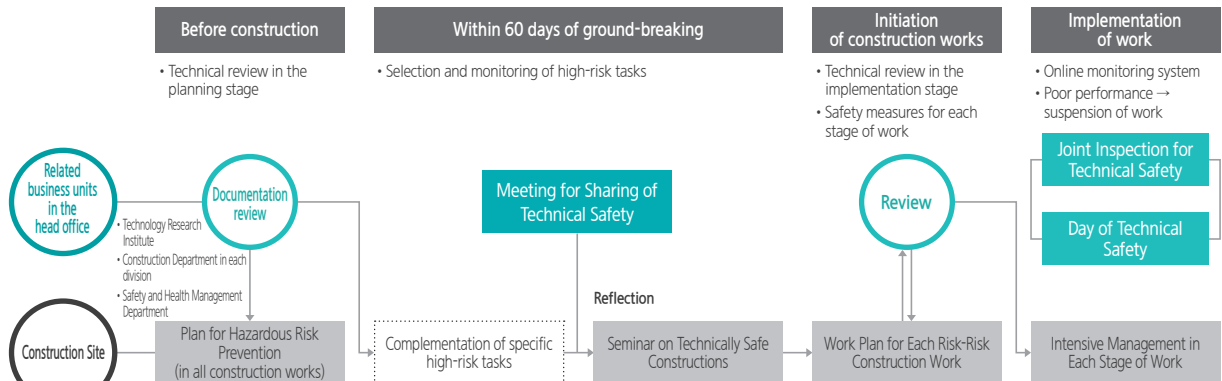
Pursuing Emotional Safety of Workers

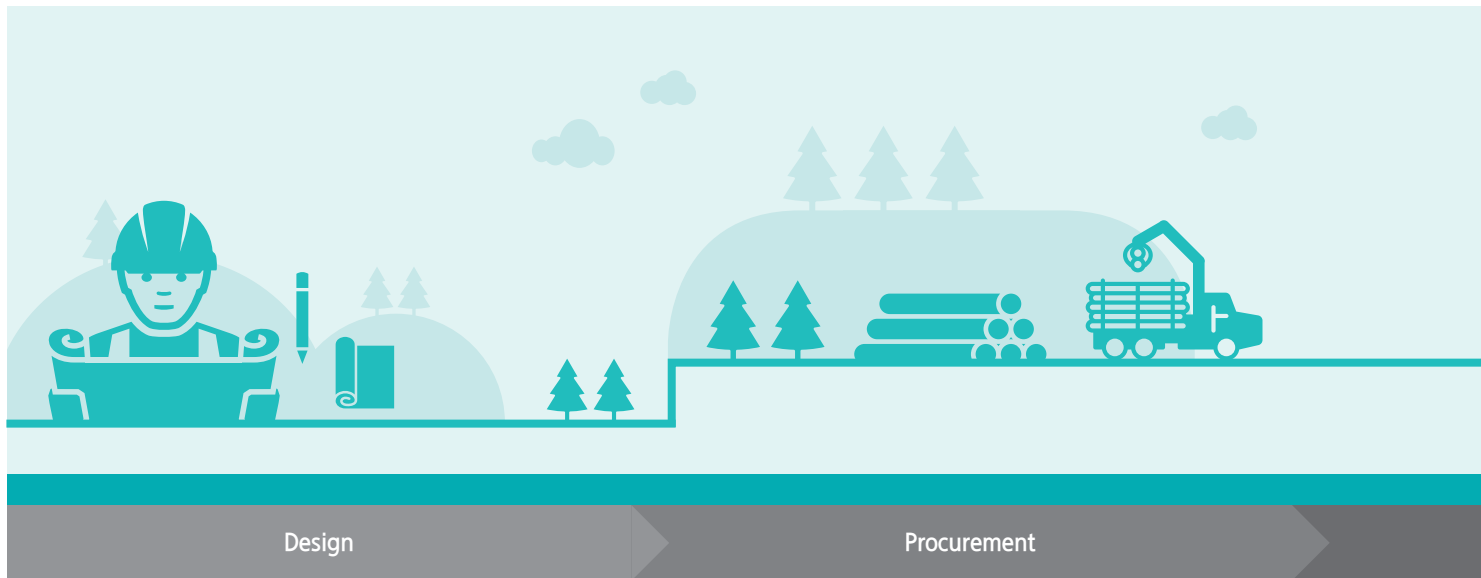
We have improved and expanded convenience facilities for workers on all sites. Our goal is to boost their satisfaction with the working environment which is directly linked to on-site safety management. To this end, we are improving hygiene and convenience levels for shower booths, bathrooms and dining facilities and etc.

Establishing a Technical Safety Management System for High-Risk Tasks

In order to prevent the occurrence of safety and health risks including massive collapses and fires and large-scale technical accidents, LOTTE E&C has set up a management system in each construction stage based on collaboration between Technology Research Institute and Construction Department held by the head of Safety and Health Management Department. Tasks with common risks throughout the company, and tasks with risks in specific sites are selected, which are subject to intensive management in each process, ranging from pre-construction to implementation of tasks, thereby proactively preventing accidents resulting from high-risk tasks.

Key Management Procedure





Realization of Eco-friendly Construction Sites

Eco-friendly Design

LOTTE E&C performs eco-friendly works by reviewing to acquire the certification of a green building in such categories as building materials and other resources, design, structure and function from the onset of a construction project.

Green Building Certification

We minimize environmental impacts throughout all stages - design, construction and management, etc. - by utilizing advanced eco-friendly technologies.

Type	Project Title	Level	Date
Housing	Wonju Enterprise City 10BL	General Grade in preliminary accreditation for green buildings	Sep. 30, 2015
	Wonju Enterprise City 9BL	General Grade in preliminary accreditation for green buildings	Nov. 20, 2015
	LOTTE Castle Gold Park Block 3	Top excellence in preliminary accreditation for green buildings	Jan. 19, 2016
	LOTTE Castle Gold Park Block 1	Excellence in preliminary accreditation for green buildings	Feb. 3, 2016
	LOTTE Castle Gold Park Block 2	Excellence in preliminary accreditation for green buildings	Mar. 11, 2016
Buildings	LOTTE Mall Gimpo Airport	Excellence in the main accreditation for green buildings	Nov. 14, 2011
	LOTTE Mall Suwon	Excellence in the main accreditation for green buildings	Oct. 18, 2014
	LOTTE World Mall	Top excellence in the main accreditation for green buildings	Nov. 26, 2015
	Hotel LOTTE L7 Myeong-dong	Excellence in the main accreditation for green buildings	Apr. 28, 2016
	LOTTE Mall Eunpyeong	Excellence in the main accreditation for green buildings	Nov. 10, 2016
	LOTTE World Tower	Top excellence in the main accreditation for green buildings	Nov. 21, 2016

Number of LEED APs
(cumulative as of 2016)

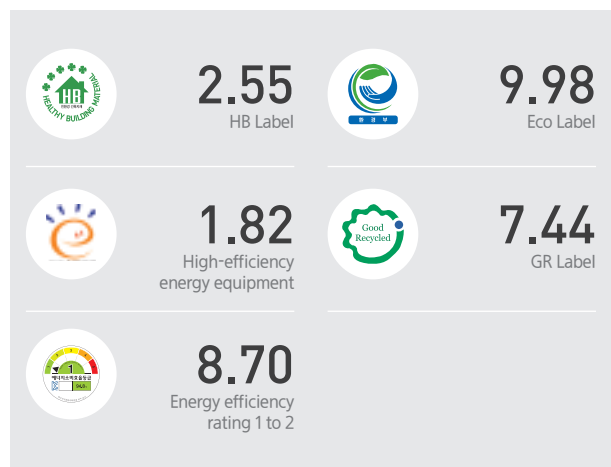
21 employees

Accountable Procurement

LOTTE E&C procures materials in consideration of eco-friendliness in the entire process - design, construction and management, etc. - by signing voluntary agreements on eco-friendly procurement in the industry and continuously exploring suppliers of eco-friendly products by operating the green procurement system.

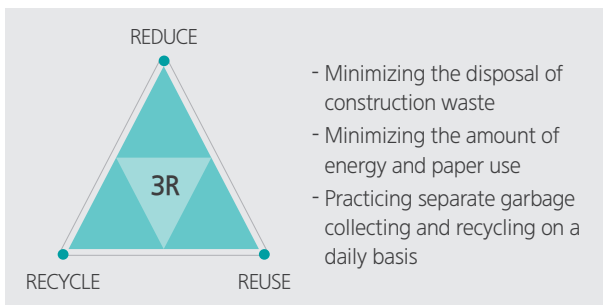
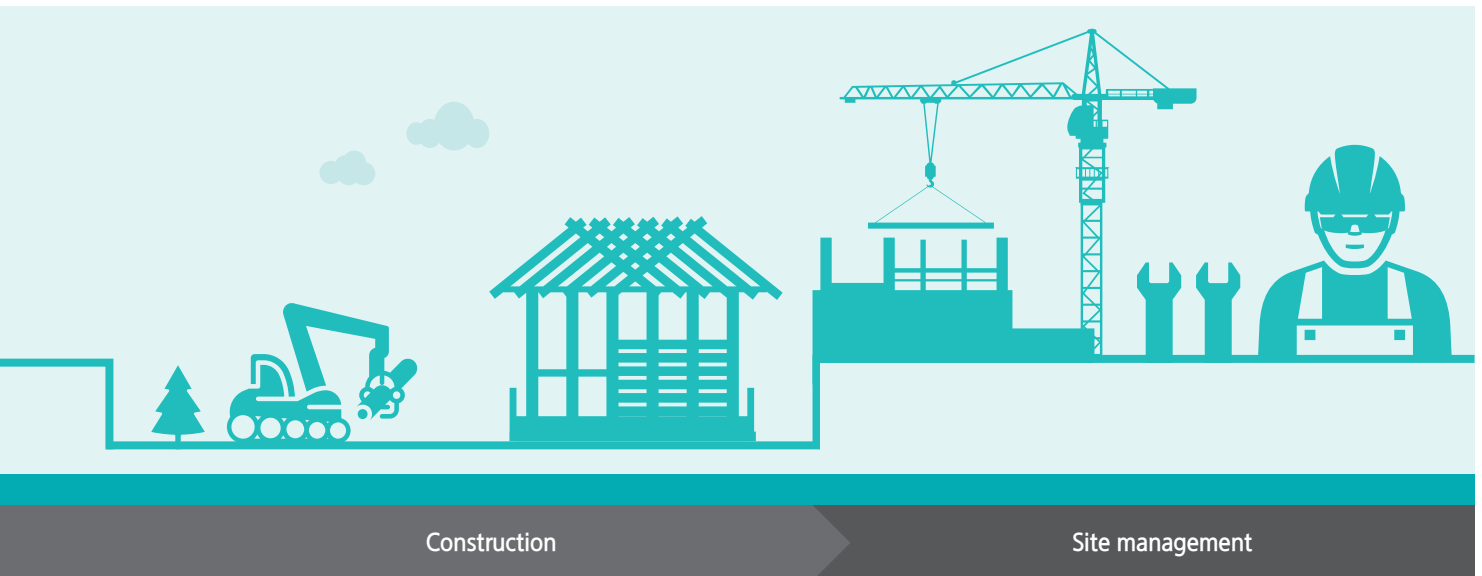
Procurement Records of Certified Eco-friendly Products

(Unit : USD Million)



Construction Based on the 3Rs (Reduce, Reuse, Recycle)

With daily practices of the 3Rs, LOTTE E&C minimizes the environmental impact which might occur during a construction work. We also maximize the recycling rate of construction waste, manage the amount of fly ash emissions below the statutory level and conduct activities to prevent civic complaints related to the environment.



Furthermore, LOTTE E&C periodically wages a campaign for compliance with environmental laws, settlement of a company-wide environmental culture and awareness raising for environmental management. Under our environmental campaign, we have distributed posters on key management agenda in each period: management of fly ash, reduction of GHGs, intensive management during holidays and prohibition of illegal incineration.

| Minimization of Environmental Impact

LOTTE E&C evaluates the environmental conditions and impacts to prevent ecological footprints from air and water pollution, noise vibration and waste that may occur during construction work, and periodically monitors them.

| Waste Management

LOTTE E&C monitors the amount of waste generated on a yearly basis through the lawful treatment system for waste. At the same time, we efficiently manage construction materials used during the construction process by establishing and managing a waste recycling guideline. Best practices on recycled aggregates are shared among all sites, expanding their uses throughout the company.

| Management of Dust Scattering

To reduce dust scattering at construction sites, we perform various activities such as washing the wheels of transporting vehicles, watering unpaved roads, installing covers for open-storages, installing dust-free covers for materials in yards, operating road cleaning machines and other environmental improvement activities.

| Management of Water Resources

LOTTE E&C reduces the environmental impact from effluent and waste water discharge by installing water pollution prevention facilities. At the same time, we set and manage reduction targets for water use per site to lower the volume of water resources.

| Management of Noise and Demolition

LOTTE E&C periodically measures noise four times a day, while installing mobile air sound-proofing walls upon doing work by using high-noise equipment and machinery, which might cause civic complaints. In addition, we strive not to exceed the statutory level by installing a noise signboard on the sound-proofing wall in urban sites.

Meanwhile, we comply with work standards prescribed in laws to prevent the scattering of asbestos in the middle of demolition work, and oblige workers to wear protective gear and uniforms.

| Cyber Monitoring of Environmental Management

On-site supervisors and workers routinely monitor the state of the installation and operation of facilities to prevent environmental pollution, and register the current state into the online environmental management system on a monthly basis. This enables them to be aware of the importance of environmental preservation and prevents possible environmental pollution in each work.

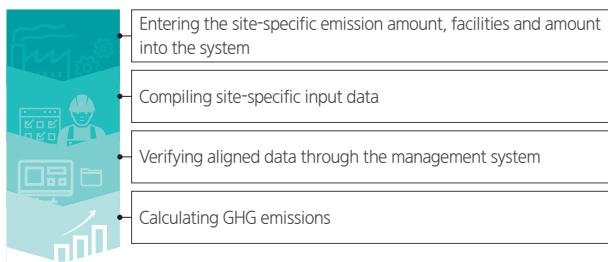
Response to Climate Change

LOTTE E&C strives for systematic energy and GHG management and reduction by using the relevant systems, and is engaged in lowering site-oriented environmental impacts. Moreover, we wage campaigns and provide training to improve employees' awareness on the environment.

System for Climate Change Response

Having set up the 'Management System for the Amount of GHG & Energy Use', LOTTE E&C systematically manages GHG emissions, amount of energy use, emission sources and facilities. In addition, we are engaged in such activities as promoting energy saving rules to raise interest and environmental awareness in lowering GHGs among all employees based on the 'GHG Reduction Guideline'. It is our goal to contribute to lowering environmental impact in the entire supply chain by supporting GHGs and energy management for partners.

Operation Procedure for the Management System for the Amount of GHG & Energy Use



Reinforcing Business Units for Environmental Management

LOTTE E&C runs the Safety and Environmental Management Subcommittee under the Sustainability Council to identify trends and material issues on environmental management and take appropriate actions, engaging in establishing environmental strategies, managing risks and providing, training and evaluating on relevant information. In particular, expertise in environmental management is boosted through collaboration among related departments including the Safety and Health Management Department, Design Research Institute, Technology Research Institute, and Sourcing and Procurement Division.



Site-oriented GHG & Energy Management

LOTTE E&C implements restrictions on using unnecessary energy on construction sites, setting energy reduction goals and measures as a part of an energy saving program per division. In 2016, in particular, we have posted the semiannual GHG emission status on the internal information system board, conducting evaluations based on site-specific GHG emission variations.

Establishing the LOTTE Carbon Assessment System (LOCAS)

LOTTE E&C developed LOCAS, which evaluates CO₂ emissions generated from the buildings' lifecycle, which is applied to construction sites. It is a standard indicator for eco-friendly performance, assessing GHG emissions in the entire process, ranging from order placement for a building to design, subscription, construction and disposal. The indicator suggests alternatives to reduce GHG emissions, and is in a preemptive response to the certified emission reduction (CER) market.

Training of Environmental Management Specialists

Performance of environmental training in 2016

Basic environmental training
A total of **884** participants
(held 68 times)



LOTTE E&C provides environmental training for construction site supervisors, partners and workers for on-site environmental management. We have shared information on applicable regulations for each pollutant source and best practices in environmental management of other companies through training on consignment since 2014. We also upgraded our environmental management level by acquiring experts' know-how and practical skills for environmental management and management of civic complaints.

Minimizing the Environmental Impact around Construction Sites

LOTTE E&C internally formulated a legal guideline and a practical guideline, and made a log for environmental management to minimize the environmental impact around construction sites, which are shared among all sites. We also conduct a monthly Environment Day event, enhancing workers' environmental awareness and engaging in a clean-up campaign in surrounding areas.

Issue. 3

Human Resource Management

Significance of Issue

Creative and passionate human resources are the driving force for a sustainable company, and discovering and cultivating core employees are the most significant factors in corporate management. In today's market environment with fast changes and unpredictable directions, in particular, it is critical to create a decent working environment for all employees to exert their utmost competencies.

2016 Key Performance

Return rate after child-care leave

77.8%



Training hours per individual

105 hours



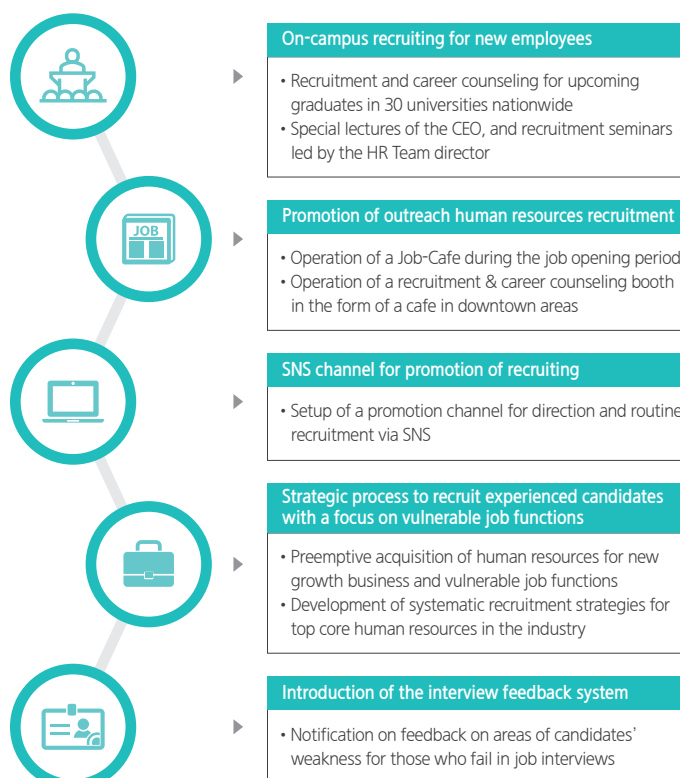
- Overview
-
- Main Business
- Sustainability Report**
- Sustainability Structure
-
- Appendix
-



Acquiring Top Human Resources

LOTTE E&C recruits human resources with expertise based on the criteria of fairness, diversity, appropriateness and rationality with no discrimination against personal differences by age, region or school. Moreover, we carry on with our efforts to acquire top human resources by adopting an advanced recruitment system through on-campus recruitment and setup of a process to recruit experienced candidates with a focus on vulnerable job functions.

Promoting Recruitment and Improving the Recruitment Process






Cultivation of Employees with Specialized Competencies

LOTTE E&C cultivates employees with expertise and a global mindset to become a globally competitive organization and generate future corporate value. As such, we spare no efforts in investing in and supporting training of employees with specialized competences in three key areas, leadership, expertise and global capabilities.

Leadership

Leadership Diagnosis

Leadership

		
<ul style="list-style-type: none"> • Balanced cultivation of leaders 	<ul style="list-style-type: none"> • Identification of a gap between a leader and a subordinate on leadership style 	<ul style="list-style-type: none"> • Understanding of leadership style suited to circumstances

LOTTE E&C has run the Leadership Diagnosis Program each year since 2014 for executives, team directors and site managers to understand their leadership competency and style and be encouraged to make a difference in their actions. We pursue the balanced growth of the organization and leaders through diagnosis, and can cultivate leadership styles suited to various types of circumstances.

CEO Program

LOTTE E&C supports the CEO program in Korea's most prestigious universities each year under two goals: helping them to become aware of the rapidly changing management environment and developing innovative competencies needed for corporate managers, and boosting competitiveness in order acquisition and negotiating capabilities with external parties by forming internal and external personnel networks.

EMBA

LOTTE E&C fosters business leaders equipped with knowledge of business management and expertise by running an EMBA for executives. The curriculum consists of subjects as business management, HR, finance and marketing to teach basic knowledge on business management and latest theories, etc. The Senior EMBA, an upper program of EMBA, is the highest course among core human resource training programs. It cultivates macroscopic views and thinking by analyzing domestic and international cases and applying them to actual practices based on management theories.

Type	Specific activities
EMBA	<ul style="list-style-type: none"> • Teaching four core subjects in a graduate school of business management - HR, finance, marketing and strategic management • Discovering pending issues and solutions
Senior EMBA	<ul style="list-style-type: none"> • General business management theories • Practice-based case studies of home and abroad • Application to actual business operations

Executive Forum

LOTTE E&C organizes the Executive Forum led by the LOTTE Academy, especially in key areas in which LOTTE Group affiliates are situated. The forum touches upon common areas of interest for executives of each affiliate, including domestic and international social and technological trends on a monthly basis, providing opportunities to enhance strategic insights by inviting expert speakers.

Expertise

Specialized Job Training

LOTTE E&C shares technical know-how through job training in each division, and cultivates an company-wide learning culture. Training is conducted in the forms of theory learning, case analysis, presentations of team projects and evaluation. We seek to reinforce employee's technical expertise by setting up a support system for autonomous and periodic job training.

Plant Learning Group

At the same time, LOTTE E&C has developed job capabilities on plants and formed a knowledge database by running the Plant Learning Group since 2014. Learning topics on the industry and technologies, etc. are selected in small sub-groups where knowledge is transferred through mentoring. The acquired information is turned into an asset, and utilized as knowledge built up in the company.

Support for Certifications of Safety Engineer/Professional Safety Engineer

LOTTE E&C solidifies a support system for safety management throughout the company and strives to intensify related competencies as social needs for managing safety accidents within sites are rising. As such, we run online programs and preparatory courses for employees to acquire certifications for safety engineer/professional safety engineer, thus increasing the ratio of holding safety qualifications and fostering managerial capabilities of on-site staff.

Global Capabilities

Buildup of Job-specific Competency in Overseas Construction Projects

LOTTE E&C conducts training for the buildup of job competency in overseas construction projects to strategically cultivate global human resources and reinforce competitiveness in construction abroad. We help employees to gain a higher practical understanding throughout the entire process, ranging from bidding to construction, for employees expected to work and those already working in overseas projects. We conduct in-depth training by taking advantage of in-house instructors and consigned training on specific practices including contractual management, procurement and site management.

Global School

The Global School is a training program on languages in target countries and their local cultures in order to enhance employees' global communication competency on overseas projects including employees appointed to work abroad, in tandem with the expansion of overseas projects at LOTTE E&C. The program is carried out for 20 weeks, considering the specificity of the language training where steady long-term learning is critical, and the effects of language learning are maximized through various channels including telephone and online.

Training Performance in 2016



Establishing a Creative Corporate Culture

LOTTE E&C wishes to lay the creative foundation through labor-management trust and cooperation, and strive for common goals, thus ensuring corporate growth, and employees' happiness and creating social values. To this end, we are engaged in wide-ranging programs to establish a creative corporate culture, including a system to accept suggestions, the Innovative Activity Contest, a program to boost employees' self-pride, LOTTE Family Hamaeum (one heart) Festival and Charlotte Volunteer Group.



1st-year anniversary for announcing family-oriented management, shared growth management and a creative labor-management culture



Eullim (harmony) Kimchi-sharing Event of Charlotte Volunteer Group

Creating a Company-wide Innovative Culture

LOTTE E&C acts out innovation programs in diverse areas, ranging from competitiveness buildup at the corporate level, such activities as engineering improvement, quality improvement and cost reduction at the site level, and individual employees' offering suggestions.

Type	Specific activities
Buildup of competitiveness	<ul style="list-style-type: none"> Establishing and executing tasks to boost competitiveness for each business Realigning the work process Cultivating and securing specialists at the leader level
On-site innovation activities	<ul style="list-style-type: none"> Discovering and executing such tasks as engineering improvement, quality improvement, cost reduction, safety management and technology development at the site level
Employees' suggestion-making activities	<ul style="list-style-type: none"> Submitting ideas for improvements on the bulletin board for employee suggestions Setting up, disseminating and utilizing a database for excellent suggestions

Innovative Activity Contest

LOTTE E&C organizes the Innovative Activity Contest at each year-end to create a company-wide culture of innovation and help achieve management goals. Innovative tasks and cases for utilizing suggestions are presented throughout the company where best practices are shared. Excellent sites and employees are rewarded, thereby contributing to employees' higher awareness of creating a creative corporate culture.

Labor-Management Communication

The labor-management council consisting of five user representatives and five worker representatives is regularly organized to share key agenda including workers' welfare and wage, health and safety, based on which labor-management harmony is induced and strong trust is formed. In addition, a grievance handling system is in operation, and an online grievance handling system is available to further ensure anonymity. For the registered cases for counseling, immediate feedback is provided by taking actions within 10 days from the date of application registration. In 2016, a total of three grievance cases covering performance evaluation and a working environment were registered and action-taking was completed.

Improvement in On-site Communication

LOTTE E&C transparently shares management activities through various programs for communication, and facilitates communication among employees. In addition, we make utmost efforts for on-site communication by raising understanding of sites through more dynamic communication between the head office and sites, and listening to complaints and suggestions from sites, thus coming up with measures for improvement.

Type	Specific activities
Day of Recognition and Praise	<ul style="list-style-type: none"> • Sharing performance of each team and site throughout the company • Rewarding 20 excellent employees on a monthly basis
Day of Support for Completion of Construction	<ul style="list-style-type: none"> • Providing clean-up in preparation for completion of construction and defect checking by staff at the head office • Running communication programs with on-site employees before and after extending support for completion
Day of the Safety Communication Day	<ul style="list-style-type: none"> • Conducting activities for support for mostly safety including on-site safety inspection * Details are available on p.57 in this report.

Diagnosis of Organizational Effectiveness

LOTTE E&C identifies the current status on the working environment by measuring the 'Employee Engagement Index' and the 'Organizational Health Index' through employee surveys, and discover areas for improvement. In 2016, LOTTE E&C gained 77 points for the Employee Engagement Index and 79 points for the Organizational Health Index. We analyze low-performance areas to be complemented based on diagnosis findings, and improve the overall working environment including organizational visions and strategies, leadership, career development opportunities and welfare benefits.

Fair Performance Evaluation and Compensation

LOTTE E&C fairly evaluates performances including competency and achievements, and core values, based on performance-oriented evaluation and compensation system, and provide reasonable compensation in accordance with individual capabilities and performance. In particular, employees with a high performance with records of no accidents are routinely rewarded and incentivized to boost their morale.

Creating a Great Work Place








LOTTE E&C induces creativity and improves employees' concentration level by creating a great work place for all employees to work with joy in order to spread the culture of a 'great work place'.

Welfare Benefits

LOTTE E&C runs a selective welfare benefit system for employees to pick and choose the items in demand based on their needs. They are given choices to select health checkups for their spouse and group insurance, and freely use their mileage-based welfare card. Employees' health checkup costs and medical insurance premiums and medical fees are covered to improve their health. For stable housing and livelihood of the employees, LOTTE E&C provides financial supports for housing loans and subsidies of tuition fees irrespective of the number of children and also provides monetary gifts for family events.

In addition, LOTTE E&C notifies to employees on annual leave plans at the beginning of each year to support their leisurely life, and providing joint leaves including the so-called sandwich days (paid leaves on a single day between two holidays), refresh leaves and summer leaves. We also extend various welfare benefits programs so that employees could happily work in a decent working environment: the employers' liability insurance at home and abroad, family insurance for employees in overseas branches, safety manager service for employees working abroad, accreditation and reward for employees' long-term service, retirement age extension and wage peak system, subscription to social insurance (four major insurances).

In 2016, taking leaves for up to six months has been made possible by adopting the fertility treatment leave system (Leave for Dreaming of a Baby) for female workers, and the duration of childcare leave has been stretched out to allow for maximum two years of leave. In 2017, child leave for over one month for was made available by expanding the duration. In 2017, child leave for over one month for male workers has been valid when their spouse give birth, which has gained positive feedback.

 Support for Leisurely Life	<ul style="list-style-type: none"> Refresh leave Expansion of the Day of Family Love (weekly → biweekly) Operation of Clubs' Day Offering of gifts for birthdays and wedding anniversaries Support for family trips for employees working abroad 	 Childbirth and Maternity Support	<ul style="list-style-type: none"> Expansion of childcare leave after giving birth Monetary support for childbirth Adoption of fertility treatment leave and childcare leave for male workers
 Stable Housing and Livelihood	<ul style="list-style-type: none"> Housing loans Tuition subsidies Monetary gifts for congratulations and condolences 	 Medical Fees and Health Checkup	<ul style="list-style-type: none"> Payment of employees' medical checkup fees and medical fees and insurance premiums
 Statutory Welfare Benefits	<ul style="list-style-type: none"> Subscription to Social Insurance (Four Compulsory Insurances) 	 Selective Welfare Benefits	<ul style="list-style-type: none"> Offering of individual welfare benefits using a welfare card
 Others (Type)	<ul style="list-style-type: none"> Financial support for the employer's liability insurance and family insurance for employees in overseas branches Accreditation and reward for employees' long-term service Retirement Preparation Program (running an online website and office) Retirement age extension and wage peak system Launch of the flexible work arrangement (8:00~10:00) 		

Program of Welfare Benefits

Work-Life Balance

LOTTE E&C runs 'family-friendly programs' for promoting a work-life balance. Participating families can experience the history of LOTTE E&C for two days during the program and the love of their family members can deepen as they understand the company and take part in various activities.



Family-friendly Programs

By continuously running family-friendly management such as the mandatory childcare leave and company childcare centers, LOTTE E&C is generally recognized as a company with various and dynamic 'work-life balance' programs.



Company childcare center

Issue. 4

Customer Satisfaction

Significance of Issue

To provide customer satisfaction by understanding specific needs of customers and providing personalized solutions are one of the most imperative elements of a company in order to achieve sustainable growth.

In addition to quality and services, more convenient and practical designs are being emphasized as target customers in housing projects change. In addition, there is growing social interest in protecting customers' personal information and their safety management are increasingly emphasized.

2016 Key Performance

Number of quality inspection

98 times



Quality Innovation Academy

14 times

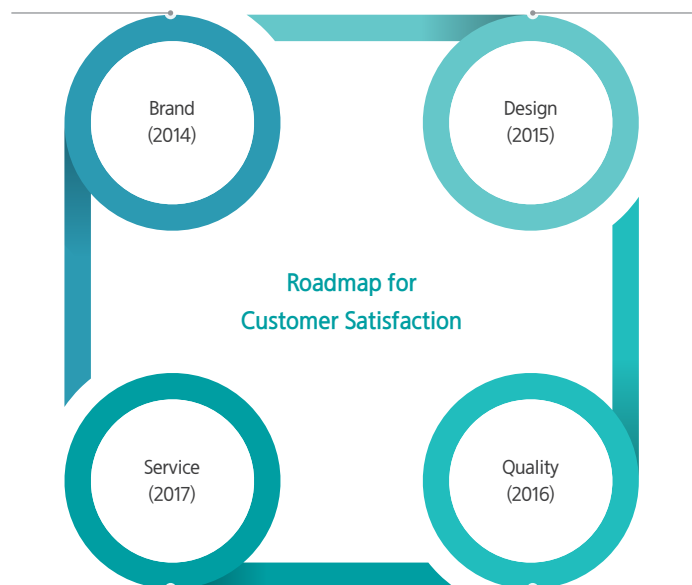


Roadmap for Customer Satisfaction

LOTTE E&C has diagnosed the current state of its existing image based on survey results including a customer questionnaires in partnership with professional consultancies in each sector including brand, design, quality and service since 2014. Based on the results, we have devised directions for improvement and tasks in-hand have executed them on a regular basis.

Analyzing the status quo analysis of the brand, developing improvement measures, analyzing implementation of design including the brand logo of LOTTE Castle, etc. and making and executing improvement measures based on customer, expert and employee interviews

Analyzing the overall design including the brand logo of LOTTE Castle, and making and executing improvement measures



Currently integrating prior inspection "before service" prior to housing completion, and after-service business units, and realigning a service process manual

Currently devising and applying improvement measures based on comparative analysis of major housing complexes and units of other construction companies

Intensifying Quality Competitiveness

Under the vision for customer value-oriented management that states “Providing Customer Satisfaction and Better Values for Customers with the Best Products and Services”, LOTTE E&C raises customer values and strengths quality and service for the completion of construction. In particular, we raise customer satisfaction by advancing the quality inspection system, especially for the housing and construction business.

Training on Quality Innovation

LOTTE E&C provides training of the Quality Innovation Academy for executives in technical job functions including architecture and machinery. Training programs are in operation to raise innovative quality, covering major defect cases on construction sites, design standards, laws and measures for quality enhancement.



Quality Innovation Academy

Enhancing the Quality Inspection

LOTTE E&C has intensified the quality inspection on major defects and features of a process in each phase of construction on business sites, and strives to prevent defects by increasing and launching the number of inspections. We establish fundamental measures for improvement to eradicate chronic and repetitive defects, which are applied to sites and their effectiveness is being evaluated.

Prior Inspection on Tenants

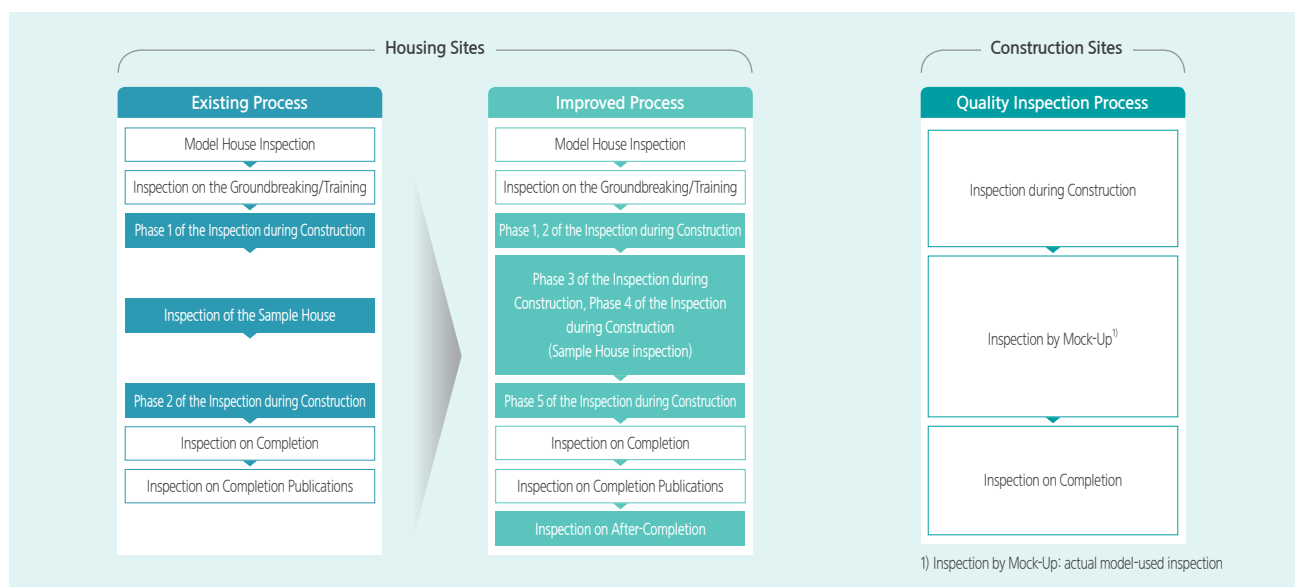
Business sites intensify the quality inspection depending on major defect factors in each construction phase and features of a process and strives to prevent defects by increasing and launching the number of inspections. In particular, ‘My House Visiting Day’ event is held to focus on inspection counseling on possible defects based on one-on-one counseling for customers, thereby promptly taking actions for possible complaints.



Prior Inspection on Tenants



Quality Inspection Process



Conducting Inspection after Completion of Construction

LOTTE E&C formed a team itinerating each site after the completion of construction, providing customer services covering equipment, interior, wall covering and etc. An emergency maintenance team is operated consisting of multi-skilled workers for three months after the completion, focusing on maintenance including prompt repair.

At the same time, LOTTE E&C conducts a special inspection on incoming panels, elevators, old dead trees and the status of their removal by strengthening post-construction inspection. This ensures quality management to boost reliability.

<p>Inspection of incoming panels</p>	<p>Inspection of elevators</p>	<p>Inspection of old dead trees and the status of their removal</p>
<p>Frequency of Inspection For 3 years after completion of construction</p>	<p>Frequency of Inspection For 3 years after completion of construction</p>	<p>Frequency of Inspection For 2 years after completion of construction</p>
<p>Once a year</p>	<p>Once a year</p>	<p>Twice a year</p>
<p>Specific Inspection on Operation Inspection on incoming panels including extra high voltage panels, transformers, low voltage panels and MCCB panels</p>	<p>Specific Inspection on Operation Inspection of operability of operations of emergency stop and call devices resulting from brake contact problem and emergency lighting operation</p>	<p>Specific Inspection on Operation Inspection on old dead trees and their removal status, non/erroneous construction and defects in public space</p>

Improving Customer Satisfaction

LOTTE E&C dynamically reflects improvements to be made and customer feedback which were derived from communication channels into corporate management activities to enhance customer satisfaction.

Communicating with Customers

LOTTE E&C listens to the voices of internal and external customers through quantitative research, focus group interviews (FGI), interview visits and feedback gathering online. Suggestions for improvement and feedback are reflected in products and services of LOTTE Castle as we continue to raise its brand value.

In addition, we devise management plans by analyzing key points to arouse customer satisfaction in each point of contact, and provide various online and offline options in consideration of customer attributes.

Devising Management Plans for Each Point of Customer Contact

We devise and operate management plans for customer satisfaction for each point of customer contact, ranging from subscription to living. We upgrade their satisfaction level by providing a packaged gift kit of a card key and a manual book with our gratitude and respect for customers.



Intensifying CS Training

LOTTE E&C periodically provides training on specialized skills to all employees in the CS Department and partners, and conducts training on developing a service mindset for responding to customers in each point of contact. Service coaching training is offered by inviting outside professional instructors. We also raise the company-wide capability to execute CS by cultivating in-house instructors.

Renewal of LOTTE Castle Website

LOTTE E&C renewed the website of LOTTE Castle in April 2016 by reflecting the new brand and design of LOTTE Castle and overall trends in marketing. The new website enables informational inquiries on each apartment complex, customized search and SNS log-in feature, raising the convenience level overall. Customer accessibility has also improved as we acquired the certification for web accessibility compliance required by the Act on Anti-Discrimination for Persons with Disabilities. Furthermore, we provide the same content on both PC and mobile platforms.



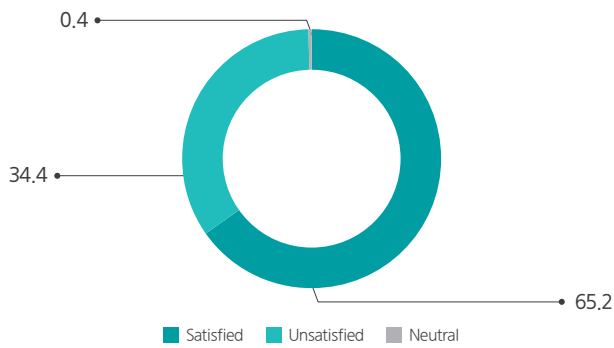
Website of LOTTE Castle (<http://www.lottycastle.co.kr>)

Happy Call Service

We gather data on customers' satisfaction with the after-sales service and customer complaints through the Happy Call Service, and utilize them as feedback information for improving products and services. All feedbacks received are registered and stored in the database for better management and we can check out plans and progress on defect handling and follow-up status by using mobile solutions.

Level of Satisfaction on Happy Call

(Unit: %)



Castle Clean Service

LOTTE E&C offers Castle Clean Service as a free follow-up service depending on years of living for apartment tenants in LOTTE Castle. The satisfaction level was above 97% based on the Happy Call results as we provided a pragmatic and high-demand cleaning service for kitchens, bathrooms, beds and external windows. We plan to continuously promote the service and improve the items in the service, thus increasing the customer participation rate and enhancing the brand image.



Reinforcement of the System for Customer Information Protection

LOTTE E&C protects corporate information assets from external threats such as virus attacks and hacking, and securely manage customers' personal information. As such, the information protection system has been intensified to prevent possible damage from information leakage. We abide by statutory regulations related to the protection of personal information, and launched a business unit for information protection at the corporate level, which is now in operation.

The monthly Information Protection Day is held to raise awareness of security among employees, and autonomous inspection is conducted at the head office and on sites. Company-wide information protection status is inspected every quarter on four areas-PC security, document security, office environment and personal information-jointly by the Strategic Planning Department, Ethical Management Department and Marketing Department.

Meanwhile, we provide regular training on a yearly basis for all employees handling personal information. Training and supervision are accompanied so that fiduciaries including subscription agencies can securely handle personal information in performing their tasks.

In order to protect critical data from the recently rampant infection from ransomware, LOTTE E&C came up with countermeasures against damage and recovery measures by adopting professional solutions to counter ransomware in November 2016 for the first time among LOTTE affiliates and domestic construction companies. As such, there has been no damage resulting from the leakage of personal information in 2016.

LOTTE E&C has set up the top-tier information protection system in the construction industry by acquiring the 'Information Security Management System (ISMS) certification¹⁾' for the process and the internal system which handle personal information of subscribers of LOTTE Castle from 'Korea Internet & Security Agency (KISA)'.

1) Information Security Management System (ISMS) Certification: a certification system validated by a national certifier on the adequacy of the overall system of setup, management and operation in order for a company to protect its critical information assets from various threats

Customer-oriented Design

LOTTE E&C creates designs which are suited to customer needs by selecting design key words each year. We are committed to touching the hearts of customers by prioritizing customer safety and convenience.

Security System (Black Box Door Phone, etc.)



Black box door phone



Network switch
(emergency call button in red)

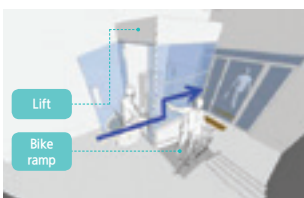
LOTTE E&C strengthens residential safety for customers by applying a black box door phone which records and stores a stranger by recognizing movements, using a sensor, without the person having to press the door bell, and also by adding an emergency call button to the network switch, which enables interactive communication with janitors' room via the home network system during an emergency.

Safety Holder for Fire Extinguishers (Dream Safety Box)



We have installed a safety holder for a fire extinguisher which can be applied inside a shoe closet in door steps (on the inside) where people take off their shoes. It is designed to be also used as an umbrella stand to be both pragmatic and safe.

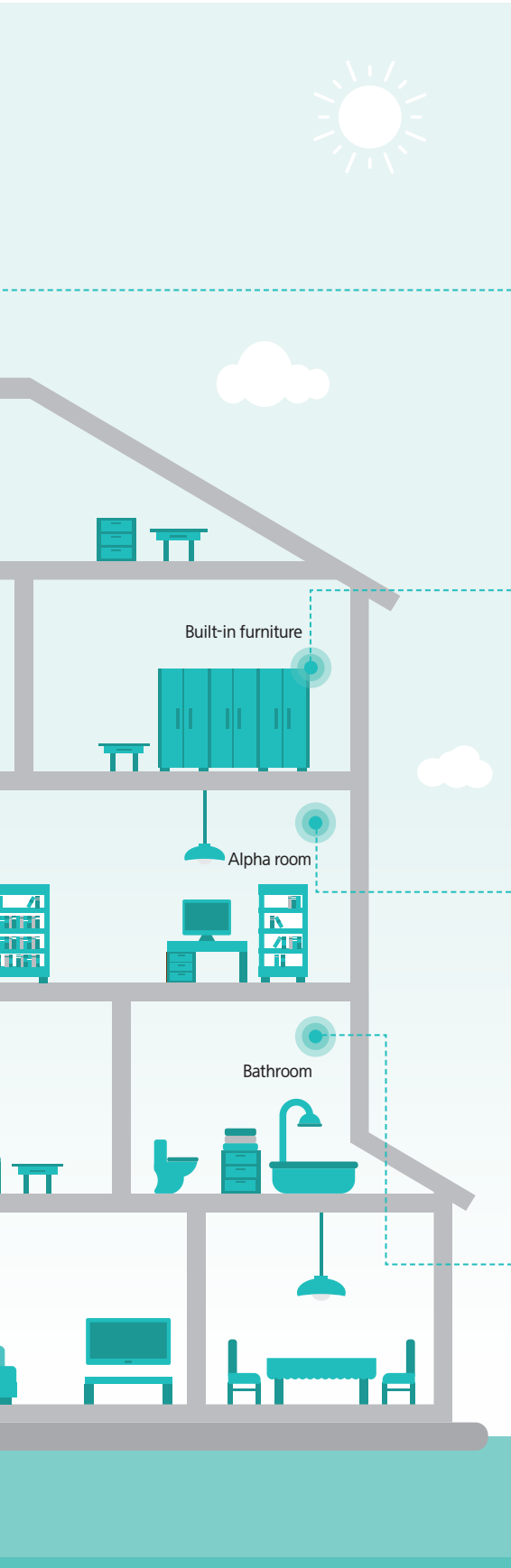
Barrier-free Entry System (Nebbiolo Lobby)



We have installed a lift instead of the existing wheelchair ramp at the above-ground entrance to provide further convenience customers who are immobile. Landscape gardening stands out in a free space, providing distinctive values to customers.

* Additionally providing bike ramps





• Improving Convenience in Using Bathrooms (Dual Powder)



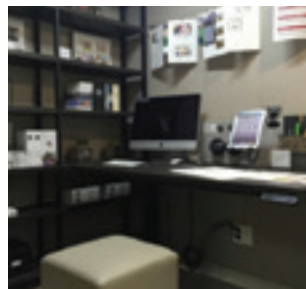
We have provided more storage features at the lower part of the existing built-in dressing table, and added a simple dressing table on the side so that a couple can use the dressing table at the same time.

• Improving the Storage Space in Furniture (Dream Furniture Dual)



We have raised convenience by offering a bi-directional cabinet with multiple functions - a closet, a bookshelf, a toy box and a storage space for cleaning suppliers. In addition, a height-adjustable closet rod and a wheeled toy box for children are also available.

• Implementing a Home Office Space (Dream Alpha Room Working Station)



Due to the increasing population working from home, we have broadened the options to decorate the space of an alpha room which used to serve as a dress room into an office space. An efficient and convenient working space is offered by installing an electronically height-adjustable desk, a shelf enabling various types of storage, and a sliding glass door which gives more openness.

• Multi-functional Safety Bathtub



The safety foothold on the side of a bathtub prevents safety accidents of the elderly and children. Additional storage spaces are also provided for customer convenience.

Issue. 5

Win-Win Partnership

Significance of Issue

The key to win-win partnership is selecting partners based on transparent criteria and procedures and complying with fair trade orders. In addition, extending financial and non-financial support to partners can lead to practicing shared growth among a large enterprise and SMEs, and contribute to job creation for the society.

2016 Key Performance

Number of cases for new joint technologies and R&D

50 cases



Amount of integrated financial support

USD **27.79** million



* Current status of integrated financial support

- Direct support: USD 4.31 million for the shared growth loan (interest-free loan for six months to seven contractual partners)
- Combined support: depositing USD 23.27 million in the Shared Growth of Industrial Bank of Korea (IBK) (raising USD 46.53 million in the form of matching grant with the bank, extension of the loan to partners)
- Special support: contributing USD 0.21 million to Corporate Partnership Foundation (Industrial Innovation Movement, financial resources for investing in training)



System for Shared Growth

LOTTE E&C runs the Secretariat for Mutual Growth since 2011, performing such tasks as extending financial, training and technical support to partners. Moreover, evaluation items for executives involved in procurement are integrity and taking actions in complying with the terms and regulations of the agreement. We transparently notify information on new construction sites including the subcontracting amount and construction period via websites of partner companies.

Current Status of Key Partners

We are in business relations with a total of 2,696 suppliers including outsourcing partners which perform construction in the areas of architecture, civil engineering and plant, and procurement partners which supply materials. Partners are further categorized into classes such as excellent, major and general considering the transaction period and amount and periodic evaluation ratings, etc. Excellent partners are provided with diverse incentives, providing bidding opportunities on a preferential basis, and exempting and reducing the amount of performance bonds.

Types of Partners

	<p>Outsourcing Partners</p>
	<ul style="list-style-type: none"> • Businesses holding statutory licenses on construction including the Basic Act on the Construction Industry • Supporting construction in such fields as architecture, civil engineering, machinery, electricity and service, etc.
	<p>Procurement Partners</p>
	<ul style="list-style-type: none"> • Businesses that hold licenses in construction and environment or those that can supply related items • Supplying equipment on architecture, civil works, machinery and electricity and plant equipment

Transparent Selection and Management of Partners

LOTTE E&C selects and manages partners according to fair standards and procedures. We improve the construction quality by creating transparent and sound transactional practices, and form a virtuous partnership where LOTTE E&C and partners both achieve shared growth.

Selection of Partners

LOTTE E&C explores new partners through regular and routine openings on a yearly basis, and the selection criteria and procedures are transparently disclosed via the website. They are subject to a 100% system evaluation based on items such as constructability and performance, revenues, credit ratings and cash flow, etc., and the results are disclosed on the website. A procedure is in place for partners that are not selected to raise an objection to the results, and when the objection is registered, re-evaluation may take place, if necessary.

Evaluation of Partners

Quality, management and technical levels of partners are periodically evaluated to cultivate excellent partners and enhance competitiveness in the supply chain of LOTTE E&C. Such rewards as presenting prizes and expanding contractual opportunities are offered to excellent partners based on the evaluation results.

Incentives for Excellent Partners

Type	Benefits
Offering prizes to excellent partners	<ul style="list-style-type: none"> Presenting a plaque to an excellent partner
Expansion of contractual opportunities	<ul style="list-style-type: none"> Offering bidding opportunities on a preferential basis
Support for expanding exchanges	<ul style="list-style-type: none"> Supporting activities for 'LOTTE Partners', a council of excellent partners Organizing networking meetings among partners
Exemption and reduction in the amount of performance bonds	<ul style="list-style-type: none"> Exempting or reducing performance bonds on a differential basis depending on the number of times to be selected as excellent partners
Training and management support	<ul style="list-style-type: none"> Providing domestic and international training and inspection opportunities for CEOs of excellent partners Extending support to executives of partners to participate in training on a preferential basis Offering management consulting programs aligned with a professional institution on a preferential basis

'LOTTE Partners'

LOTTE Partners consisting of excellent partners organizes a regular general meeting once a year for the mutual development of LOTTE E&C and its member companies. Continuous cooperation is in place by operating the meeting in breakout sessions - technology, quality and safety, transparency in the society and win-win management.



Award ceremony for excellent partners

Risk Management

Seeking to manage possible risks which might occur from bankruptcy, collusion and non-payment of proceeds, LOTTE E&C is engaged in risk management activities, including more stringent management of contractual securities, introduction of a system to prevent arrears and monitoring a portion of insolvent companies among suppliers.

Formation of Win-Win Partnerships

LOTTE E&C runs programs for shared growth which are practically helpful to partners such as financial support, support for competency buildup and expansion of exchanges in order to form win-win partnerships. By doing so, we support the stable growth of partners and form a sound culture of shared growth.

Key Programs

Financial support	Support for competency buildup
Direct and indirect financial support for partners to acquire financial liquidity	Support for management competencies and increases in revenues to lay the foundation for partners' growth
Technical support	Expansion of exchanges
Support for R&D to intensify skills/technologies and competitiveness of partners	Discussion on direction for further development by listening to grievances and complaints from partners

Financial Support

LOTTE E&C extends financial support including urgent fund support and formation of the win-win fund. We run an interest-free loan worth USD 4.31 million through direct support to extend a short operating fund for partners. We also extend indirect support including arranging and operating funds by depositing them in Industrial Bank of Korea (IBK) and providing preferential interest rates through a partnership with IBK.

Type of financial support	Main program	Details
Direct Support	Urgent Fund Support	<ul style="list-style-type: none"> Extending interest rate-free loans for shared growth
Combined Support	Win-Win Fund	<ul style="list-style-type: none"> Arranging and operating funds by depositing them in Industrial Bank of Korea (IBK)
Indirect Support	Network Loan	<ul style="list-style-type: none"> Loan support based on favorable interest rates & increase of credit lines in partnership with IBK
Special Support	Funding by Corporate Partnership Foundation	<ul style="list-style-type: none"> Contribution of the funds for the Industrial Innovation Movement 3.0 Contribution of funds for investment in training

Win-Win Fund

One of LOTTE E&C'S win-win partnership programs for small- and medium-sized partners is called the 'Win-Win Fund' and it automatically exempts the loan interest for SME partners in transactions with LOTTE affiliates by using the interest of LOTTE'S contributions. LOTTE E&C provides an automatically preferential loan interest of 1.1~1.3%, which is the highest level in the construction industry, and extends funds to 94 partners as of December-end 2016.

Support for Competency Buildup

LOTTE E&C conducts training to upgrade job performance to boost the expertise of partners' employees. Online and offline tools are used to train on practicum on construction, language skills, and finance & cost accounting for them.

Management Consulting for Partners

LOTTE E&C provides consulting to partners which is consigned to outside specialized institutions. Topics covered for partners include their financial structure, production, quality management, corporate management, strategies, marketing, brand and technology development, helping to strengthen their competencies. In 2016, management consulting was provided to a total of six companies, which was 100% sponsored by LOTTE E&C.

Support for Sales Expansion

LOTTE E&C jointly develops new construction methods with partners and applies them to its construction sites, contributing to partners' competency buildup and expansion of sales. In addition, we have explained our partner management scheme by taking part in the procurement seminar organized by the Small and Medium Business Administration and Corporate Partnership Foundation. Furthermore, support is provided to SMEs to participate in fairs to scale up their sales channels.

Technical Support

LOTTE E&C assists partners to secure growth engines in the future and intensify their competitiveness in such forms as joint technological and research development. New construction-related technologies and products are jointly researched and developed, and subsidies are provided to them by LOTTE E&C. As such, we dynamically enhance their own R&D competencies. We also proposed new directions for shared growth by introducing the performance sharing system for the first time as a Korean construction company.

Expansion of Exchanges

Diverse channels are used for us to periodically exchange with partners and listen to their complaints. For instance, the CEO of LOTTE E&C pays a visit to sites where various ideas are gathered, which are, in turn, proactively reflected to make improvements. In addition, we run the CEO training program for CEOs of excellent partners, discussing directions for mutual development.

Improvement of Partners' Portal

LOTTE E&C upgraded functions for the IT system in partners' portal for better communication with partners. The portal has become more efficient with higher convenience in use of the renewed user interface along with the advancement of public certification and e-signature solutions and the latest e-contract management solutions.

Issue. 6

Expanding Social Contribution

Significance of Issue

Beyond creating jobs and fulfilling tax obligations as a corporate citizen and member of the community, companies should seek sustainable growth along with local communities while also communicating with them through social contribution activities that employees engage in.

2016 Key Performance

Expenses for social contribution

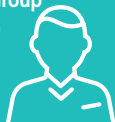
USD **1** million



Number of Charlotte Volunteering Group

(on an accrual basis, including 6 teams abroad)

138 teams



Number of volunteering hours for Charlotte Volunteering Group

5,055 hours



Employees taking part in social contribution activities

1,247 employees



Basic Directions for Social Contribution Activities

Basic Principle

LOTTE E&C strives to utilize the nature of its construction business and expertise of employees as advantages, select items for social contribution required by community, and expand programs to be voluntarily engaged in by employees.

Specialized Unit

The Social Contribution Subcommittee is in operation as an exclusive unit for social contribution within the Sustainability Council.

The subcommittee serve as a control tower for company-wide social contribution activities: devising social contribution strategies, exploring key social contribution activities, devising and executing action plans, operating a social contribution fund, and managing 'Charlotte Volunteering Group', an autonomous volunteer unit at both domestic and international sites.

Strategies of Implementation

LOTTE E&C practices sharing management by setting tasks for action in line with three strategic directions. We will do our best to walk alongside our neighbors as a warm-hearted corporate citizen and create an enriching society.



Expansion of Key Social Contribution Projects

- Expansion of social contribution business reflecting the nature of the construction industry



Introducing Recipient-Oriented Social Contribution

- Unfolding community-centered social contribution
- Expanding social contribution activities abroad






Establishing an Culture of Voluntary Employee Engagement

- Encouraging employees to participate in the Matching Grant
- Facilitating activities of the Charlotte Volunteering Group

Key Social Contribution Activities

LOTTE E&C selects key social contribution activities and has continuously proceeded with them each year in order to practice ongoing social contribution. In addition, we plan to expand a culture of participation so that employees, their families, and other stakeholders including corporate partners can join.

Love House of Dreams and Hopes	Briquette of Love-Sharing Activity	Community Services at the National Memorial Board
 <ul style="list-style-type: none"> Improving housing facilities for the underprivileged Improving social welfare centers 	 <ul style="list-style-type: none"> Providing and delivering briquettes to low-income people 	 <ul style="list-style-type: none"> Laying flower wreaths to and cleaning up the cemeteries of National Memorial Board which has signed a sisterhood relationship with LOTTE E&C

Love House of Dreams and Hopes

LOTTE E&C has conducted activities to improve residential and social welfare facilities (housing repair) for the underprivileged by utilizing the nature of the construction business since 2012. We find areas of need in the community and sponsor supplies such as refrigerators and gas stoves while repairing the interiors and exteriors of rundown buildings. We also extend financial support to improve the residential environment for the underprivileged. We have expanded the scope of facility improvement and support since 2017, and plan to dynamically improve the residential environment for the underprivileged in the community.




Briquette of Love-Sharing Activity

Employees of LOTTE E&C are engaged in volunteering - donating and delivering briquettes - for the underprivileged every winter. In 2016, the CEO and 130 employees from the Charlotte Volunteering Group took part in the 'Briquette of Love-Sharing Activity' marking

the 6th anniversary of the program, donating a total of 40,000 briquettes to '104 Village in Nowon-gu, Seoul' and 'Maechukji Village in Dong-gu, Busan', and delivered briquettes to 55 households.

Community Services at the National Memorial Board (volunteering of employees and their families)

LOTTE E&C conducts volunteering activities engaging employees and their families before Memorial Day and Armed Forces Day. The participating volunteers paid homage to the dead at the Memorial Tower and had a tour around the exhibition hall, while flower wreaths to and cleaning up the cemeteries of National Memorial Board which has signed a sisterhood relationship with LOTTE E&C. In May and September 2016, 30 families and 120 employees and their family members took part in volunteering.

2016 Performance of Major Social Contributions		
 <p>Love House of Dreams and Hopes</p> <p>Seoul 3 regional childcare centers, Busan Improving 4 low-income households</p>	 <p>Briquette of Love-Sharing Activity</p> <p>Donating 40,000 pieces of briquettes and 1,500 boxes of instant noodles</p>	 <p>Flower Wreath-Laying and Clean-up at the National Memorial Board</p> <p>30 families and 120 individuals participating each year</p>

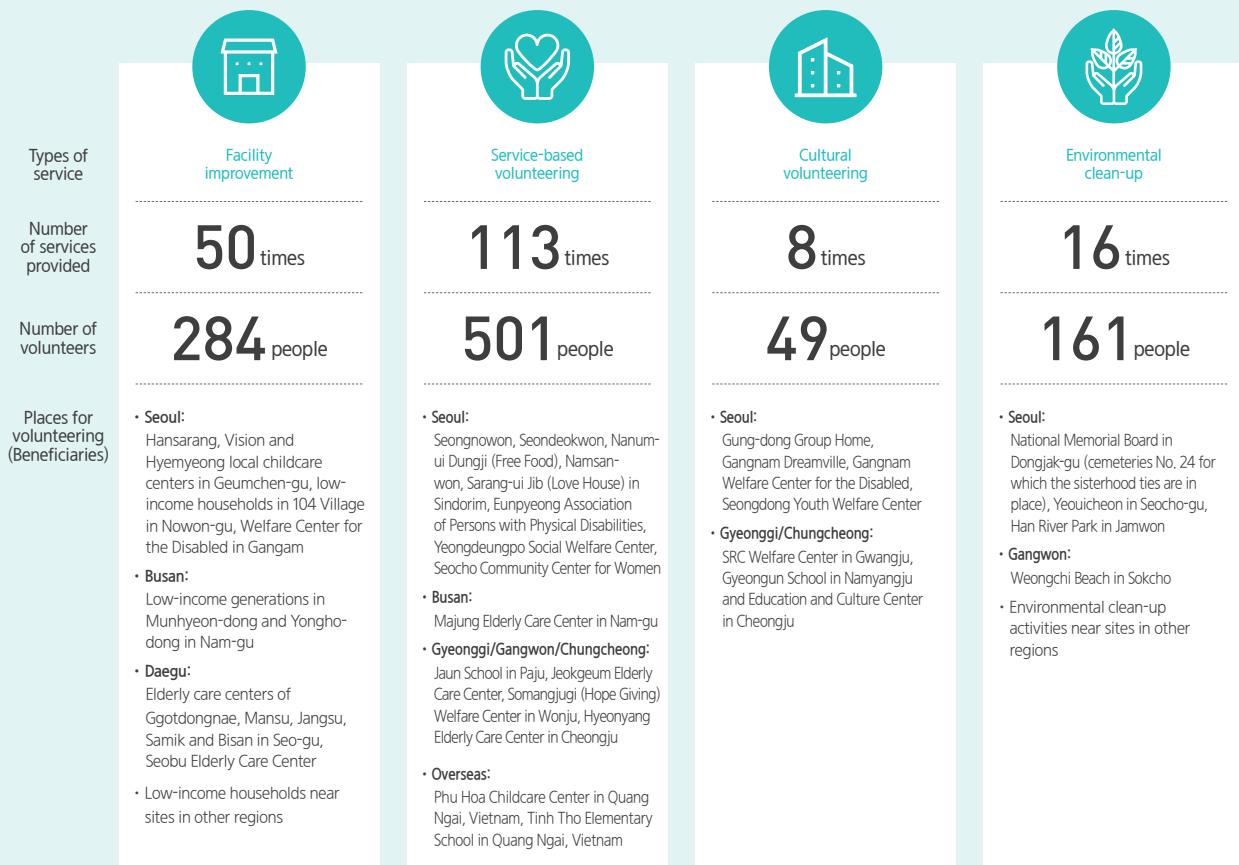
Management of the Matching Grant-based Social Contribution Fund

LOTTE E&C has raised a social contribution fund through matching grants since 2011. Employees donate a certain portion or the last digit of their monthly wage, and LOTTE E&C donates the same amount in fundraising for social contribution. Employees have demonstrated a great deal of enthusiasm for this initiative, with 77% of all employees participating.

A Culture of Employees' Voluntary Participation (Charlotte Volunteering Group)

LOTTE E&C runs the 'Charlotte Volunteering Group', a volunteering unit at the head office, department and domestic and international site levels. As of the end of 2016, 138 teams have been registered on a cumulative basis, among which 52 teams actively participate. The 'Charlotte Volunteering Group' is mostly involved in the following types of volunteering: volunteering for facility improvement to tidy up the residential environment of low-income households and enhance the environment in welfare centers; service-based volunteering such as meal serving and clean-up by visiting welfare centers; cultural volunteering to support low-income people to be engaged in cultural experiences including exhibitions and performances; and environmental clean-up for rivers and parks in the region with our corporate presence.

Major Activities of the Charlotte Volunteering Group in 2016



Future Plans

LOTTE E&C plans to expand social contribution activities from 2018. The matching grant fund will be expanded by increasing the amount of corporate contributions, thereby scaling up the social contribution fund. 'Love House of Dreams and Hopes' as LOTTE E&C's key social contribution activity will be also stretched out to more areas for support to give more practical help to communities. Furthermore, employees' participation rate in the 'Charlotte Volunteering Group' will be raised.

Issue. 7

Ethical Management

Significance of Issue

A company is obliged to comply with corporate ethics as a corporate citizen and contribute to forming a sound social landscape. Many companies, therefore, formulate standards including the charter on ethics and the code of ethics for all employees to take actions with ethical values as the top priority based on integrity and trust.

2016 Key Performance

Diagnosis of the level of ethical management

* Organized by LOTTE Group / ranking 3rd among all affiliates

95 points



Number of trainees in ethical management

3,007 employees



Number of cases with improvement and guidance after auditing

65 cases



Number of cases reported to reporting channels (Ombudsman)

404 cases



Directions for Ethical Management

LOTTE E&C recognizes risks in ethical standards in the international community as well as domestic regulations which are made more stringent along with responsibilities as a corporate citizen, and strives to encourage employees to practice ethical management in their daily life. In particular, the scope of activities for ethical management is gradually expanded because of social interest in and criticism against corporate ethics triggered by large enterprises' exertion of dominance against partners, unethical acts of employees and leakage of customer information.

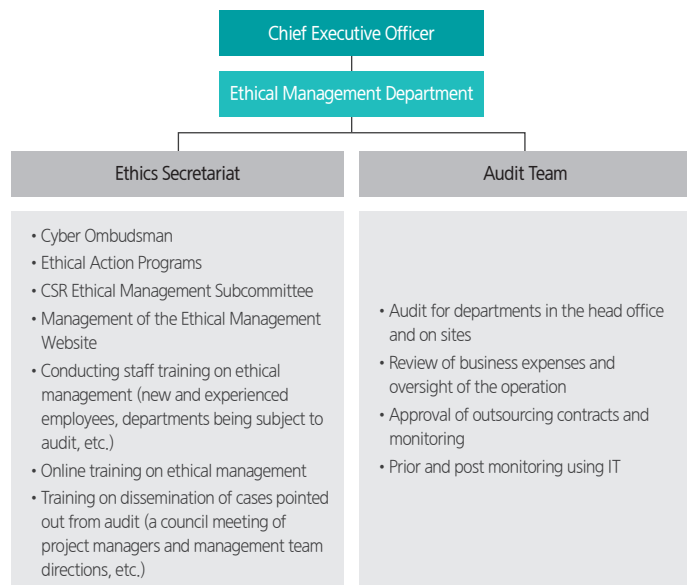
We provided standards to determine acts of violation and compliance for all employees based on the 'Enforcement Decree of the Improper Solicitation and Graft Act (known as Kim Young-Ran Act)' formulated in 2016, and conducted training for all employees to prevent unfair acts.

In 2017, we also laid the foundation for compliance management by prescribing compliance control standards and adopting a system for compliance support. As a consequence of such efforts, LOTTE E&C is committed to serving as an ethical company based on principles and trust.

LOTTE E&C's Ethical Management Units

Ethical management is managed in two channels via the Ethics Secretariat and the Audit Team. The Ethics Secretariat conducts preventive activities such as dispersing and providing training on the principles of ethical management, while the Audit Team is engaged in activities to guide, inspect and improve compliance with laws and bylaws. Each unit is made up of diversified members from different job positions with working-level experiences (in the supervisor level and above) to provide more practical and professional audits.

Ethical Management Units and Major Job Functions



Training and Inspection of Employees' Ethical Awareness

Strengthening Ethical Training Aligned with the Code of Conduct

LOTTE Group has adopted the 'LOTTE Code of Ethics' in October 2000, and devised the 'LOTTE Code of Conduct' which has complemented the existing version in 2014. The code of conduct consists of 'trust among LOTTE families', 'trust with customers', 'trust with partners' and 'trust with the society'. It covers principles of ethical practice for employees of LOTTE Group to commonly abide by in relationships with stakeholders. In 2016, we published and distributed the 'Q&A Book of LOTTE Group Ethical Management' as a practical and clear guideline to suggest specific guidance on the code of conduct to all employees in LOTTE Group in 2016.

We have given training on the 'LOTTE Code of Conduct' to all employees in alignment with the 'LOTTE E&C's behavioral norms and bylaws for conduct' since 2015, and provided training at the branch and corporation level for local recruits in key global hubs.

'LOTTE Code of Conduct' and 'Q&A Book of LOTTE Group Ethical Management'



Training on Ethical Management per Target

We run various training programs on ethical training suited to the job functions and ranks of employees.

Training on Ethical Management per Target



Diagnosis of Ethical Management Levels

LOTTE Group diagnoses the ethical levels of affiliates since 2015 and devises areas for improvement for them since 2015 for continuous complementation, management and training of 'LOTTE Employees' Code of Conduct'. In the diagnosis of ethical management levels, the levels are measured based on four areas in the code of conduct (LOTTE employees, customers, partners and society). The level of LOTTE E&C's ethical management is 94 points in the first diagnosis in 2015 and 95 points in both 2016 and 2017, ranking 3rd among all affiliates.

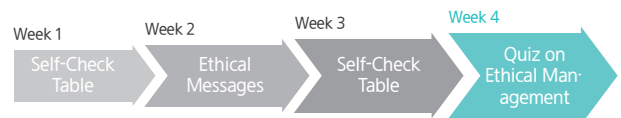
In addition, LOTTE E&C diagnoses the level of ethical management using LOTTEX, a self-developed diagnosis program, and sets channels for stakeholder communication, paving the way for corporate sustainable growth.

Monitoring of Ethical Management Practice

LOTTE E&C has conducted the 'Ethical Management Practice Day' from October 2014 in departments at the head office, domestic and international sites and overseas branches/subsidiaries. The level of ethical management practice is monitored on a monthly basis, led by a department head (an executive), a project manager and a head of a branch/subsidiary by utilizing the items for ethical risks reflecting the nature of tasks in each unit. The Ethical Management Department complies with and analyzes the monitoring outcome to discover areas of corporate weakness and devises directions for improvement.

Furthermore, the weekly 'Ethical Management Practice Program' is in operation, which consists of the self-checklist, ethical messages and a quiz on ethical management for individual employees to be internalized with ethical awareness. Excellent individuals and business units in ethical management practice are awarded once a year.

Components of the Ethical Management Practice Program



An Example of a Quiz on Ethical Management (the Solicitation, Anti-Graft Act and etc.)



Ethics of External Stakeholders

Ethical Training of Partners

LOTTE E&C conducts ethical training for employees of partners to establish a culture of ethical management in partners because of increases in the roles of a supply chain in corporate management. By doing so, we provide education of ethical management policies of LOTTE E&C to partners, and prevent unethical acts connected with partners. In 2016, we invited instructors specialized in ethical management for 116 employees in 114 excellent partners in 2016, and trained on corporate ethics and prevention of unethical incidents.



Ethical training of partners

Ethics Pledge of Partners

LOTTE E&C operates the 'Ethical Pledge Writing Program' to enhance partners' ethical awareness and settle an ethical management culture.

Ethical Pledge helps eradicate unethical management activities of partners as they fill in the ethical pledge with their willingness to practice ethical management and also contributes to the growth of a fair corporate eco-system.

Hotline for Whistleblowing (Cyber Ombudsman, etc.)

LOTTE E&C receives whistleblowing information on unethical acts by operating online and offline hotlines for whistleblowing on unethical acts. The cases that are registered are to be responded to within 10 days on average in principle, identification of whistleblowers is protected and malicious reporting is prevented through fair audits.

In 2016, we sent the Cyber Ombudsman Access Manual via email and SMS and gave notices via email and telephone to external stakeholders including partners to facilitate external reporting on unethical acts, thus conveying our policies and commitment internally and externally on ethical management.

Strengthening Audits

LOTTE E&C has enhanced internal audits for fair and ethical management activities, conducting regular, topic-specific and special audits aligning the head office and sites. This led to improvements of systems and auditing quality whilst raising the ethical awareness among employees. In addition, we constantly monitor the current status of using corporate cards to create a culture of their proper use.

Key Auditing Results



Enhancing the work system through auditing

- Continuously conducting topic-specific audits that bring about significant improvement for the work system



Raising the quality of audits

- Intensifying on-site auditing (guidance + periodic audits → integrated on-site auditing)
- Improving the work process in overseas sites and inspecting risks there



Internal and external ethical communication

- Strengthening external awareness of LOTTE E&C as an ethical company by conducting special audits based on various reporting registered to hotlines



Forming a culture of proper use of corporate cards

- Intensifying preventive audits based on regular audits of corporate card use

Future Plans

LOTTE E&C seeks to continuously acquire infrastructure for ethical management, whilst recognizing 2017 as a year to stride higher as a globally ethical company. LOTTE E&C will continue to endeavor to facilitate sound corporate philosophies and to gain trust of various stakeholders.

Creating a Culture for Ethical Management and System Enhancement

LOTTE E&C seeks to expand interest in ethical management and improve our corporate image as an ethical one. Accordingly, we plan to consistently provide ethical management training for employees, and include the address of the Cyber Ombudsman on individual employees' name card. At the same time, we will send a quarterly letter to engage in ethical management to partners, thus contributing to culture creation of ethical management in the supply chain.

Furthermore, we also make ethical management indicators in partner evaluations to prevent unethical acts. Preferential points are given to partners when they are engaged in ethical management, and points are deducted upon discovering their unethical acts through an audit in order to conduct an objective and quantified evaluation on partners.

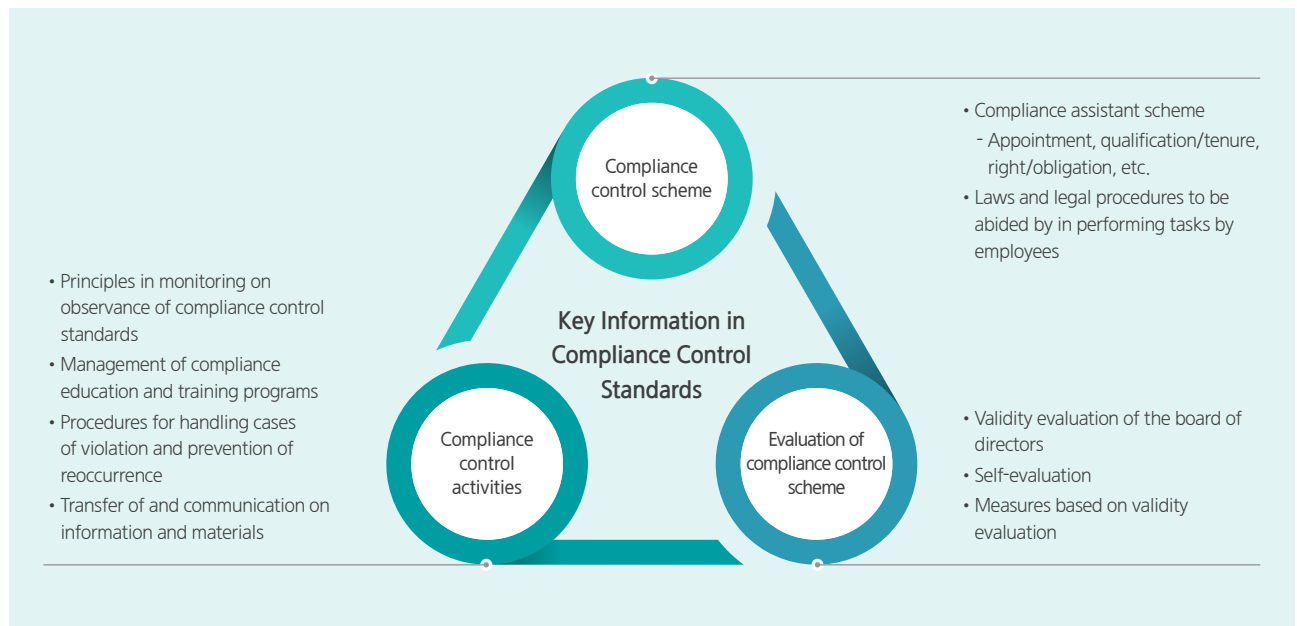
Establishment of Foundation for Compliance

The LOTTE Group pursues compliance that transcends simply complying with laws: it is to ensure ethical management of global standards, clarify goals for social responsibilities, and establish a preemptive and well-organized system to achieve them.

To this end, we launched the Compliance Committee to conduct compliance management, legal and audit functions in February 2017, paving the way for compliance management to make a higher stride as a global company. The committee establishes compliance management policies at the Group level, and extends support for each affiliate to cover compliance-related provisions in their internal regulations, contracts and third-party checklists.

In July 2017, LOTTE E&C appointed compliance assistants, while formulating compliance control standards, and all the employees signed the compliance pledge. In August, we formulated and announced the charter for compliance management, striving for sound corporate development and acquisition of stakeholder trust through legal compliance and realization of corporate ethics.

Key Information in Compliance Control Standards



SUSTAINABILITY STRUCTURE





86 Corporate Governance



88 Risk Management



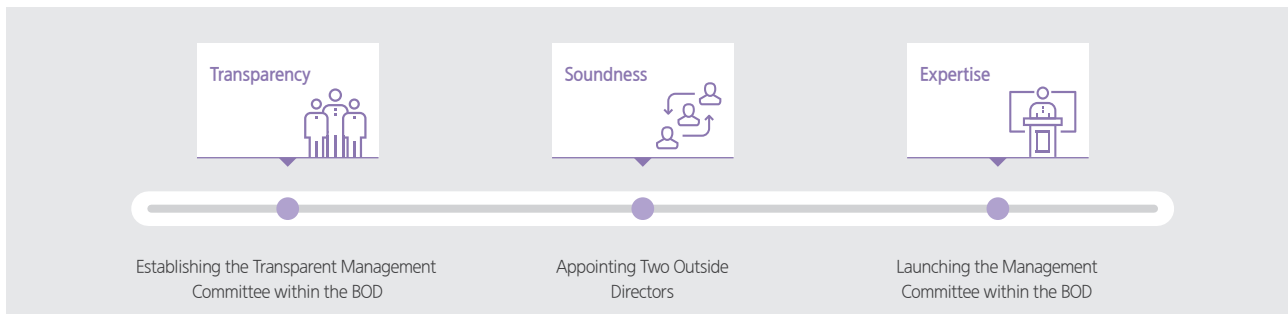
90 High Value-Added Technologies

Corporate Governance



Corporate Governance

LOTTE E&C amended the Articles of Incorporation to introduce the outside directors and install commissions at the regular shareholders' meeting in March 2016, seeking to raise the independence and transparency of corporate governance. Outside directors were newly appointed through the deliberation of the shareholders' meeting, thus strengthening the checks and balances and expertise in making decisions.



Operation of the Board of Directors

LOTTE E&C's top decision-making body is the BOD (Board of Directors) elected at the general shareholder's meeting, which consists of eight directors including inside directors and two other executive directors. Regular BOD meetings are held once every month. In addition to regular meetings, BOD meetings can be held on demand. In 2016, BOD meetings were organized for 14 times, and its members voted on 58 agenda. In particular, the attendance rate of outside directors is 100%, indicating full-fledged participation in the BOD.

Composition of the BOD and Auditors (as of August 2017)

Title	Name	Position	Title	Name	Position
Inside Directors	Dong Bin Shin	(Current) Chairman of LOTTE Group	Outside Directors	Ho Joong Kim	(Current) Professor at Business School of Konkuk University Professional Review Board Member at the Financial Supervisory Service Ph.D. in Business Administration, Georgia State University
	Suk Joo Ha	(Current) Chief Executive Officer		Young Myon Lee	(Current) Professor at Business School of Dongguk University Public Interest Member, National Labor Relations Commission Ph.D. in Labor and Industrial Relation, University of Minnesota
	Hee Cheol Seok	(Current) Head, Building Works Division	Non-Executive Directors	Young Ja Shin	(Current) Chairwoman of LOTTE Foundation
	Sang Yeol Lee	(Current) Head, Civil Works Division	Auditor	Jong Hyun Kang	(Current) Executive Managing Director of LOTTE Corporate Innovation Office
	Su Chan Ko	(Current) Head, Management Support Division			

Evaluation and Reward

Financial and non-financial performances of the management are evaluated and yearly salaries and incentives are determined accordingly. They are rewarded within the limit approved at the general shareholder's meeting. The peak amount of remuneration for directors (including non-registered executives) was set at USD 20.16 million. USD 2.44 million was paid to the registered directors during the year, and the average compensation per individual is USD 0.41 million.

Sub-committees of the BOD

The BOD set up the Management Committee consisting of three inside directors including the CEO in March 2016 for deliberating and deciding on general management matters entrusted by the BOD. Moreover, the Transparent Management Committee was launched consisting of two outside directors and one inside director to enhance the transparency of internal trading with affiliated persons and affiliates.

We held the Management Committee 20 times in 2016 to decide on such agenda as signing loan agreements and subcontracting agreements. We also organized the Transparent Management Committee three times to deliberate on four key agenda including establishing a mobile system for safety management and signing an agreement on the service use of the disclosure supporting system.

Status of Committees

Type	Composition	Purpose of Establishment and Rights
Management Committee	3 inside directors (including the CEO)	Deliberating / deciding on general management matters entrusted by the BOD
Transparent Management Committee	2 outside directors 1 inside director	Deliberating on negotiated contracts of a certain scale or higher with affiliated persons and affiliates

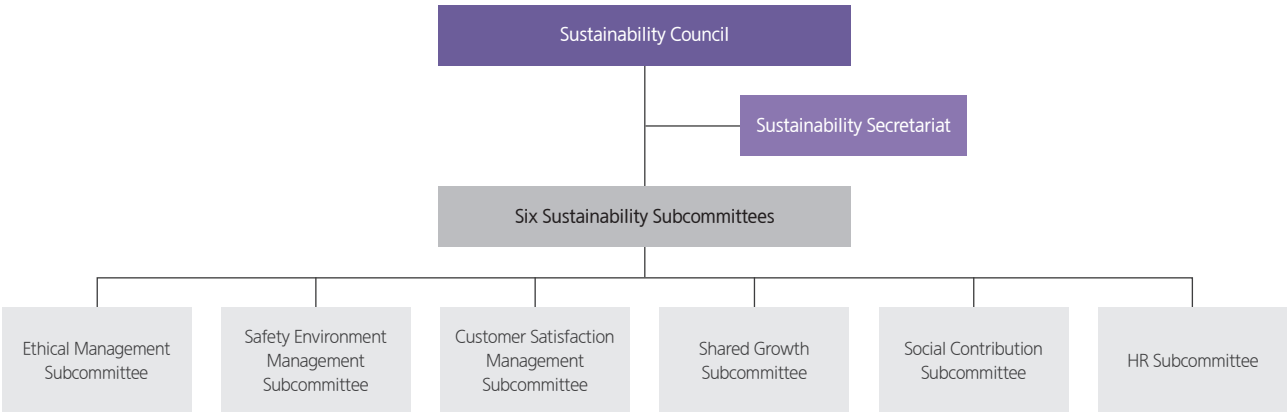
Auditing

LOTTE E&C appoints one auditor based on the decisions made at the shareholders' meeting for performing audit operations. The auditor may independently supervise directors' operations by attending the board meeting, and may require a relevant department to submit related documents and records.

Sustainability Council

LOTTE E&C operates the Sustainability Council consisting of subcommittees under the CEO who devises basic plans on sustainable management and is authorized to make decisions on it. In addition, we devise mid-and long-term strategies, manage specific strategy directions and performance in executing them by division, and respond to external policies and regulations through the Sustainability Secretariat, a body to execute sustainable management.

Organizational Chart of the Sustainability Council



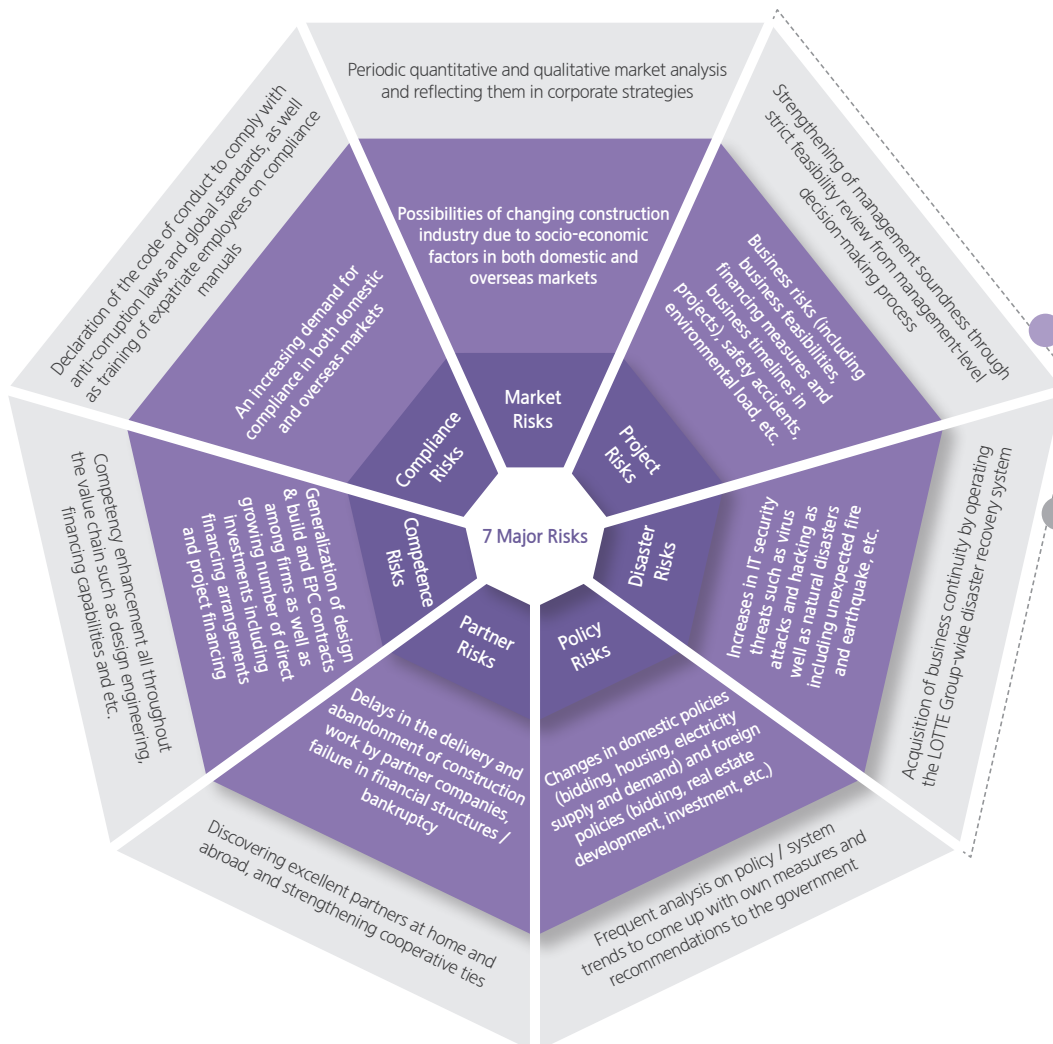
Risk Management



Risk Management System

LOTTE E&C runs an organization for response and a decision-making system by division by categorizing risks in seven areas, including market, policies, competences, partners, projects, compliance and disasters, and conducts regular monitoring. In particular, under the supervision of the Chief Executive Officer, expected risks are analyzed, countermeasures are devised, and follow-up actions are taken by running a pre/post review process engaged by each business unit.

Managing and Responding to Major Risks



Project Risk Management

In the construction industry, risks which might occur in project management might not only directly impact business performance but also tarnish the corporate reputation over the long haul. In order to prevent risks, we run a decision-making system including an organization to respond to project risks, the Deliberative Committee for Project Biddings and Deliberative Committee for Investment. Also, we have established a management process by factor to minimize risks including site safety and environmental load, and initiate periodic inspections and systematic responses when emergencies occur. In 2016, we intensified deliberation on bidding participation for the subcontracting business, turnkey-based design & construction business and private investment to bolster management of uncertainty risks in overseas business.



- * Preventive Measures: Establishing measures for analyzing expected risks
- * Post Measures: AIA (After Instant Analysis) analysis technique

Management of Safety and Environment Risks

We conduct a prior analysis of embedded risks through a risk evaluation process on construction sites, and devise relevant countermeasures. The factors that are identified are shared throughout the company via the internal IT network. At the same time, each site operates a safety management system based on the daily safety cycle: prior perception of risks, safety training, safety check, supervision during operations, meetings on operational safety, and wrap-up and check prior and post to operations.

Failure Prevention System

- Preventing failures by operating daily on-duty work scheduling
 - Checking mobile devise/PCs and machinery rooms, etc.
 - Maintaining the immediate reporting system
- Operating the real-time failure monitoring system (internally operated)

Failure Prevention Drills

- Mock-up drills for disaster recovery (twice a year)
 - Led by the Information Protection Committee in the Group
 - Awareness of R&R in each job function
- Mock-up drills (twice a year)
 - Self-training in each job function

Management of Disaster Risks

Acquisition of Business Continuity

Recently, natural disasters resulting from fires and earthquakes and IT security risks including hacking and virus attacks from outside have occurred more frequently. As such, LOTTE E&C operates a disaster recovery system in the Group level to secure business continuity even when IT service operations cannot be performed for many hours. We plan to ensure that core operational data in each service are copied and stored in real time via the integrated disaster recovery system, and utilize them in business by converting the network into stored data when disasters occur.

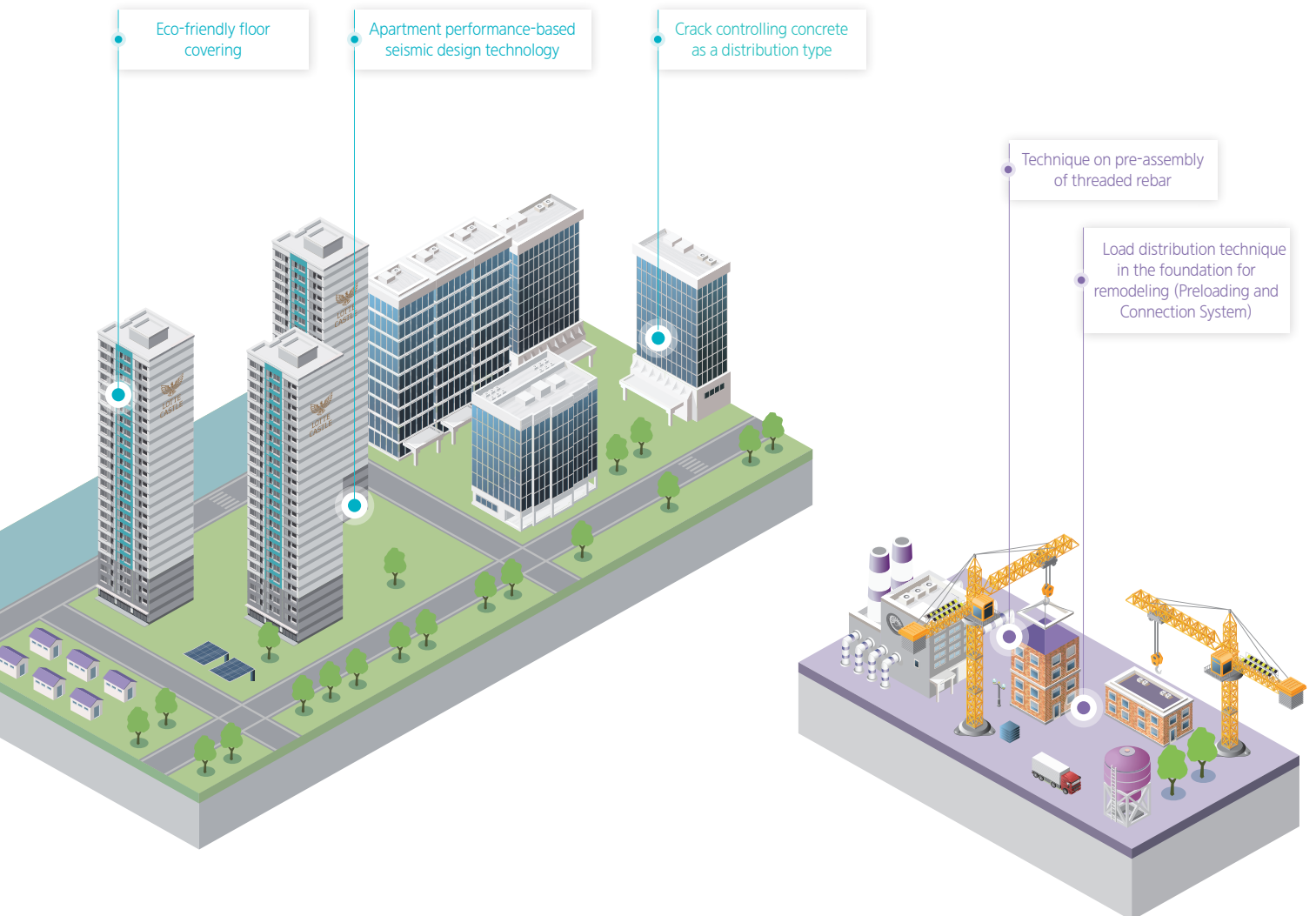
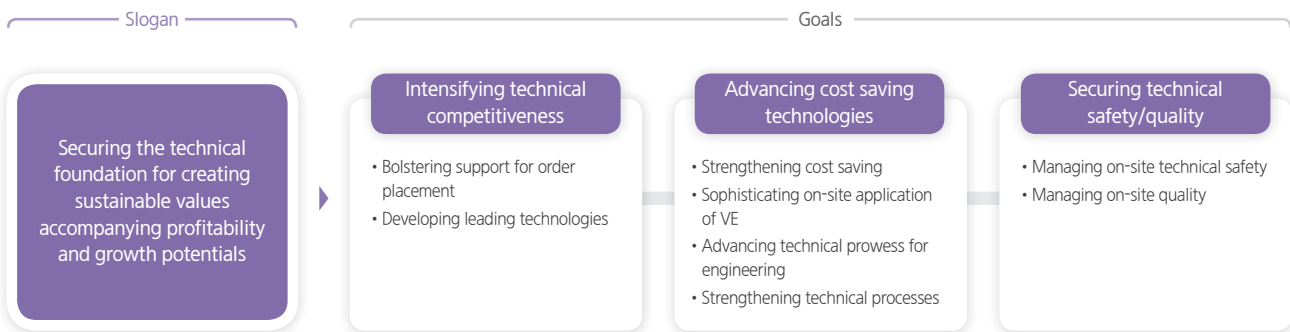
Prevention and Management of Failure in Business Systems

In order to prevent accidents including the suspension of services due to failure in business systems, we classify and manage records failures based on the level of importance by rating and type, set up a failure prevention system, and conduct mock-up drills.

High Value-Added Technologies



System for R&D Strategies

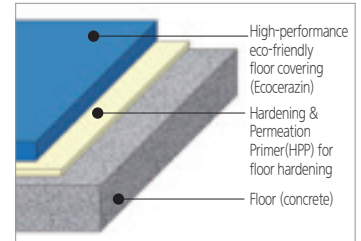


Technologies to Improve Customer Values

Eco-friendly Floor Covering

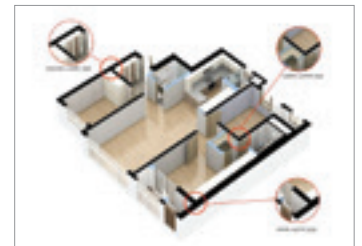
The eco-friendly floor covering minimizes the discharge of toxic materials, while improving the indoor air quality by minimizing hazardous chemicals including the Total Volatile Organic Compounds (TVOC) and formaldehyde (HCHO). Even if it is exposed to acid or water, etc., there is no change in quality so that it can be applied to a space for food and cooking. LOTTE E&C has two patents, one green technology certification and one new building technology based on its exclusive safety and technological prowess in eco-friendliness. In 2017, our performance has been recognized by acquiring the certificate for Environmental Product Declaration (EPD)¹⁾ for the high-performance eco-friendly floor covering (Ecocerazin).

1) Korea Environmental Industry and Technology Institute's Environmental Product Declaration (EPD) G2017-I-001 (Jan. 25, 2017)



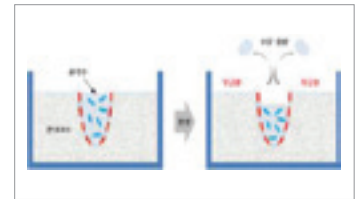
Apartment Performance-based Seismic Design Technology

LOTTE E&C established a seismic design process for the standard-type apartment of LOTTE Castle in partnership with the Earthquake Engineering Society of Korea, and conducted a simulation by producing a 3-dimensional model of a building. We plan to strengthen seismic safety by applying the next-generation performance-based seismic design methodologies to many sites.



Crack Controlling Concrete as a Distribution Type

LOTTE E&C developed a high-performance admixture which can reduce the shrinkage rate by over 160% compared to ordinary concrete as a standard type, whose technology can be used to reduce maintenance costs by controlling cracks when applied to ordinary concrete. It minimizes the occurrence of crack by applying to massive floor concrete structures which are prone to firing and shrinkage-induced crack.



Technologies to Lead the Future Market

Technique on Pre-assembly of Threaded Rebar

Threaded rebar were developed to introduce the mechanized construction of the steel reinforcement of columns. The aim was to minimize the number of personnel for construction on sites and prevent possible safety accidents in the middle of construction work because of the spread of social awareness on safety accidents on sites. LOTTE E&C was designated by the Ministry of Land, Infrastructure and Transport for its new technology used in the construction technique in the pre-assembled rebar in the rebar rotational type by using threaded rebar and couplers, connecting pins and support, which is being applied to sites.

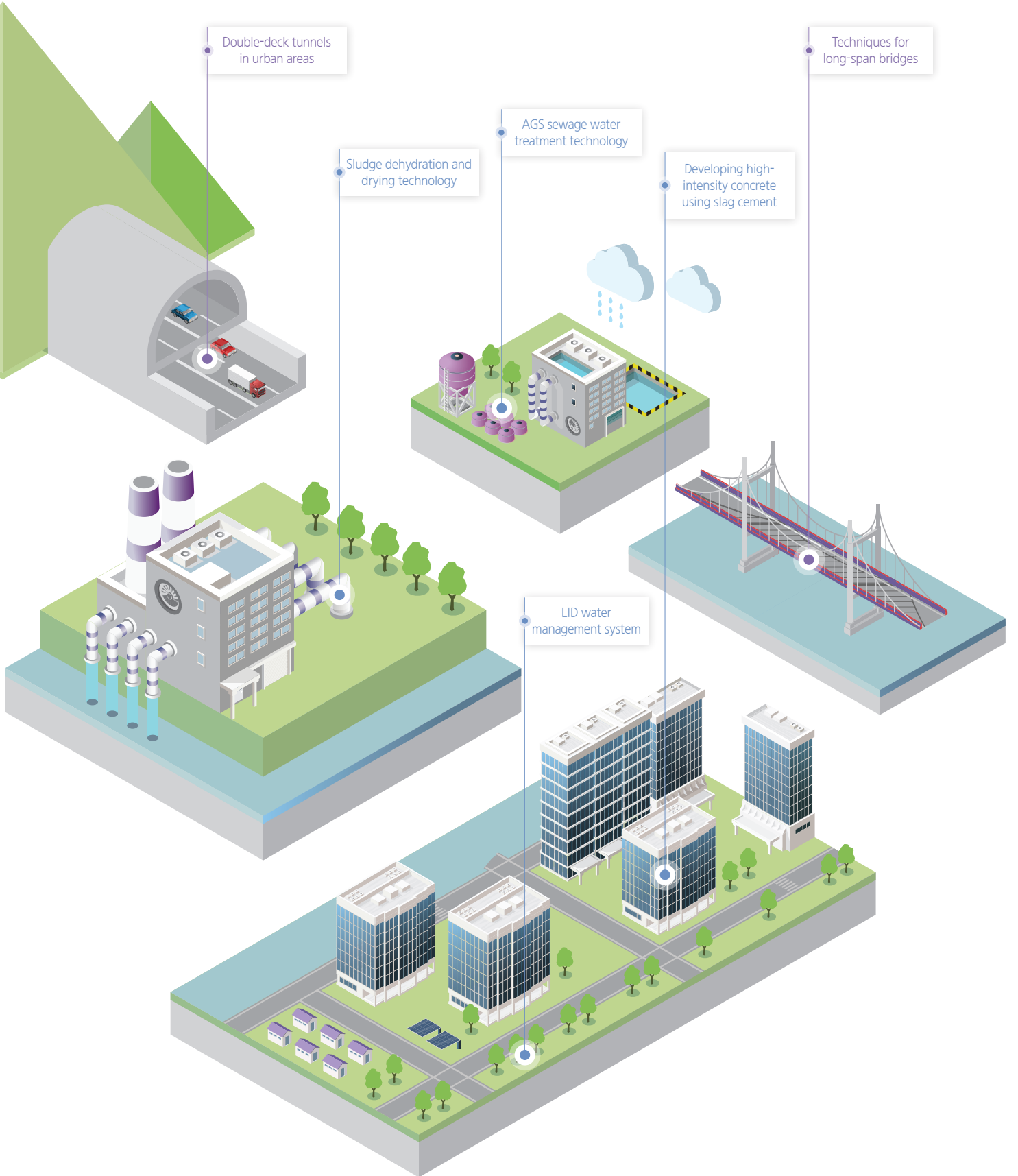


Load Distribution Technique in the Foundation for Remodeling (Preloading and Connection System)¹⁾

LOTTE E&C developed a load distribution technology for the existing foundation through the preloading and connection system because of a higher demand to retrofit the existing structures as vertical extension remodeling for structures are allowed for and seismic retrofit has been highly performed. We can acquire an optimized and stable design by utilizing micro-piles which excel in load supporting capabilities while easing the load distribution rate for additional loading to the existing foundation.

1) Preloading and Connection System: a technology to distribute the load of the existing pile and reinforced pile resulting from an increasing load

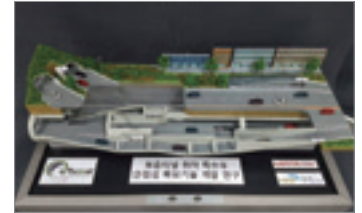




Double-Deck Tunnels in Urban Areas

Since double-deck tunnels have emerged as a new alternative to distribute the on-ground traffic volume in the metropolitan area, we completed developing a reinforcement material and registered a patent¹⁾ on it to acquire stability in special areas of unsound double-deck tunnel including underground diverging area / inflow and outflow area / closely spaced tunnel. We evaluated site applicability through pilot construction, and completed the comparative analysis of constructability and economic feasibility with existing techniques.

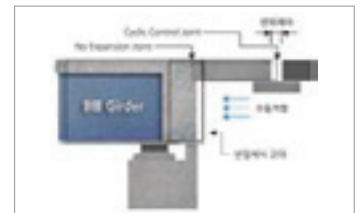
1) Patent No. 10-1674811



Techniques for Long-Span Bridges

LOTTE E&C completed the construction of the Donggi Bridge - Korea's first long-span, earth-anchored¹⁾ composite cable-stayed bridge²⁾, gaining experience in cable configuration management and construction, and securing the related personnel. Based on the experience, we are constructing the Sandaldo Suspension Bridge, a concrete cable-stayed bridge.

- 1) Long-span, earth-anchored method: a method of fixating cables on an additional structure in a bridge where the length between pylons is long
- 2) Cable-stayed bridge: a technique of scaffolding the bridge deck only with cables coming down from the steel pylon



Technologies for Creation of Environmental Values

Aerobic Granular Sludge (AGS)¹⁾ Wastewater Treatment Technique

AGS is a high-density microorganism agent produced through the self-fixation²⁾ of microorganisms. In order to develop an advanced wastewater treatment technique using AGS, LOTTE E&C has acquired the Intellectual Property Right³⁾ since 2015, and carried out a 225m³-testbed plant research. In 2016, we acquired the certification for a new environmental technology from the Ministry of Environment: 'Advanced Wastewater Treatment Technology of Sequence Batch Type to Maintain Aerobic Granular Sludge Intensity with Belt-type Filters' in 2016.

- 1) AGS(Aerobic Granular Sludge): an aerobic granular sludge which granulates active microorganisms
- 2) Self-fixation method: a method of granulating with microorganisms alone without a scaffold
- 3) Patent No. 10-1613711



Water Management System of Low Impact Development (LID)

LOTTE E&C participated in a national task force to conduct research on LID technology for urban water cycle from 2012, and developed a rainwater utilization system¹⁾ aligned with groundwater, which is a technology related to the LID water management system. We have set up and are operating a field test facility of 60m³ in the LID test bed operated by the task force. In 2016, our performance evaluation of the test bed compared the efficiency of water use in the groundwater-aligned rainwater utilization system and the ordinary rainwater tank, thereby increasing efficiency over 30%, and it was also revealed that the technology could be applied to an environment with an available catchment area of a small scale.

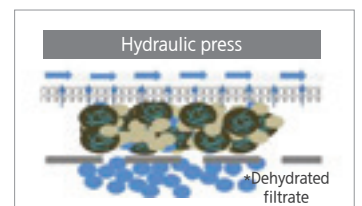
1) Patent No. 10-1433076, Patent No. 10-1566948



Sludge Dehydration and Drying Technology

We developed a fuel production technology by dehydrating and drying organic waste resources including sludge which occurs in sewage water treatment plants, etc. by reducing their water content rate from 80% to 10%. The technology was certified by the Ministry of Environment as a green technology¹⁾ and is in the process of being certified as a new environmental technology. We received the Ministerial Prize of Land, Infrastructure and Transport for the technology, and acquired a related intellectual property right.²⁾

- 1) Green Certification GT-16-00004
- 2) Patent No. 10-1558459, Patent No. 10-1698296



Developing High-intensity Concrete Using Slag Cement

Subterranean structures including cast-in-place piles, slurry walls and foundation require high-quality construction satisfying performance requirements including constructability, durability and water proofing because buildings are larger in scale and constructed as high-rises. As such, eco-friendly concrete design technology was applied which emits relatively little CO₂, fulfilling the requirements and reducing CO₂ emissions.



APPENDIX



95 Key Performance
in Sustainable
Management



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101 Third Party's
Assurance
Statement



103 Memberships
and Participating
Associations / Awards



103 Overseas Offices
and Subsidiaries

Key Performance in Sustainable Management

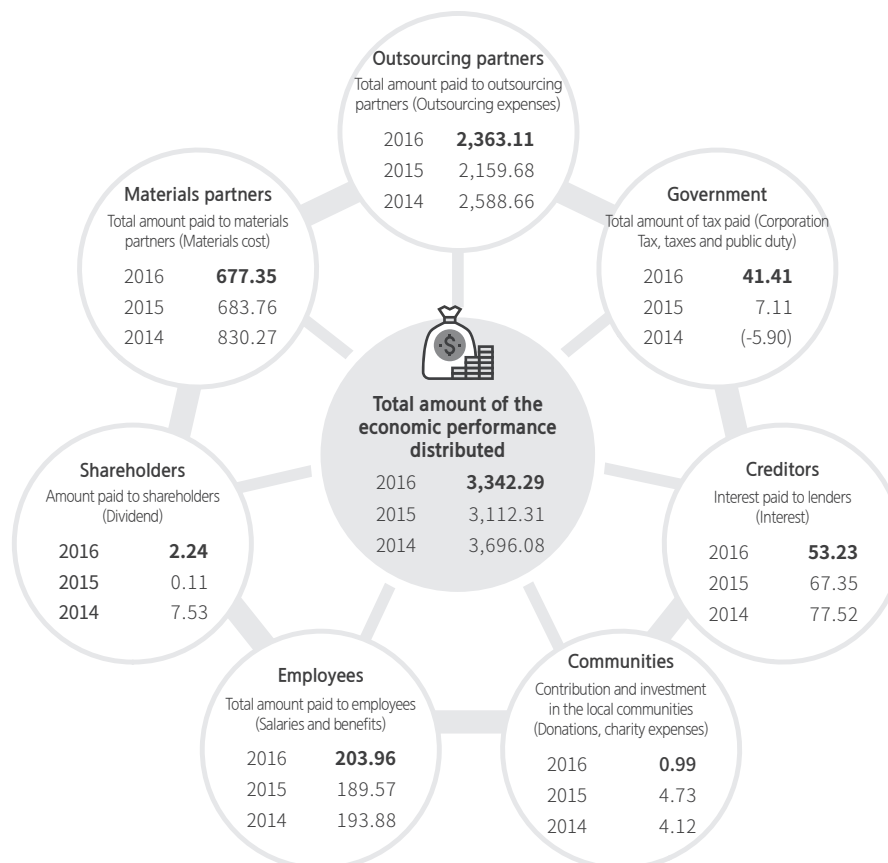
Economic Performance

LOTTE E&C's economic performance is continuously improving, including revenues and operating income. We practice shared growth with various stakeholders by distributing economic values created through business activities to shareholders, creditors, employees, government, partners and communities.

Category	Sub-category	Unit	2014	2015	2016
Orders	Total orders	USD Million	5,081.27	7,343.86	6,098.32
	- Domestic orders	USD Million	4,784.47	6,778.14	5,908.66
	- Overseas orders	USD Million	296.80	565.71	189.66
Sales		USD Million	4,224.90	3,648.43	3,996.35
Gross profit		USD Million	323.13	330.37	405.95
Operating income		USD Million	138.73	141.00	216.68
Profit (loss) before income tax		USD Million	-51.02	15.58	51.31
Net income (loss)		USD Million	-45.13	8.48	9.90
Total assets		USD Million	4,992.66	4,477.62	4,240.02
Liabilities		USD Million	3,031.36	2,730.30	2,526.80
Capital		USD Million	1,961.30	1,747.32	1,713.22
R&D investment	Technology development service expenses	USD Million	35.30	15.75	14.29
	Exclusive technology development expenses	USD Million	3.17	3.27	3.31
Retirement pension	Amount of retirement pension management	USD Million	75.15	82.36	97.21
	Number of subscribers	people	2,849	2,927	2,986

Distribution of Economic Performance

(Unit: USD Million)



Environmental Performance

LOTTE E&C manages the amount of use for materials, energy and water and the amount of waste generated to minimize environmental impacts caused by business activities.

(* Scope of data collection: 267 sites in 2014, 231 sites in 2015, 221 sites in 2016)

Category	Sub-category	Unit	2014	2015	2016
Material Consumption	Ready-mix concrete	m ³	2,062,693	2,042,190	2,781,003
	Cement	Ton	42,434	40,073	45,346
	Aggregate	m ³	291,133	212,550	314,309
	Asphalt concrete	Ton	266,367	219,465	348,961
	Sand	m ³	73,274	47,180	43,151
	Rebar	Ton	211,691	319,809	419,119
	Plaster board	Board	1,462,275	1,876,416	1,325,591
Recycled Aggregate Consumption	Recycled Aggregate Consumption	m ³	21,740	10,354	11,834
Energy Consumption	Steam	TJ ¹⁾	-	9	2
	Electricity	TJ	1,015	645	748
	Others	TJ	217	126	158
Waste Generation	Waste concrete	Ton	191,088	99,608	352,541
	Waste asphalt concrete	Ton	23,371	14,185	16,674
	Wood wastes	Ton	6,379	4,793	70,408
	Waste synthetic resins	Ton	8,623	6,526	47,306
	Waste soil and stones	Ton	31,268	121,018	45,932
	Construction sludge	Ton	1,332	2,301	1,853
	Roof tile wastes	Ton	-	0	0
	Tile / ceramic wastes	Ton	13	913	461
	Waste bricks	Ton	-	0	0
	Waste blocks	Ton	-	0	0
	Textile wastes	Ton	484	52	1
	Waste boards	Ton	1,634	1,663	1,110
	Waste glass	Ton	-	11	15
	Other wastes	Ton	-	0	6,801
	Mixed construction waste	Ton	115,174	84,846	96,822
	GHG Emissions	Scope 1 (direct emissions) ²⁾	tCO ₂ e	14,900	8,983
Scope 2 (indirect emissions) ³⁾		tCO ₂ e	49,332	31,659	36,474
Water Consumption	Water and sewage consumption	Ton	4,778,929	1,189,878	1,319,761
	Underground water consumption	Ton	3,502,181	295,252	554,641

1) TJ: Tera joule (1TJ: 1 trillion joule)

2) Scope 1 (direct emission): GHGs directly emitted by sites owned or managed by an organization

3) Scope 2 (indirect emission): GHGs indirectly emitted by the electricity and water, etc. purchased by a company

Social Performance

LOTTE E&C observes legal and ethical compliance, practices social contribution and creates a great, safe workplace.

Category	Sub-category	Unit	2014	2015	2016
Current Status of Employees	Total number of employees	people	2,852	2,933	3,007
	Rate of regular employees	%	75.8	74	73.3
	Rate of contract-based employees	%	24.2	26	26.7
	Number of male employees	people	2,720	2,783	2,834
	Number of female employees	people	132	150	173
Female Leadership	Female employee ratio	%	4.6	5.1	5.8
	Female executive ratio	%	0.8	0.9	1
Current Status of the Disabled	Total number of the disabled employed	people	49	58	60
Employment Status	No. of turnovers	people	99	126	89
	No. of local recruits	people	130	115	212
	No. of local human resources recruited for early openings	people	25	39	33
Status for Maternity & Childcare Leave	Return rate after child-care leave	%	75	71	77.8
	Rate of working for over 12 months after return from leave	%	67	50	46.7
Human Resources Development	Total number of trainees	people	2,852	2,933	3,007
	Total training expenses	USD Million	2.79	2.38	2.11
	Training hours per individual	hour	101	102	105
Status of Ethical Management	Number of employees participating in ethical management training	people	2,852	2,933	3,007
	Number of violations of ethical practice	case	15	19	9
	Number of cases reported to the Ombudsman	case	325	296	404
	Number of cases with improvement and guidance after auditing	case	75	58	65
	Ethical level diagnosis	point	-	94	95
Status of Social Contribution Activities	Expenses for social contribution	USD Million	4.12	4.73	0.99
	No. of employees participating in volunteering	people	1,609	1,473	1,247
	No. of volunteering teams for social contribution	number	99	122	138
	Participation rate of employees in the matching grant	%	79	80	77
Status of Safety Management	Industrial accident rate	%	0.11	0.22	0.26
	Number of cases for the occurrence of critical disasters	case	4	3	1
Head Office-Led On-site Safety Inspection	Number of cases for on-site safety inspection	Number of times	3.1	4.2	6.1
	Total number of inspection	Number of times	315	578	662
	Number of cases for defective sites	number	5	2	15
Safety Training	Number of safety training courses	number	6	10	13
	Number of safety training graduates	people	1,064	3,629	3,769
Acquisition of Safety Managers	Ratio of regular workers as safety managers	%	29	32	32
Head Office Safety Support Group	On-site experienced safety monitoring managers	%	-	4	6
	Number of sites where the Head Office Safety Support Group was dispatched	number	-	10	18
	Number of cases where risks were discovered and removed	case	-	1,209	2,314
Mandatory Safety Qualification System for Project Managers	Ratio of Professional Safety Engineer qualification holders	%	-	1.5	7.7
	Ratio of Safety Engineer qualification holders	%	-	21.4	32.3
	Total ratio of safety qualification holders	%	-	22.9	40
Number of Inspection for Mobilized Equipment		Number of units	-	519	935
Activities for Equipment Safety and Management	Average years of using mobilized equipment and plants	year	12.8	9.6	9.3
	Average years of experience in tower crane installation and dismantlement team	year	8	16	15.7

GRI Index

GENERAL STANDARD DISCLOSURE

● Fully reported ● Partial reported ○ Not reported

GENERAL STANDARD DISCLOSURE				
Classification	G4	Indicators	Reporting Rate	Page and Answer
Strategy and Analysis	G4-1	Statement from the most senior decision-maker	●	6 ~ 7
	G4-2	Provides a description of key impacts, risks, and opportunities	●	6 ~ 7, 48
Organizational Profile	G4-3	Report the name of the organization	●	4
	G4-4	The primary brands, products, and services	●	8 ~ 46
	G4-5	The location of the organization's head office	●	2
	G4-6	The 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	●	40 ~ 41, 103
	G4-7	The nature of ownership and legal form	●	86 ~ 87
	G4-8	The markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries)	●	40 ~ 41
	G4-9	Scale of the organization	●	95, 97
	G4-10	Total workforce	●	97
	G4-11	The percentage of total employees covered by collective bargaining agreements	●	No labor union
	G4-12	The organization's supply chain	●	74 ~ 76
	G4-13	Any significant changes during the reporting period regarding the organization's size, structure, ownership, or its supply chain	●	Footnote on the same page.
	G4-14	Whether and how the precautionary approach or principle is addressed by the organization	●	88 ~ 89
	G4-15	List externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses	●	50 ~ 51
G4-16	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization	●	103	
Identified Material Aspects And Boundaries	G4-17	List all entities included in the organization's consolidated financial statements or equivalent documents	●	2
	G4-18	The process for defining the report content and the aspect boundaries	●	49
	G4-19	List all the material aspects identified in the process for defining report content	●	49
	G4-20	For each material aspect, report aspect boundary within the organization	●	49
	G4-21	For each material aspect, report the aspect boundary outside the organization	●	49
	G4-22	The effect of any restatements of information provided in previous reports, and the reasons for such restatements	●	Footnote on the same page.
	G4-23	Significant changes from previous reporting periods in the scope and aspect boundaries	●	None
Stakeholder Engagement	G4-24	List of stakeholder groups engaged by the organization	●	49
	G4-25	Basis for identification and selection of stakeholders with whom to engage	●	49
	G4-26	Organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group	●	49
	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, including through its reporting	●	49

GENERAL STANDARD DISCLOSURE				
Classification	G4	Indicators	Reporting Rate	Page and Answer
Report Profile	G4-28	Reporting period (such as fiscal or calendar year) for information provided	●	2
	G4-29	Date of most recent previous report (if any)	●	2
	G4-30	Reporting cycle (such as annual, biennial)	●	2
	G4-31	Provide the contact point for questions regarding the report or its contents	●	2
	G4-32	Report the 'in accordance' option the organization has chosen	●	2
	G4-33	Report the organization's policy and current practice with regard to seeking external assurance for the report	●	2
Governance	G4-34	Report the governance structure of the organization, including committees of the highest governance body	●	86 ~ 87
Ethics and Integrity	G4-56	Describe the organization's values, principles, standards and norms of behavior such as codes of conduct and codes of ethics	●	80 ~ 83

Specific Standard Disclosure

SPECIFIC STANDARD DISCLOSURE - ECONOMIC				
Classification	G4	Indicators	Reporting Rate	Page and Answer
Economic Performance	Generic DMA			52
	EC1	Direct economic value generated and distributed	●	95
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	●	60 ~ 62
	EC3	Coverage of the organization's defined benefit plan obligations	●	95
Indirect Economic Impacts	Generic DMA			77
	EC7	Development and impact of infrastructure investments and services supported	●	77 ~ 79
	EC8	Significant indirect economic impacts, including the extent of impacts	●	50 ~ 51, 77 ~ 79
Materials	EN1	Materials used by weight or volume	●	96
	EN2	Percentage of materials used that are recycled input materials	●	61, 96
Energy	EN3	Energy consumption within the organization	●	96
	EN4	Energy consumption outside of the organization	●	Not subject to management
	EN5	Energy intensity	●	0.3020TJ/person
	EN6	Reduction of energy consumption	●	59 ~ 62
	EN7	Reductions in energy requirements of products and services	●	59 ~ 61
	Water	EN8	Total water withdrawal by source	●
EN9		Water sources significantly affected by withdrawal of water	●	No water sources are significantly affected
EN10		Percentage and total volume of water recycled and reused	●	No amount used

SPECIFIC STANDARD DISCLOSURE - ECONOMIC				
Classification	G4	Indicators	Reporting Rate	Page and Answer
Emissions	EN15	Direct greenhouse gas (GHG) emissions (Scope 1)	●	96
	EN16	Energy indirect greenhouse gas (GHG) emissions (Scope 2)	●	96
	EN17	Other indirect greenhouse gas (GHG) emissions (Scope 3)	●	Not subject to management
	EN18	Greenhouse gas (GHG) emissions intensity	●	16.2098 tCO ₂ e / person
	EN19	Reduction of greenhouse gas (GHG) emissions	●	60 ~ 62
	CRE4	Greenhouse gas emissions intensity from new construction and redevelopment activity	●	Not subject to management
Effluents and Waste	EN23	Total weight of waste by type and disposal method	●	96
Compliance	EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	●	61
Employment	Generic DMA			63
	LA1	Total number and rates of new employee hires and employee turnover by age group, gender, and region	●	97
	LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	●	66 ~ 67
	LA3	Return to work and retention rates after parental leave, by gender	●	97
Labor/Management Relations	LA4	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	●	66
Occupational Health and Safety	Generic DMA			56
	LA5	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs	●	56 ~ 57, 97
	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	●	56 ~ 57, 97
	CRE6	Percentage of the organization operating in verified compliance with an internationally recognized health and safety management system	●	56 ~ 59
	LA7	Workers with high incidence or high risk of diseases related to their occupation	●	59
	LA8	Health and safety topics covered in formal agreements with trade unions	●	57
Training and Education	Generic DMA			63
	LA9	Average hours of training per year per employee, by gender, and by employee category	●	97
	LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	●	64 ~ 65
	LA11	Percentage of employees receiving regular performance and career development reviews, by gender and by employee category	●	66
Diversity and Equal Opportunity	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	●	97
Labor Practices Grievance Mechanisms	LA16	Number of grievances about labor practices filed, addressed, and resolved through formal grievance mechanisms	●	66
Human Rights Grievance Mechanisms	HR12	Number of grievances about human rights impacts filed, addressed, and resolved through formal grievance mechanisms	●	66
Local Communities	Generic DMA			77
	SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	●	79
	SO2	Operations with significant actual and potential negative impacts on local communities	●	79
Anti-corruption	Generic DMA			80
	SO4	Communication and training on anti-corruption policies and procedures	●	81 ~ 82
Product and Service Labeling	Generic DMA			68
	PR3	Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant products and services subject to such information requirements	●	Not applicable
	PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	●	Not applicable
	PR5	Results of surveys measuring customer satisfaction	●	70 ~ 71
	CRE8	Type and number of sustainability certification, rating and labeling schemes for new construction, management, occupation and redevelopment	●	60
Customer Privacy	PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	●	71

Third Party's Assurance Statement

To the Readers of LOTTE E&C Sustainability Report 2017:

Foreword

Korea Management Registrar Inc. (hereinafter "KMR") has been requested by of Lotte E&C to verify the contents of its Sustainability Report 2017(hereinafter "the Report"). LOTTE E&C is responsible for the collection and presentation of information included in the Report. KMR's responsibility is to carry out assurance engagement on specific data and information in the assurance scope specified below.

Scope and standard

LOTTE E&C describes its efforts and achievements of the sustainability management activities in the Report. KMR performed a Type 2, moderate level and limited assurance using AA1000AS (2008) as assurance standards. KMR's assurance team (hereinafter "the assurance team") evaluated the adherence to principles of Inclusivity, Materiality and Responsiveness, and the reliability of the selected GRI G4 indices as below, where professional judgment of the assurance team was exercised as materiality criteria.

- G4 Reporting Principles
- General Standard Disclosures
- Specific Standard Disclosures
- Generic DMA of each of following material indicators of aspects
 - Economic Performance: EC1, EC2, EC3
 - Indirect Economic Impacts: EC7, EC8
 - Employment: LA1, LA2, LA3
 - Occupational Health and Safety: LA5, LA6, LA7, LA8
 - Training and Education: LA9, LA10, LA11
 - Local Communities: SO1, SO2,
 - Anti-corruption: SO4
 - Product and Service Labeling: PR3, PR4, PR5
- Construction and Real Estate Sector Disclosures: CRE4, CRE6, CRE8

This Report excludes a data and information of joint corporate, contractor etc. which is outside of the organization, i.e. LOTTE E&C, among report boundaries.

Our approach

In order to verify the contents of the Report within an agreed scope of assurance in accordance with the assurance standards, the assurance team has carried out an assurance engagement as follows:

- Reviewed overall report
- Reviewed materiality test process and methodology
- Reviewed sustainability management strategies and targets
- Reviewed stakeholder engagement activities
- Interviewed people in charge of preparing the Report

Our conclusion

Based on the results we have obtained from material reviews and interviews, we had several discussions with LOTTE E&C on the revision of the Report. We reviewed the Report's final version in order to confirm that our recommendations for improvement and our revisions have been reflected. When reviewing the results of the assurance, the assurance team could not find any inappropriate contents in the Report to the compliance with the principles specified below. Nothing has come to our attention that causes us to believe that the data included in the verification scope are not appropriately presented.

| Inclusivity

Inclusivity is the participation of stakeholders in developing and achieving an accountable and strategic response to sustainability.

- LOTTE E&C is developing and maintaining stakeholder communication channels in various forms and levels in order to make a commitment to be responsible for the stakeholders. The assurance team could not find any critical stakeholder LOTTE E&C left out during this procedure.

| Materiality

Materiality is determining the relevance and significance of an issue to an organization and its stakeholders. A material issue is an issue that will influence the decisions, actions, and performance of an organization or its stakeholders.

- LOTTE E&C is determining the materiality of issues found out through stakeholder communication channels through its own materiality evaluation process, and the assurance team could not find any critical issues left out in this process.

| Responsiveness

Responsiveness is an organization's response to stakeholder issues that affect its sustainability management performance and is realized through decisions, actions, and performance, as well as communication with stakeholders.

- The assurance team could not find any evidence that LOTTE E&C's counter measures to critical stakeholder issues were inappropriately recorded in the Report.

We could not find any evidence the Report was not prepared in accordance with the 'Core Option' of GRI G4.

Recommendation for improvement

We hope the Report is actively used as a communication tool with stakeholders and we recommend the following for improvements.

■ It is desirable that Lotte E&C is running a sustainability management department and actively utilize sustainability report as a communication tool with stakeholders.

In the future, it is recommended that to describe efforts to increase profits/productivity and reduce risk from the investor's perspective.

■ The report highlights efforts to deliver the latest topics in detail through KPIs:

Introduction of the Concept of Sustainable Development Goals, introduction of LOTTE World Tower which is an intensive aggregation of the latest construction technologies, strengthened safety management activities, efforts to implement eco-friendly construction sites, enhancement of quality competitiveness, implementation of high value added technologies and social contribution activities centered on Charlotte Volunteer Group.

■ In the future, it is recommended that you reflect on the computerized system, upgrade the standard data format, and take full advantage of Interactive PDF to makes it easier and more accurate to aggregate the data contained in the report and to become a representative report for the construction industry that is available to more stakeholders.

Our independence

With the exception of providing third party assurance services, KMR is not involved in any other LOTTE E&C's business operations that are aimed at making profit in order to avoid any conflicts of interest and to maintain independence.

August, 10th, 2017

CEO Ki Ho Park

Memberships and Participating Associations / Awards

Associations and Memberships

Association			
Construction Association of Korea	Construction & Economy Research Institute of Korea	Korea Housing Association	Architectural Institute of Korea
The Korea Construction New-Technology Association	Korean Geotechnical Society	The Korea Chamber of Commerce & Industry	The Korea Institute of Building Construction
Korea Railway Construction Engineering Association	Society of Air-Conditioning and Refrigerating Engineers of Korea	Korean National Committee on Irrigation and Drainage	The Korea Railway Association
The Korean Institute of Electrical Engineers	Korea Road Association	Korea Concrete Institute	Korean Society of Civil Engineers
Korea Fire Safety Association	Korean Tunneling and Underground Space Association	Construction Safety Manager Committee	Korea Electrical Contractors Association
International Contractors Association of Korea	Maeil Business Newspaper S.E.L Club	Korea Information & Communication Contractors Association	American Concrete Institute (ACI)

Awards & Prizes (2016 ~)

Date	Award	Organization
2016.02.22	Contribution to the development of overseas construction	Chairman of International Contractors Association of Korea
2016.02.23	Contribution to the development of the engineering industry	Minister of Trade, Industry and Energy
2016.04.30	Contribution to the advancement of construction technologies and culture	Architectural Institute of Korea
2016.06.17	Industrial Service Medal on the Construction Day in 2016	President of Korea
2016.06.17	Commendation on the Construction Day in 2016	Minister of Land, Infrastructure and Transport
2016.07.07	The grand prize at 2016 Korea Service Awards (Apartment housing category) (receiving the prize for 15 consecutive years)	Korean Standards Association
2016.10.04	Contribution to housing repairs for the elderly living alone and environmental improvement in elderly care facilities	Mayor of Daegu Metropolitan City Government
2016.11.17	Contribution to creating an environment for R&D for construction technologies	Speaker of National Assembly
2016.11.17	Selected for best practices in the category of environmental plants with construction technologies	Minister of Land, Infrastructure and Transport
2016.12.08	Contribution to the prevention of construction disasters and creation of a safety culture	Minister of Employment and Labor
2016.12.30	Commendation for the merit for Yen Vien-Lao Cai Railway Upgrading Project	Division of Railway under the Ministry of Transport, Vietnam
2017.07.06	The grand prize at 2017 Korea Service Awards (Apartment housing category) (receiving the prize for 16 consecutive years)	Korean Standards Association

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