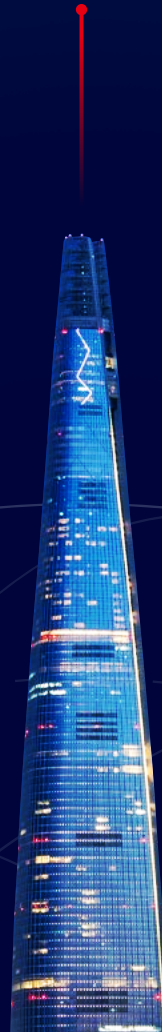


# Beyond Dimension

2022 LOTTE E&C SUSTAINABILITY REPORT



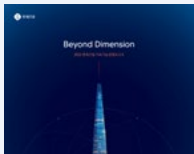
# Beyond Dimension

## ABOUT THIS REPORT

LOTTE E&C has published a Sustainability Report every year since 2013 as a means of transparently disclosing its sustainability management activities and performance results to its stakeholders. This report classifies major stakeholders into the environment, executives and employees, partner companies, customers, and local communities and publishes ESG activities and their performance.

### 2022 Cover Story

LOTTE WORLD TOWER, a representative landmark building built by LOTTE E&C, has substantiated our advanced technology and grand passion beyond dimension, not just beyond differences. The building demonstrates the strong determination of LOTTE E&C to provide greater value to the customers and to grow as a sustainable company based on our unique competitiveness.



### Contact Point

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Division, LOTTE E&C

**Tel** 02. 3483. 5928

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**Website** <http://www.lottecon.co.kr>

### Reporting Period and Scope

The quantitative data in this report was obtained from LOTTE E&C's work sites from January 1 to December 31, 2021. The data for qualitative activities and performance information was collected from the period of January 1, 2021, to June 30, 2022.

### Reporting Standards

This report has been prepared in accordance with the Core Option suggested by the Global Reporting Initiative (GRI) Standards. Taking into consideration the guidelines of the Sustainability Accounting Standards Board (SASB), the report shares sustainability issues which may greatly influence the financial status of engineering and construction industry.

### Reporting Cycle

Every year  
(the latest one was published in November 2021.)

### Reporting Assurance

This report was independently verified by a third-party entity to ensure the level of credibility, reliability and completeness. In addition, Assurance Standard 1000 (AA 1000) has been reflected in preparing the report.

# Contents

## Introduction

CEO Message	004
CSO Message	005
About LOTTE E&C	006

## Our Business Performance

Housing	011
Architecture	014
Civil works	017
Plants	020
Overseas	023

## ESG Management System

ESG Governance	027
ESG Strategy	028
Interview with an ESG Advisor	029
Materiality Assessment	030
Management Approach	031
Communication with Stakeholders	032

## ESG Actions for Stakeholders

For Our Planet	034
Green Buildings That Care the Earth	
Environmental Management   Research & Development	
For Our Employees	046
Happy Employees who Continue to Develop Themselves	
Safety & Health   Human Capital Development   Welfare Benefits	
For Our Partners	065
Win-Win Relations with Partner Companies	
Shared Growth	
For Our Customers	072
Customer Value   Quality Management	
For Our Communities	077
Where Everybody Prospers   Community Engagement	

## ESG Fundamentals

Governance	085
Ethics	087
Information Security	090
Risk Management	093
Compliance	094

## Appendix

ESG Data Book	096
GRI Standards Index	109
SASB Index	114
Independent Assurance Statement	116
Occupational Health and Safety Management Systems	118
Code of Conduct for LOTTE Employees	119
Memberships in Associations and Awards	120

## CEO Message



**We will continue to implement solid strategies for sustainable management and move forward to become a leading company in ESG initiatives.**

### Dear valued stakeholders,

In the midst of the unprecedented COVID-19 pandemic and continued uncertainties in the global economy, LOTTE E&C, as a member of the LOTTE GROUP, has moved forward with corporate sustainability initiatives under the group mission of 'We enrich people's lives by providing superior products and services that our customers love and trust' and the vision of 'Lifetime Value Creator.' Through the LOTTE E&C Sustainability Report 2022, we intend to communicate with our customers and stakeholders about the sustainable values that we have jointly achieved despite challenging business environments.

LOTTE E&C is enhancing its capabilities as a comprehensive business developer in the areas of housing, architecture, civil works and plants in both domestic and overseas markets. The company offers outstanding quality and unique customer experience across the entire product life cycle from feasibility studies at the initial stage, business plan development, design, procurement, construction, project management, post-construction facility's operation to financing. Furthermore, we intend to achieve sustainable growth by continuously discovering additional sources for growth momentum, such as expanding to overseas markets, strengthening EPC capabilities in plants, and winning more contracts in green infrastructure.

With the newly established Environment, Society, and Governance (ESG) Team, LOTTE E&C has laid a solid foundation to fully implement its ESG management objectives. In response to current global policies in curbing carbon dioxide emissions and requirements for building

zero energy buildings (ZEB), LOTTE E&C has created an Eco Energy Task Force to secure green technologies.

LOTTE E&C values our people above all. In an effort to create a safe work environment without loss of life, one of the most important issues in the construction industry, we have raised the status of the Safety and Health Division to the Safety and Health Department. We have also formed a Safety Team within the new Department to further prevent any possible on-site safety accidents. Following extensive investment in safety and health, the company has opened 'Safety On,' its new safety and health training center. LOTTE E&C has employed and nurtured people of talent from various fields, lubricated the gears of innovation to create an effective workplace culture, reorganized its systems to significantly improve quality, internalized management ethics, strengthened win-win partnerships with contractors, and fulfilled corporate social responsibilities in relevant communities.

LOTTE E&C is deeply grateful to our stakeholders. We will continue to encourage unlimited creativity and further develop the spirit of challenge so as to maintain its sustainable growth in the future.

Thank you.

August 31, 2022

President and CEO **Suk Joo Ha**

*HA. Suk Joo*



## CSO Message



**Safety is not something you can negotiate or surrender. We will secure the safety of all workers by conducting safety activities and making needed investments.**

### Dear valued stakeholders,

It is becoming increasingly important for companies to fulfill their social roles and responsibilities for safety with the establishment of the Serious Accidents Punishment Act in 2022. Having declared safety and health management as a top priority with our philosophy of respect for life, LOTTE E&C strives to achieve sustainable growth by making a continuous investment in safety and health management and providing a workplace without loss of life.

In an effort to strengthen preventive measures for safety accidents, we have established safety and health management systems and their implementation procedures. The company has expanded an organization devoted to safety and health that directly reports to the CEO, and has formed a Safety Team in each of its business divisions.

In addition, we have recently established an Employees' Council for Safety and Health, which consists of key executives to support safety and health in construction sites through a timely decision-making process. The company continues to expand its investment budget for safety management and introduce SMART technologies for safety and health, such as wearable cameras, collision-prevention systems by recognizing human bodies and more.

Through our Safety Communication Center, Safety Communication Day, and Safety and health management meetings, LOTTE E&C has established a process to listen to the voices of our workers, find causes that compromise safety, and make continuous improvements. We monitor the work of our employees in charge of safety and health management through internal assessments, BSC

evaluations, and evaluations of work responsibilities to increase the level of safety management.

Having introduced a capability evaluation system for managing environment, society, governance (ESG) and safety capabilities, a process to support partner companies to appoint employees in charge of safety management, and training for the Serious Accidents Punishment Act, we continue to support our partner companies so that they can strengthen their capabilities for managing safety and health.

With the newly-opened Safety On, a safety and health experience center, we strive to raise the awareness of safety by providing more education and training for employees and workers so that they can have better understanding of possible risk factors and coping skills. Furthermore, we continue to come up with various projects and award opportunities for spreading safety culture to enhance the general safety and health activities.

LOTTE E&C endeavors to become a leading company that takes the initiative in safety culture by continuously carrying out preventive measures for safety accidents and making more investment. We will continue to provide a safe construction site where all workers can work safely.

Thank you.

August 31, 2022

Head of Safety and Health Department & Director

**Jin Kim**

*Kim Jin.*

# About LOTTE E&C

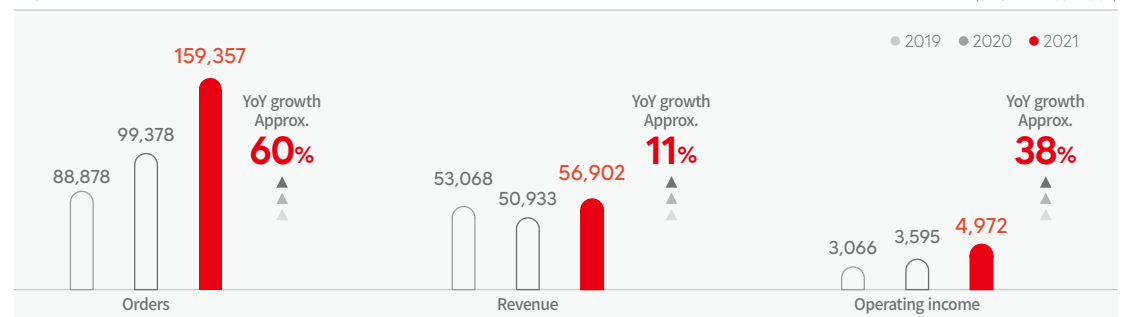
## Company Overview

Since 1978, when becoming one of the member of LOTTE GROUP, LOTTE E&C has moved forward with the group mission of ‘We enrich people’s lives by providing superior products and services that our customers love and trust’ and the vision of ‘Lifetime Value Creator’ to provide greater life value to people in the global community. From apartment houses, hotels, department stores for living and daily lives to roads, bridges and plants for industrial and social infrastructure, LOTTE E&C has proved its competitiveness across the sections in construction industry. In 2021, the company ranked 7th in construction capability evaluation done by the Ministry of Land, Infrastructure, and Transport.

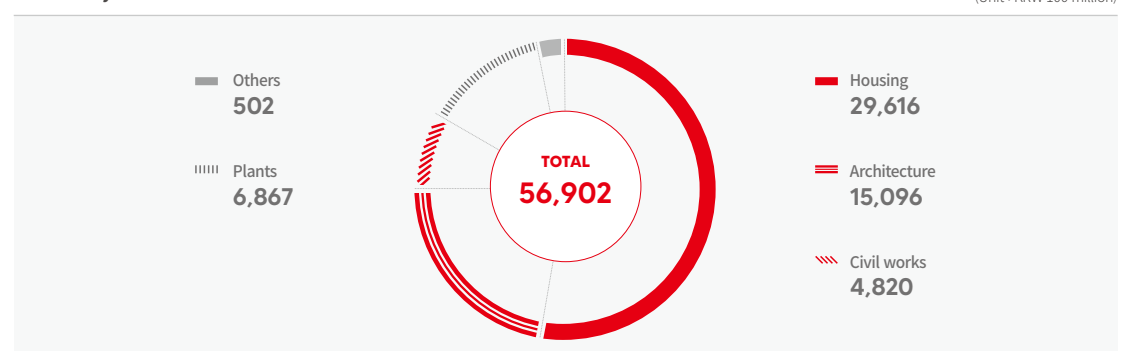
(as of December. 31, 2021)

Company name	LOTTE Engineering & Construction Co., Ltd.
Date of Establishment	February 3, 1959 (Acquired by the LOTTE Group in 1978)
CEO	Suk Joo Ha (Inaugurated in March 2017)
Head Office	29, Jamwon-ro 14-gil, Seocho-gu, Seoul, Korea
Key Businesses	Housing, Architecture, Civil Works, Plants, Overseas businesses
Major Shareholder	LOTTE Chemical Corporation (43.79% stake)
No. of Employees	3,568 employees
Branches / Subsidiaries	1 domestic branch, 6 overseas branches 5 overseas subsidiaries 3 overseas offices
Orders	KRW 15.9357 trillion
Revenue	KRW 5.6902 trillion
Operating Income	KRW 497.2 billion
Credit Rating	A+ (Korea Investors Service Corporate Bond (September 1, 2021))

### Key Financial Performance



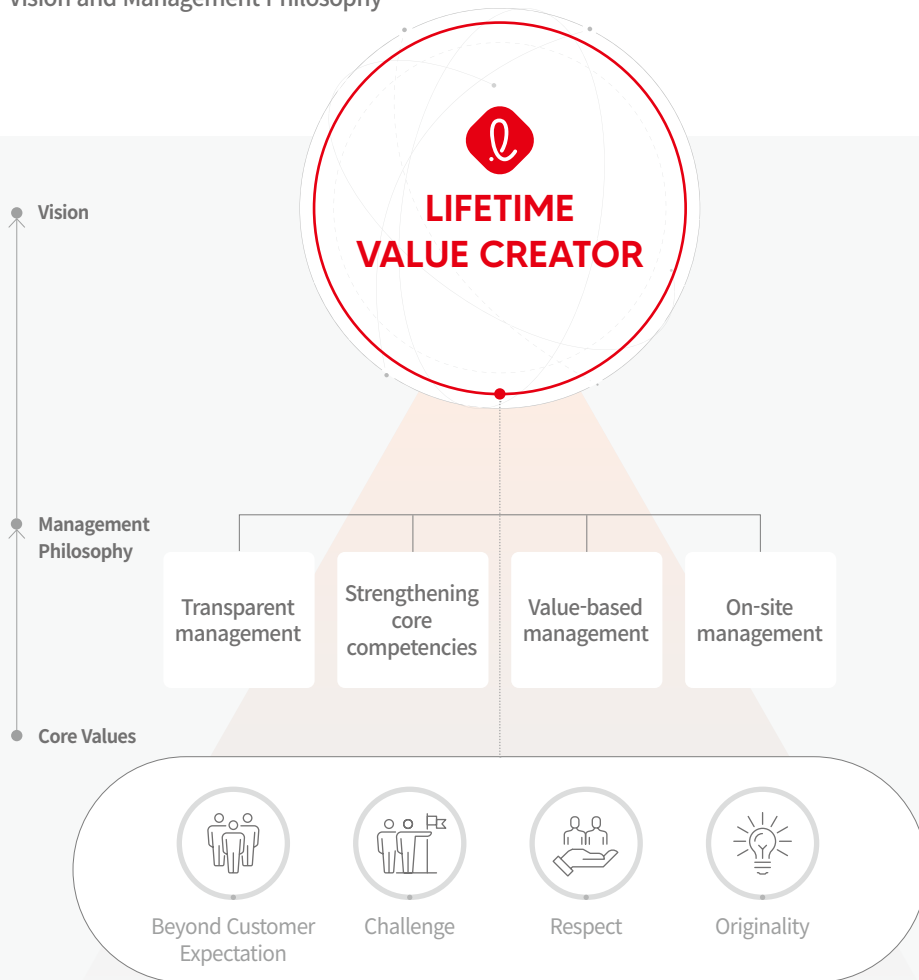
### Revenue by Business in 2021



## LOTTE E&C Philosophy

Under the LOTTE GROUP Vision of ‘Lifetime Value Creator’ for the entire life cycle, LOTTE E&C selects a new slogan every year and accordingly pushes forward with key tasks. Pursuing best practices and aiming to become the best company in every area, we have chosen the slogan for 2021 as ‘The year for strengthening the foundation for sustainable growth through innovation across the organization.’

### LOTTE GROUP Vision and Management Philosophy

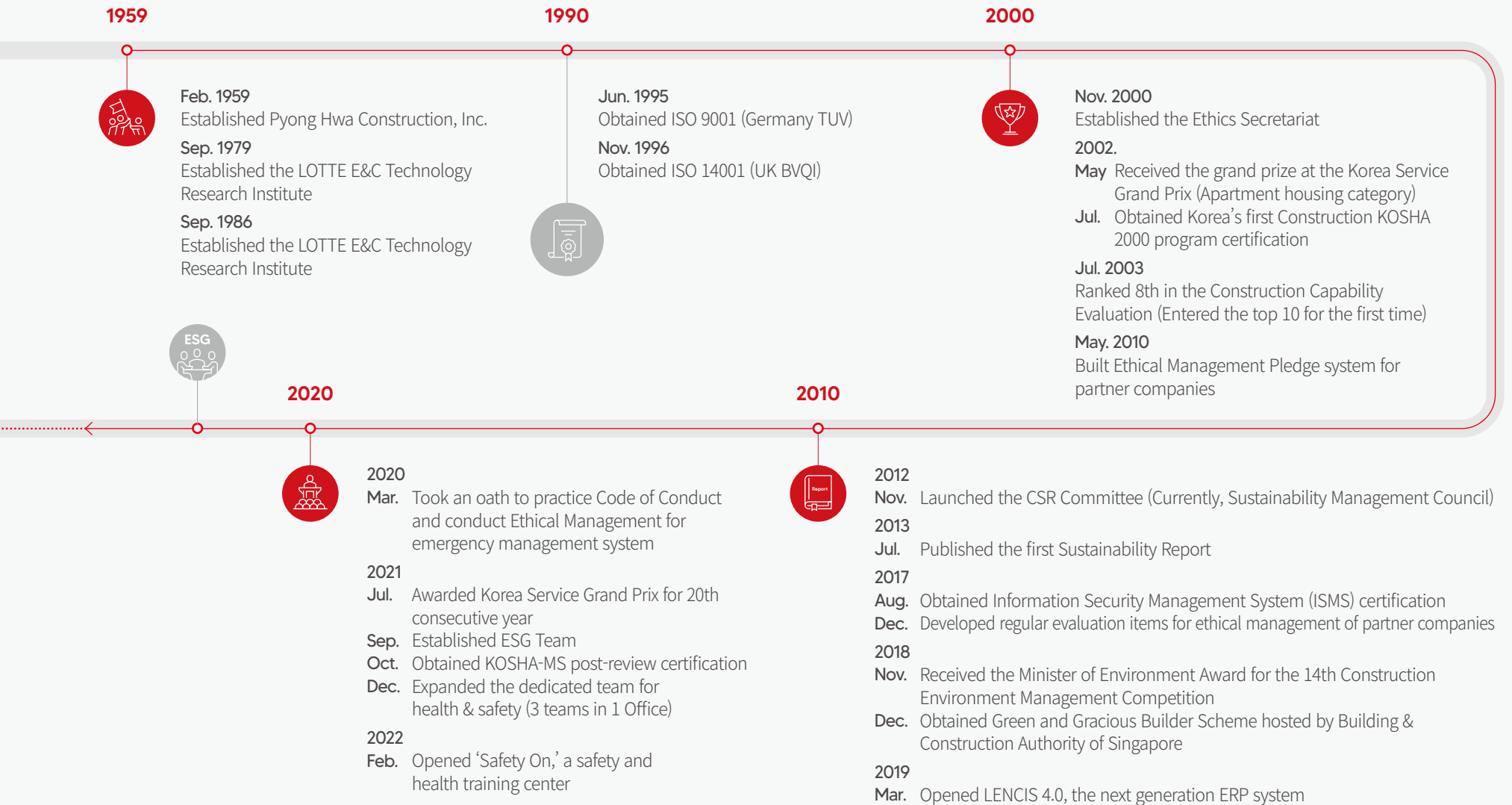


### LOTTE E&C VISION 2030



## Sustainable Management History

LOTTE E&C was founded in 1959 and become one of the member of LOTTE GROUP in 1978. Under the group mission of ‘We enrich people’s lives by providing superior products and services that our customers love and trust,’ LOTTE E&C intends to fulfill its responsibilities as a corporate citizen to contribute to sustainable growth.

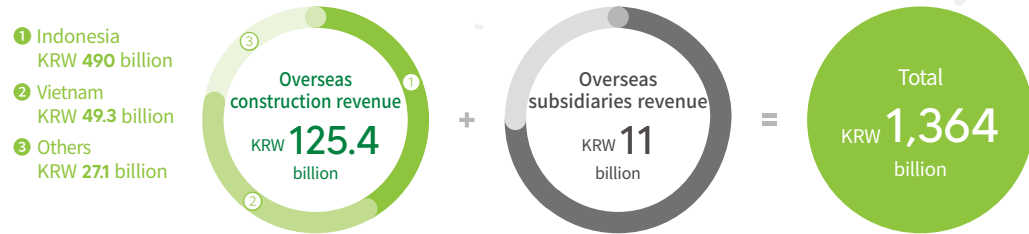


## Global Network

With its global network of one domestic branch, five overseas branches and five subsidiaries, LOTTE E&C continues to pioneer global markets around the world. From neighboring countries in Southeast Asia, LOTTE E&C continues to secure increased project orders with multifaceted business activities. Utilizing our long-established know-how in architecture and housing areas, we are taking part in high-quality projects.



### Overseas Revenue



### Overseas Office

**5** subsidiaries  
**3** countries

Beijing Co., Ltd  
Shenyang Co., Ltd  
Vietnam Co., Ltd  
LOTTE Land, Vietnam  
LOTTE Land, Indonesia



### Branch Office

**Six** branches  
in **six** countries

Russia  
Pakistan  
Japan  
Singapore  
Indonesia  
Australia



### Overseas Office

**Three** offices  
in **three** countries

Representative Office, Vietnam  
PO, Qatar (Project office)  
PO, Cambodia (Project office)

# Our Business Performance

Housing	011
Architecture	014
Civil works	017
Plants	020
Overseas	023



# Housing

## Overview

With our apartment housing brand, 'LOTTE Castle,' LOTTE E&C conducts housing business in apartments, residential and commercial complexes, and studio flats. We also conduct businesses in various fields, such as urban improvement (redevelopment and reconstruction), development projects (complex and housing developments), asset management services (lease business, public offering), self-financed projects, and others. The company offers outstanding quality and a unique customer experience across the entire product life cycle, from feasibility studies at the initial stage, marketing activities, sales to post-construction facility management. To respond to the paradigm shift in the housing market, we have been operating "Eyes", an asset management service platform for residents, since 2018. In 2019, we launched "LEEL", a high-end housing brand.

## 2021 Key Performance



**Korea Service Grand Prix Awards**  
for 20th consecutive year  
(2021. 7)



Ranked joint third in construction category (apartment house) at the **National Customer Satisfaction Index (NCSI)**

### Cheongnyangni District 4 LOTTE Castle SKY-L65 (Jan. 2019 - Jul. 2023)

**Features** A landmark complex in the neighborhood of Cheongnyangni Station, designed to allow various ways of space utilization depending on the makeup of family members

**Construction size** 7 stories below ground and 65 stories above, 4 buildings, 1,425 units

Unit : KRW 100 million

	2019	2020	2021
Orders	43,375	55,662	97,630
Revenue	30,219	25,575	29,616



# Housing

- 01 ① Dec. 2021 ~ Jun. 2025  
② 4 stories below ground and 35 stories above, 9 buildings, 1,261 units
- 02 ① CP1 : May. 2021 ~ Sep. 2024  
CP2 : May. 2021 ~ Jul. 2024  
CP3 : Aug. 2022 ~ Dec. 2022  
② CP 1~3 : 7 stories below ground and 15 stories above / business facilities, retail buildings, residence, etc.
- 03 ① Aug. 2020 ~ Sep. 2022  
4,5BL : 2020.11 ~ 2022.12  
② 3BL : 2 stories below ground and 19 stories above, 4 building in total (by LOTTE E&C)  
4, 5BL : 3 stories below ground and 19 stories above, 15 building in total (by LOTTE E&C)
- 04 ① 2019.07 ~ 2022.09  
② 3 stories below ground and 36 stories above, 9 buildings, 935 units
- 05 ① Apr. 2021 ~ Aug. 2025  
② 5 stories below ground and 59 stories above, 2 buildings, 1,221

① Construction period ② Construction size

01	03
	04
02	05



Housing reconstruction and maintenance project of Cheongdam Samik Apartment (Cheongdam LEEL)



2nd of Hwaseong Mangpo District 4, 3-5BL



Development project of Magok MICE complex



Housing redevelopment and maintenance project in Gaya District 3



Multipurpose development projects of high-rise building in North Port, Busan



## Housing Division ESG Integration

# Supplying more fuel cell-powered houses



**Sangdo Station LOTTE Castle Park L (New construction project of apartment houses in Sangdo station's sphere of influence)**

- Construction period Jul. 2019 - Nov. 2021
- Construction size site area pf 59,458㎡, gross floor area of 56,830㎡, B2F ~ 4F

### UN SDGs

- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
- 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking actions in accordance with their respective capabilities



LOTTE E&C contributes to the government's effort to spread new energy sources by providing fuel-cell powered houses and increasing energy efficiency in buildings. The government policy on zero energy buildings (ZEB) requires that from 2025 at least 20% of energy production should come from new renewable energy sources for apartment houses with 30 households or more. One of the advantages of fuel cell-powered houses is that they can be built in small areas where solar and wind power technologies cannot be applied. In addition, as they are free from seasonal and climate effects, fuel cell-powered houses can be operated 365 days a year. Adding sustainable values to housing, LOTTE E&C's Technology R&D is expediting the development of related technologies by demonstrating blue hydrogen fuel cells for buildings and coming up with items specified for ZEBs and apartment houses.

### Performance on fuel cell application

Status	Project Name	Capacity
Construction completed	Geumcheon LOTTE Castle Gold Park TOWER III, IV	150Kw
	Doksan enterprise type rental house	20Kw
	New construction project of apartment houses in Sangdo station's sphere of influence	30Kw
Under construction	Wonhyo-ro youth housing project	30Kw
	Sinbanpo XIII, XIV	23Kw
	Sanggye 6	5Kw
	Hive L in Suji-gu Office	7Kw
	Magok MICE CP2, CP3-1	77Kw
<b>Total</b>		<b>342Kw</b>



# Architecture

## Overview

As the construction industry generates more high value-added, creates more jobs and can better stimulate economy compared to other industries, it supports economic growth by building various infrastructures and supporting the production activities of other industries. From the policy perspective, the industry plays a leading role in revitalizing the economy from economic recession. In an effort to strengthen its competitiveness in public and private sectors, LOTTE E&C has continuously secured projects for special facilities such as airports and ports. The company is also trying to increase its chances of winning projects with high growth potential, such as knowledge industry centers, complex development and logistics centers. For revenue management, we focus on business profitability when trying to win a contract. We intend to improve profitability by ensuring better management in large and technologically-intensive work sites in order to decrease costs and risks.

## 2021 Key Performance



**2021 Industrial Safety and Health Week**  
 Grand prize in Best Practice Presentation Contest  
 (Jul. 2021)

### LOTTE World Tower (Nov. 2010 - Feb. 2017)

**Construction size** 6 stories below ground and 123 stories above, gross floor area of 420,310m<sup>2</sup> (total 805,872m<sup>2</sup>)

### LOTTE World Mall (Nov. 2010 - Oct. 2014)

**Features** Multiple complex boasting a range of facilities including a duty-free shop, shopping malls, hypermarkets, cinema, aquarium, and a concert hall

**Construction size** size 6 stories below ground and 12 stories above, gross floor area of 385,562m<sup>2</sup> (total 805,872m<sup>2</sup>)

Unit : KRW 100 million

	2019	2020	2021
Orders	26,836	25,532	31,953
Revenue	12,314	13,136	15,096





# Architecture



Suwon Yeongtong Shindong, Knowledge Industry Center



LOTTE Premium Outlet Time Villas, Uiwang

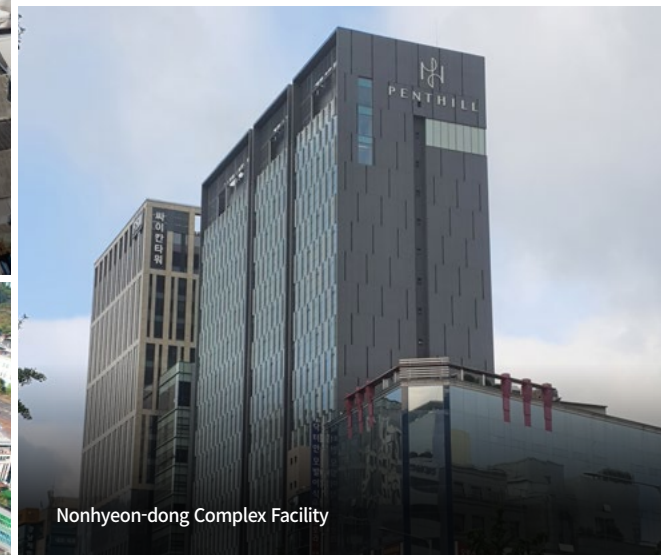
- 01 ① Jul. 2019 ~ Nov. 2021  
② Site area of 13,064m<sup>2</sup> / gross floor area of 84,466m<sup>2</sup> / B3F ~ 15F
- 02 ① Nov. 2018 ~ Nov. 2021  
② Site area of 12,502m<sup>2</sup> / gross floor area of 64,575m<sup>2</sup> / B3F ~ 23F
- 03 ① Sep. 2019 ~ Aug. 2021  
② Site area of 71,207m<sup>2</sup> / gross floor area of 176,790m<sup>2</sup> / B2F ~ 4F
- 04 ① Sep. 2019 ~ Aug. 2021  
② Site area of 2,704m<sup>2</sup> / gross floor area of 23,276m<sup>2</sup> / B5F ~ 17F
- 05 ① May 2019 ~ Mar. 2022  
② Site area of 500,767m<sup>2</sup> / gross floor area of 36,106m<sup>2</sup>

① Construction period ② Construction size

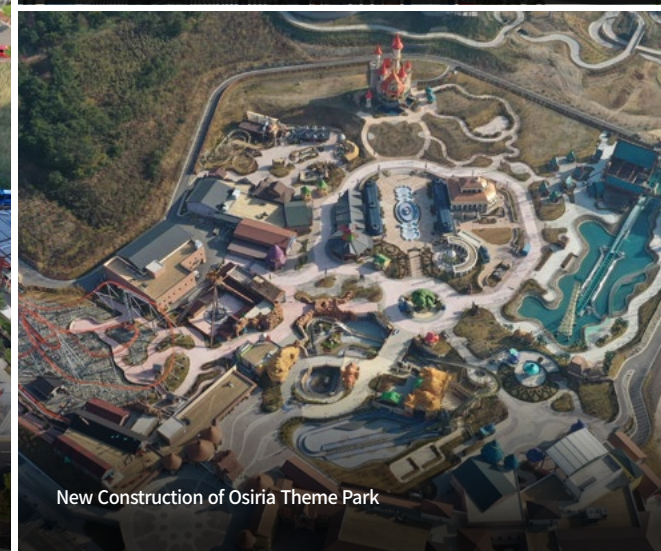
01	03
02	04
	05



Songdo Hyungji Global Fashion Complex



Nonhyeon-dong Complex Facility

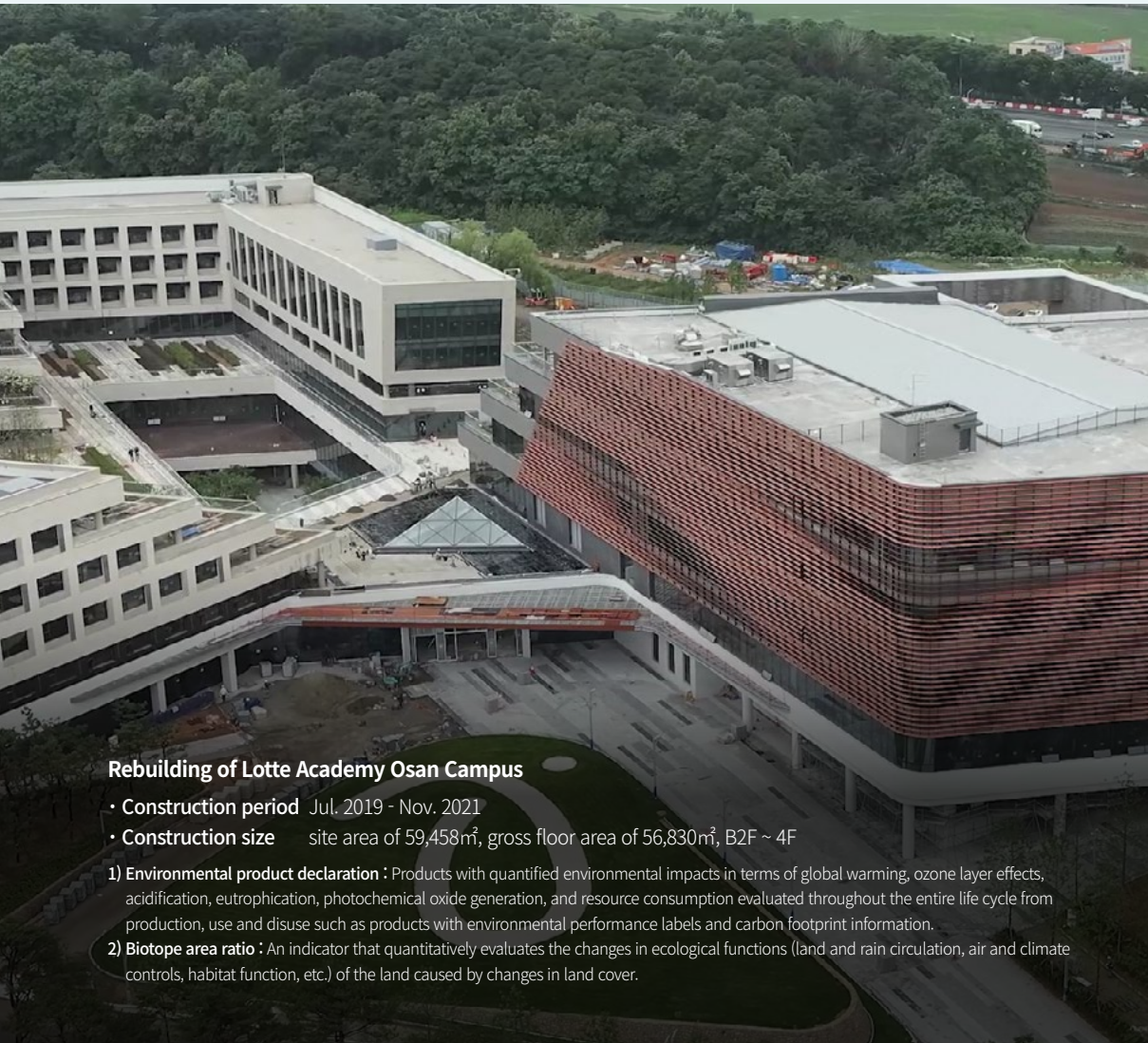


New Construction of Osiria Theme Park



# Architecture Division ESG Integration

## Minimizing Environmental Impacts with G-SEED



### Rebuilding of Lotte Academy Osan Campus

- **Construction period** Jul. 2019 - Nov. 2021
- **Construction size** site area of 59,458m<sup>2</sup>, gross floor area of 56,830m<sup>2</sup>, B2F ~ 4F

- 1) Environmental product declaration** : Products with quantified environmental impacts in terms of global warming, ozone layer effects, acidification, eutrophication, photochemical oxide generation, and resource consumption evaluated throughout the entire life cycle from production, use and disuse such as products with environmental performance labels and carbon footprint information.
- 2) Biotope area ratio** : An indicator that quantitatively evaluates the changes in ecological functions (land and rain circulation, air and climate controls, habitat function, etc.) of the land caused by changes in land cover.

### UN SDGs

- 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking actions in accordance with their respective capabilities
- 15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems

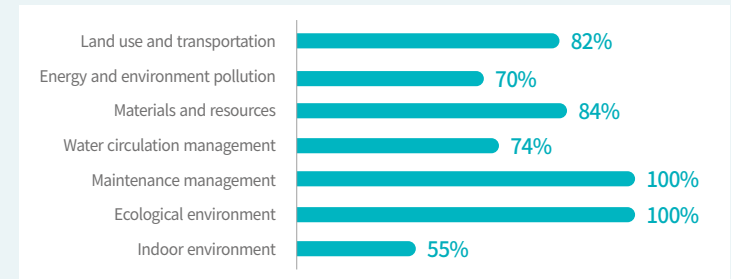


LOTTE E&C intends to reduce any environmental impacts in construction work by obtaining G-SEED certification. The Green Standard for Energy and Environmental Design (G-SEED) certifies buildings that contribute to conserving energy and bringing down environmental pollution throughout the entire construction cycle from design, construction, maintenance, and post-management. According to the report, ‘effect on greenhouse gas reduction of G-SEED buildings by using eco-friendly materials,’ released by the Korea Institute of Construction Technology, G-SEED buildings bring down 23.2% of GHG compared to the ones without G-SEED. When built with green construction materials, 28% of additional GHG can be reduced. Lotte Academy Osan Campus of LOTTE E&C obtained Green 1, the highest level of G-SEED and Energy Efficiency Rating 1 (1+). In particular, the Academy building used a total of 9 products with environmental product declaration (EPD)<sup>1)</sup> out of 4 major construction materials. Furthermore, the campus has 1.5 times the size of the minimum requirement for land (150 m<sup>2</sup>) and aquatic (75 m<sup>2</sup>) biotopes, while maintaining 40% of the biotope area ratio<sup>2)</sup>. An education and training facility for increasing creativity and communicating with each other for LOTTE employees, Lotte Academy Osan Campus shares the facility with partner companies as well.



### Number of G-SEED buildings provided

**4** sites (Architecture as of 2021)





# Civil Works

## Overview

LOTTE E&C is a total solution provider from project planning to post-construction maintenance for public financing programs (turnkey projects, technical proposal and contracted works) and private investment projects (PPP-BOT-BTO-BOO-BTL, etc.) in transportation and logistics facilities (roads, railways, subways, airports, ports, undersea tunnels), landfill and site renovation (housing sites, industrial complexes, port hinterland), water environmental facilities (water supply, water cleaning, and sewage & wastewater treatment), water installations (dams, waterways, hydroelectric power plant) at home and abroad. We are strengthening the planning, feasibility analysis, and technology for each business model in a variety of ways, focusing on marketable and differentiated products (land transportation facilities, site creation, water environment facilities, and ports) based on roads, railways, and subways, areas in which we have a strong track record of successful performance. For ground transportation facilities in particular, we have increased our competencies in the area of long-span bridges and tunnels. As part of ESG initiatives, we have developed various water treatment technologies in areas such as water supply, water purification, and wastewater treatment, both exclusively at our own Technology Research Institute and jointly with specialized external companies and institutions.

## 2021 Key Performance

### Geumgang Pedestrian Bridge

Nov. 2021 Korea Institute of Bridge and Structural Engineering  
KIBSE's Outstanding Structure Awards  
Dec. 2021 Maeil Business Newspaper  
First prize in the 17th Korea Civil Engineering and Construction Awards



### Contract Award for Private Investment Project of Isu-Gwacheon Multi-Tunnel



## Construction Project for Geumgang Pedestrian Bridge in Administrative City (Jul. 2017 ~ Dec. 2021)

**Features** Pedestrian bridge across the Geumgang river where citizen can walk and bike to go and from the Central Park and the three daily living areas in the Happy City

**Construction size** Pedestrian bridge (L): 1,651m, (B): 12-30m, Main bridge extension (L): 1,412m, (B): 12m (top layer), 7m (bottom layer)  
Starting Point Connection Bridge : L=119.5m, B=30m,  
Ending Point Connection Bridge : L=119.5m, B=30m



Unit : KRW 100 million

	2019	2020	2021
Orders	9,586	6,301	10,115
Revenue	6,021	4,260	4,820



# Civil Works

- 01 ① Sep. 2013 ~ Dec. 2018
  - ② Total extension: 1.413km(B=11.0m 15.7m, 2-lane road), Main span (cable-stayed bridge) L=280m Connection (advanced PSC beam bridge) L=340m
- 02 ① May 2012 ~ Sep. 2017
  - ② Total 7.82km, total 4 lanes, 9 bridges (1.6km), 1 tunnel (0.9km), 1 entrance facility, and 1 tollgate & office
- 03 ① Oct. 2015 ~ May 2019
  - ② Total 1.28km, width 40m (6-8 lanes), NATM tunnel (260m), open-cut tunnel (140m)
- 04 ① Jul. 2007 ~ Jul. 2014
  - ② Total 0.215km, total 6 lanes, bascule bridge
- 05 ① Feb. 2012 ~ Jul. 2014
  - ② Site area of 16,122m<sup>2</sup>, building area of 2,282m<sup>2</sup>, recycling facilities with capacity 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)

① Construction period    ② Construction size

01	03
	04
02	05



Sandaldo Suspension Bridge



Gyeongin Expressway 2 (Anyang ~ Seongnam) Section 4



Secho Station - Bangbae Road Connecting Road Construction, Seoripul Tunnel



Busan LOTTE Town Yeongdo Bridge



Improvement & Restoration Project Treated Sewage Water Recycling Facility in Pohang (Private Investment Project)



# Civil Works Division ESG Integration

## Contributing to Low-Carbon Circular Economy



### Installation Project for Generating Bioenergy from Food Waste in Changwon

- Construction period Jun. 30, 2020 - Oct. 29, 2022
- Construction size Anaerobic digestion facility (medium temperature, single-phase digestion tank (DBS), digestion gas facilities, wastewater treatment facilities (liquid corrosion method), odor removal facilities, sludge treatment facilities)

#### UN SDGs

- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix



LOTTE E&C provides total solutions for water environmental facilities (water supply, water cleaning, and sewage & wastewater treatment) from project planning to post-construction maintenance. From 2021, we have been constructing a bioenergy facility for wastewater in Changwon City. Once completed, the facility is expected to improve water quality and reduce greenhouse gases as it treats highly-concentrated organic wastewater in a stable and hygienic manner, contributing to creating a pleasant living environment and preventing secondary environmental pollution. In addition, wastewater can be used to produce bioenergy and 1,016kW of electricity every day. In close cooperation with our Technology Research Institute and jointly with specialized external institutions, LOTTE E&C plans to contribute to building sustainable infrastructure in line with a low-carbon circular economy.

#### Expectation when water treatment facility in Changwon is completed

Improvement in the quality of water discharged (mg/L)



BEFORE → AFTER

BOD	80,000	<b>1,883</b>
CODMn	130,000	<b>1,450</b>
SS	60,000	<b>400</b>
T-N	4,000	<b>654</b>
T-P	800	<b>29.7</b>



# Plants

## Overview

LOTTE E&C is involved in building national and industrial infrastructures in many areas domestically and overseas, ranging from petrochemical product manufacturing and power plants. We provide one-stop services as Project Manager, EPC Contractor, and IPP Developer throughout the value chain, covering project planning, technical and economic feasibility studies, design and engineering, procurement, construction, commissioning, project management, and O&M. In petrochemical industries, we are solidifying a large-sized project implementation system, expanding large-scale outsourced projects at home and abroad, and enhancing our competencies in winning EPC orders in connection with front-end engineering design (FEED) in eco-friendly areas such as secondary cell materials, plastic recycling, CO2 capture, and more. The company is also upgrading its IT systems and strengthening the overall capabilities of EPC by securing and training highly-skilled human resources to increase its competitiveness. Based on previous performance on LNG combined cycle power plants, we intend to increase our chance of winning the contract for large-scale LNG cogeneration plants, and find and diversify new businesses in new renewable energy sources such as wind, solar, hydrogen, and biomass.

## HPC Project (Sep. 2019 - Aug. 2021)

**Feature** Highly value-added project of heavy oil petrochemical facility  
**Construction size** 250,000 tons/year of HDPE, 250,000 tons/year of PP, 16 offshore tanks

## 2021 Key Performance



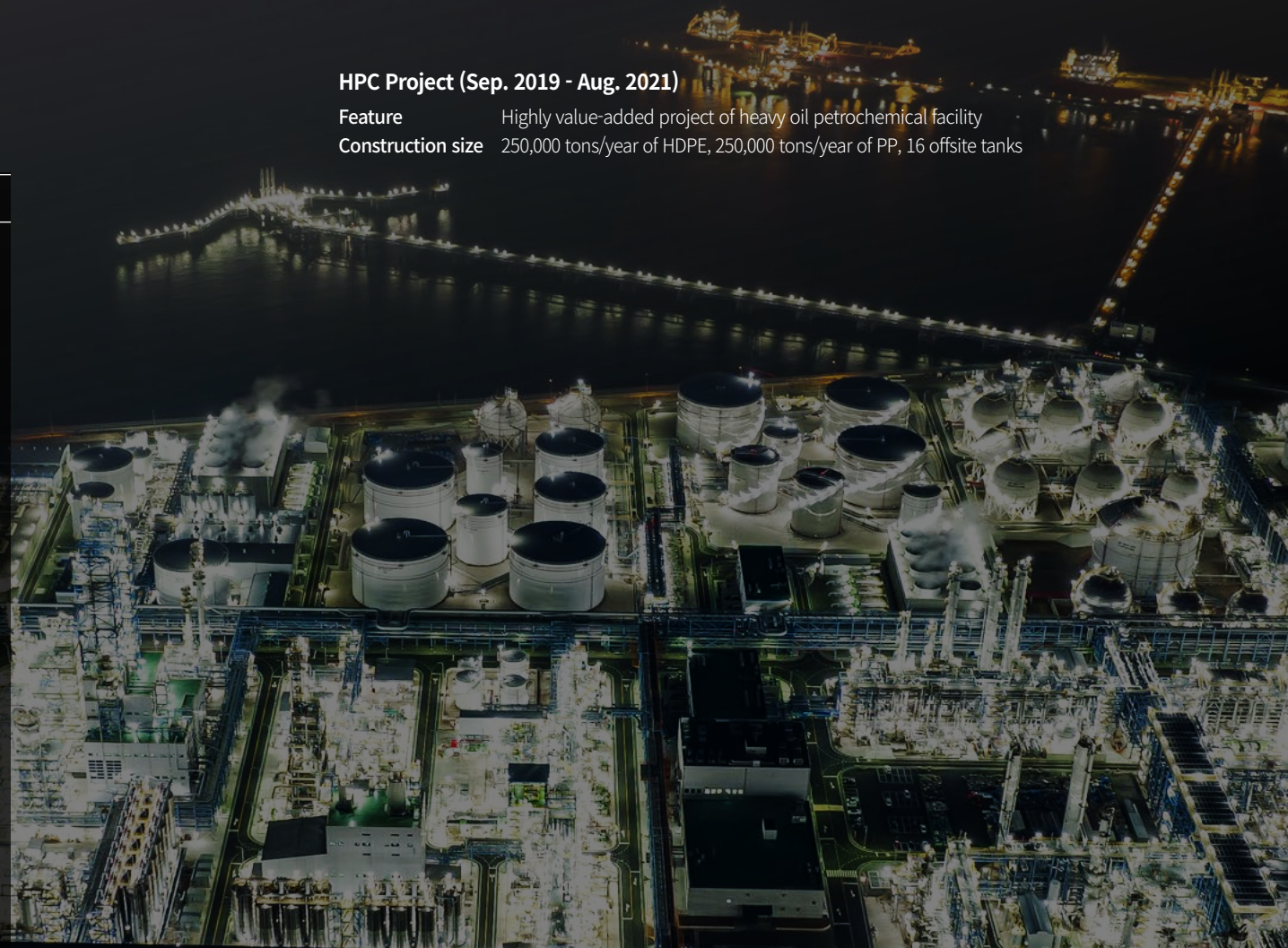
### Petrochemical plants

Winning more contracts in major areas of petrochemical plants such as NCC, polymers, etc., and expanding the participation in ESG projects



### Power plants

Winning the contract for a new renewable energy construction project



Unit: KRW 100 million

	2019	2020	2021
Orders	9,081	11,883	19,659
Revenue	4,279	7,677	6,867



# Plants

- 01 ① Jul. 2020 ~ Mar. 2022  
 ② 130,000 tons/year of BD, 20,000 tons/year of MTBE, 60,000 tons/year of BN1, 100,000 tons/year of TBA
- 02 ① Nov. 2020 ~ Oct. 2022  
 ② Carbon monoxide: 34,499Nm/h, Hydrogen: 26,709Nm/h, Acetic acid 240Ton/Day
- 03 ① Jan. 2022 ~ Apr. 2025  
 ② PP (250,000 tons/year), BD (140,000 tons/year), BTX (400,000 tons/year) 11 buildings for production plants, 34 tankages, 3 Berths and other utilities
- 04 ① November 2018 ~ May 2021  
 ② Combined Cycle Power plant (275MW) (GTG: 2 units, HRSG: 2 units, STG: 1 unit), Substation (150KV)
- 05 ① DH : Aug. 2016 ~ Jul. 2021, CHP: Nov. 2020 ~ May 2023  
 ② DH : 1 Heat only boiler 68.8 Gcal/h 1 thermal storage 20,000m<sup>3</sup> CHP : 495MW(1 GT 329.5MW, 1 ST 165.5MW 1 HRSG)

① Construction period ② Construction size

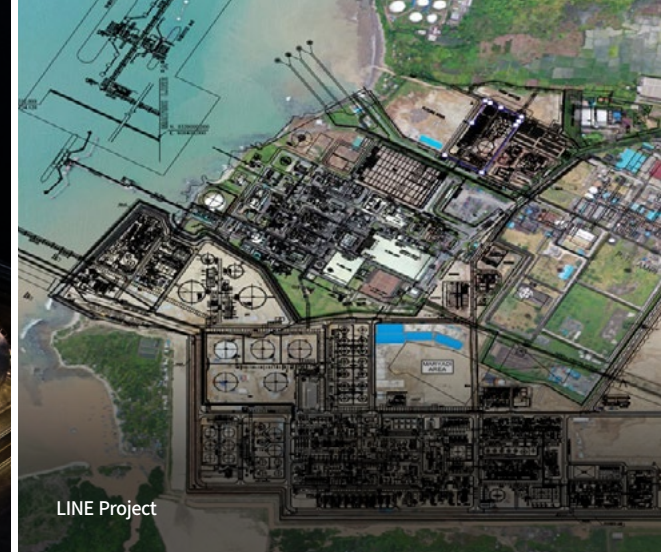
01	03
02	04
	05



LOTTE GS Chemical G1 Project



LOTTE INEOS Chemical C+D Project



LINE Project



Indonesia Riau GFPP Project



Naepo New Town Cogeneration DH/CHP Construction Project



# Plants Division ESG Integration

## Ensuring Plant Competency with Virtuous Cycle for Resources



### LOTTE CHEMICAL CR Project

- **Construction period** Aug. 25, 2021 - Aug. 31, 2022
  - **Construction size** New construction of BHET<sup>1)</sup> input facility for C-rPET<sup>2)</sup> production
    - Modification of batch plant for producing PIA<sup>3)</sup> polyol with stronger fire retardancy
- 1) BHET Bis-Hydroxyethyl Terephthalate, previous stage of PET  
 2) C-rPET Chemically recycled PET  
 3) PIA Purified Isophthalic Acid, materials for PET bottle, paint and road

### UN SDGs

- 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking actions in accordance with their respective capabilities
- 13.2 Integrate climate change measures into national policies, strategies and planning



In line with strengthening green businesses such as lithium-ion battery materials and CO<sub>2</sub> capture, LOTTE E&C is expanding a virtuous cycle system in using resources during construction work.

In collaboration with LOTTE CHEMICAL, we are taking the initiative in expanding the virtuous circle for resources by performing the Bis-Hydroxyethyl Terephthalate (BHET) pilot plant project (CR project) to convert waste plastics into C-rPET. We are also conducting front-end engineering design (FEED) and engineering, procurement, and construction (EPC) in the project to build a lithium-ion battery material factory (ES Project). The lithium-ion battery offers carbon-free power in the mobility sector and can be used for energy storage systems (ESS), contributing to solving the problem of renewable energy intermittency. Currently, we are working on carbon capture design in the Chungnam Daesan Plant project, and the captured CO<sub>2</sub> from this plant will be used as raw material for battery electrolyte organic solvent for electric vehicles. Keeping abreast with the current changes toward a low-carbon circular economy, LOTTE E&C intends to secure sustainable growth by strengthening green technological competencies in secondary cells, plastic recycling, CO<sub>2</sub> capture and increasing know-how in construction work.

### Performance of Green Plant

(From 2015 to 2022)



Accumulated

6



Revenue

KRW 588.6 billion



# Overseas

## Overview

As the domestic construction industry has reached its maturity stage with fierce competition and slower growth, it is critical to go into the global market. Overseas business, however, pose many risks as well as opportunities, and profitability is decreasing in simple construction work due to intense competition. Therefore, with the goal of achieving stable and robust growth from a long-term perspective, LOTTE E&C is focusing on improving its capabilities as a developer in investment-based development projects and on securing project orders where technological competence is key. In Vietnam and Indonesia, LOTTE E&C will expand highly-profitable projects whose asset values are likely to increase based on our accumulated competencies as a construction developer. In Singapore, we will strive to win contracts for building high-end landmark architecture and stable infrastructure. Not limiting our business in Asian countries, LOTTE E&C will continue to increase our presence in the North American and European markets as well.

## 2021 Key Performance



Continuous winning of orders



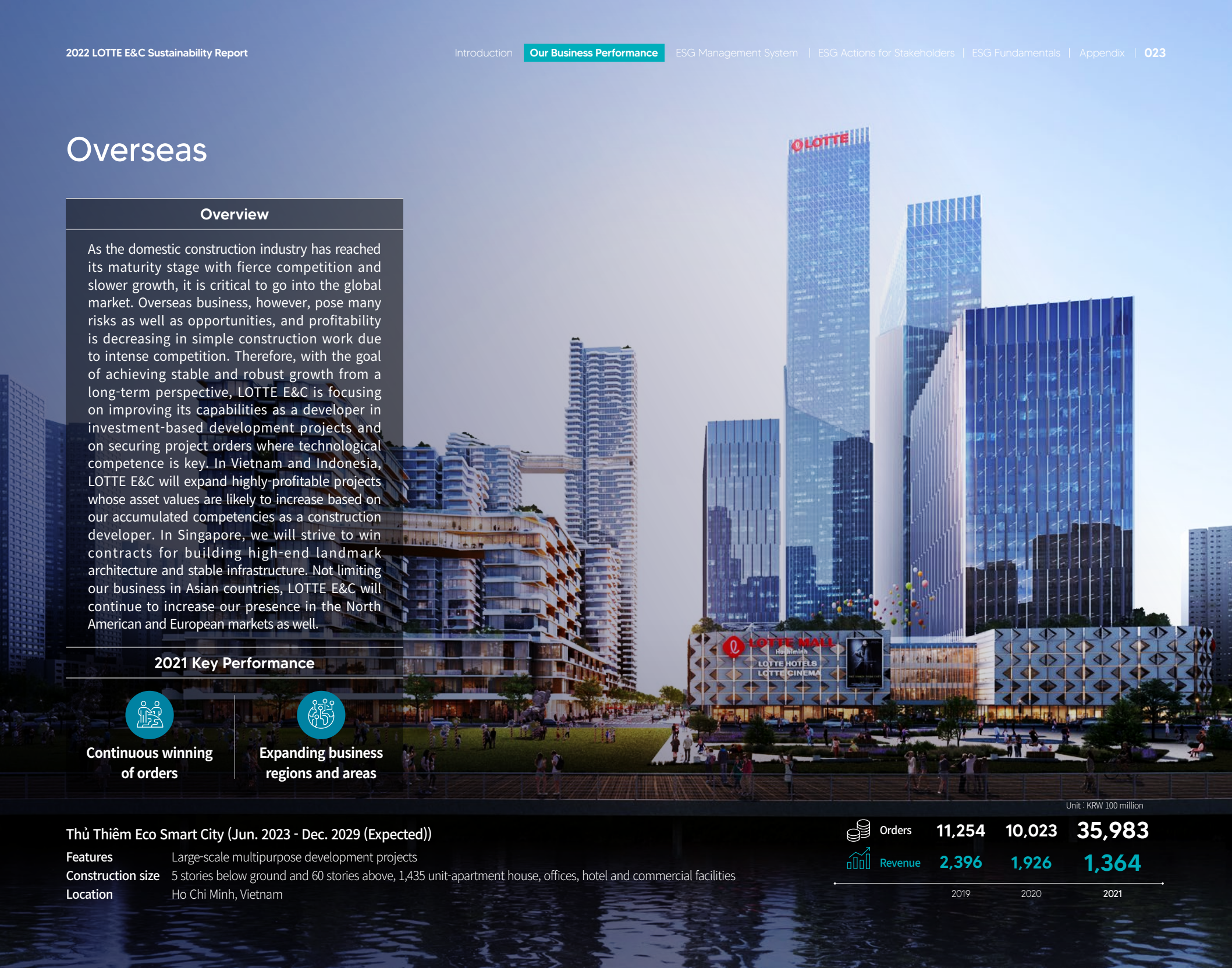
Expanding business regions and areas

### Thủ Thiêm Eco Smart City (Jun. 2023 - Dec. 2029 (Expected))

- Features** Large-scale multipurpose development projects
- Construction size** 5 stories below ground and 60 stories above, 1,435 unit-apartment house, offices, hotel and commercial facilities
- Location** Ho Chi Minh, Vietnam

Unit : KRW 100 million

	2019	2020	2021
Orders	11,254	10,023	35,983
Revenue	2,396	1,926	1,364





# Overseas

- 01 ① Nov. 2018 ~ Jun. 2023  
② 2 stories below ground and 23 stories above, gross floor area of 386,347m<sup>2</sup>, 264-Room hotel, 198-SR office, etc.
- 02 ① May 2010 ~ Jun. 2014  
② 5 stories below ground and 65 stories above, gross floor area of 253,134m<sup>2</sup>, 318-Room hotel, SR 258, office, commercial facilities
- 03 ① Oct. 2015 ~ Sep. 2018  
② 5 stories below ground and 41 ~ 43 stories above, gross floor area of 365,251m<sup>2</sup>, 1,211-unit apartment, office
- 04 ① May 2018 ~ Jan. 2021  
② 4 stories below ground and 19 stories above, gross floor area of 35,135m<sup>2</sup>
- 05 ① 2024 ~ 2031  
② Gross floor area of 338,755m<sup>2</sup>, 4,202-unit apartment, 58 shop houses

① Construction period ② Construction size

01	03
02	04
	05



LOTTE Mall Hanoi



LOTTE Center Hanoi



Kota Kasablanka 2nd Phase



Sathapana Bank Head Office



Garden City New East 2



# Overseas Division ESG Integration

## Contributing to the Spread of Renewable Energy



**The Gulpur Hydroelectric Power Plant Project in Pakistan**  
 • Construction period Nov. 2015 - Mar. 2020, • Construction size 102MW

**UN SDGs**

- 4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes
- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix



The Gulpur project in Pakistan is a BOOT (build, own, operate, transfer) basis contract where a hydroelectric power plant of 102MW capacity is built and operated for 30 years before it is transferred to Pakistan. BOOT (build, own, operate, transfer) is a project model in which a private contractor builds the facility, operates it for a certain period of time, and then transfer it to the government. LOTTE E&C invested 6% of shares in a special-purpose company and conducted engineering, procurement, and construction (EPC). The construction of the plant was completed in March 2020, and we are currently operating the facility. The project is expected to increase renewable energy supply and respond to climate change by bringing down Pakistan’s dependency on thermal power. The plant can reduce 257,022 tons of CO<sub>2</sub> every year. The Gulpur project is on the registry of Clean Development Mechanism (CDM)<sup>1)</sup> and can secure overseas carbon credits for 30 operational years. In addition, we are taking part in the Lower Spat Gah project in Pakistan. The 500MW hydroelectric power plant is expected to reduce some 800,000 tons of CO<sub>2</sub> every year once the plant starts its operation.

<sup>1)</sup> **Clean Development Mechanism (CDM)** If an advanced country with an obligation to reduce GHG makes an investment in a developing nation and reduces a certain amount of GHG, the CDM recognizes the reduced amount of GHG emissions as the advanced country’s GHG reduction in its obligation. This allows advanced nations to make cost-effective GHG reductions and developing countries to be given environmental, technical, and economic supports.

**Global Corporate Citizen**

LOTTE E&C has tried to improve educational infrastructure near the worksite of A hydroelectric power plant in Gulpur. We have supported the extension of a school facility near Barali and households, which was worth KRW 10 million. In an effort to fulfill our responsibility as global corporate citizens, we jointly donated 10,000 masks to Pakistan to support their COVID-19 quarantine activities.





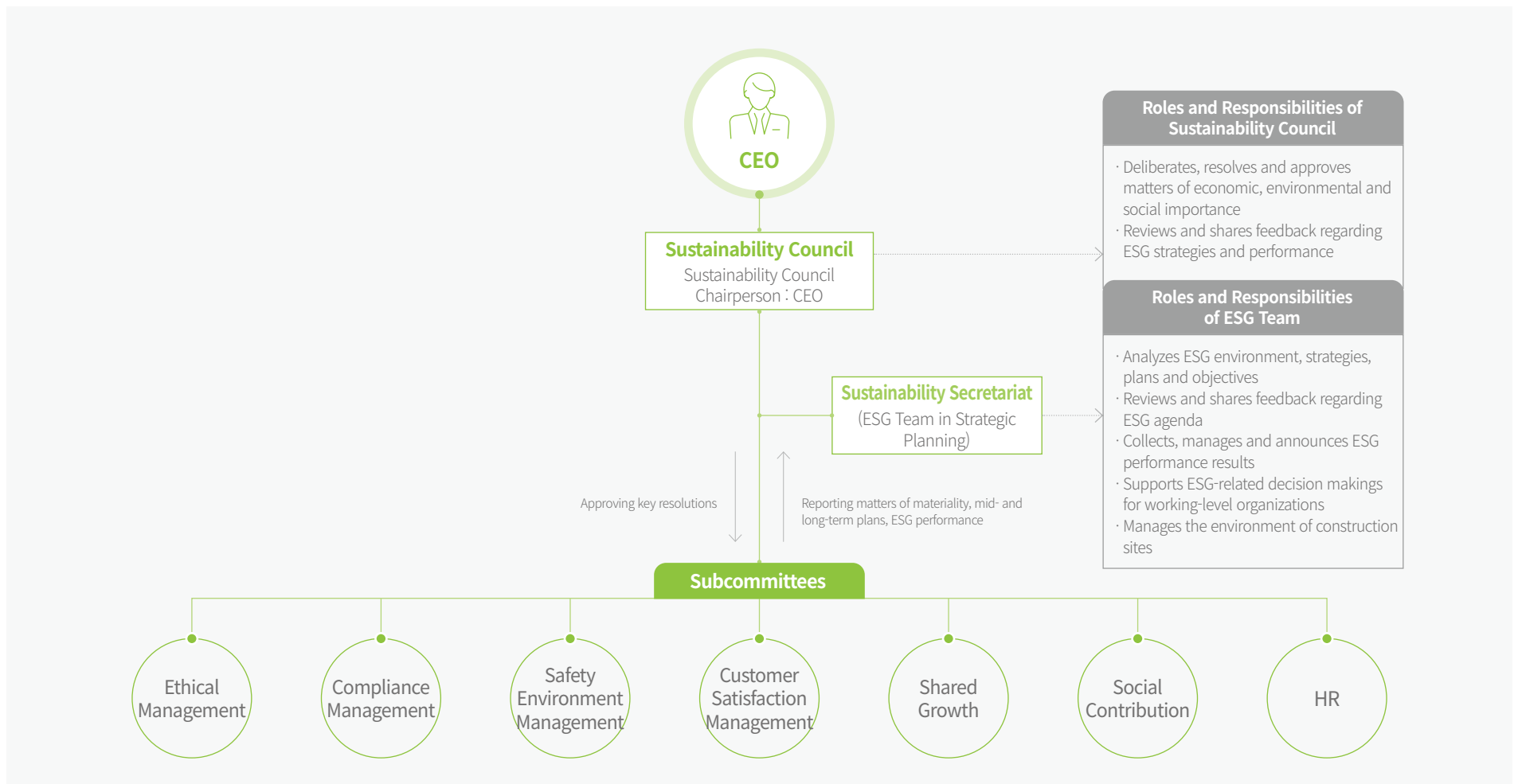
# ESG Management System

ESG Governance	027
ESG Strategy	028
Interview with an ESG Advisor	029
Materiality Assessment	030
Management Approach	031
Communication with Stakeholders	032

# ESG Governance

LOTTE E&C deliberates and resolves matters of importance in ESG management in the Sustainable Management Committee under the CEO. The Committee consists of seven subcommittees, including ethical management, safety and environmental management, and human resources. As an executing organization for sustainable management in the Committee, the Secretariat of Sustainable Management forms mid- and long-term strategies, and establishes and executes the detailed strategies for each subcommittee. The major agenda of sustainable management is reported on a quarterly basis.

· The Sustainable Management Committee can be convened when the head of the committee, the majority of committee members, and assistant administrator attend the committee (can be skipped when there is no particular agenda).



# ESG Strategy

Laying the foundation for ESG management objectives, LOTTE E&C established a new ESG team. To achieve these objectives, each working-level team is conducting a given task. In the future, we plan to establish a company-level ESG management strategy and integrate its implementation systems.

Vision	Category	Area	Strategy objectives	Strategy direction	Strategy tasks
A good corporate citizen that creates sustainable value	Environmental	Environmental Management	Conserve the global environment	Introduce the concept of ESG management	① Efficient management of environmental data ② Discover items to reduce GHG and energy use ③ E-culture campaigns
				Obtain more eco-friendly certifications	① Maintain environmental management system certifications (ISO14001) ② Set up green architecture certification process
				Zero environmental accidents	① Conduct an efficient inspection on site environment ② Strengthen training programs for working-level employees in charge of environment ③ Address environmental concerns in the construction industry
		Green Technology	Hydrogen energy, Zero energy buildings (ZEB), Secure ESG-led eco-friendly technologies	Prepare for new businesses in the future market	① Develop low-carbon clean hydrogen technology ② Create fuel cell technology
				Strengthen ZEB competitiveness	① Create an integrated design model for ZEBs ② Develop new items specified for zero energy apartment houses
				Increase green technology quality and satisfy customers	① Develop green remodeling technology ② Demonstrate waste and water management technologies, and develop relevant systems
	Social	Safety Management	Comply with safety and health obligations to provide a safe work environment without the loss of life	Improve the management system for safety and health	① Management leadership, communication, workers' engagement, reporting system, and continuous improvement
				Increase investment budget for safety (Execute 100%)	① Execute mid- and long-term investment ② Provide budgetary assistance to sites that lack safety facilities
				Apply and expand SMART safety and health technologies	① Establish and expand ABCI (Ai, Big Data, Cloud, IoT)
		Shared Growth	A leading company in shared growth based on fair trade and mutual interactions	Build the relationship for fair trade	① Create a culture of fair trade ② Adhere to four fair trade practices
				Enhance the support system for partner companies	① Increase financial and non-financial support for partner companies ② Support the management improvement for partner companies
				Build trust with partner companies	① Improve the communication system with partner companies ② Spread the culture of sustainable management for the supply chain
		Social Contribution	A love-sharing company that grows with the local communities	Make use of the characteristics of a construction company	① Increase the number of representative activities for social contribution
				Discover social contribution activities that meet the needs of demand	① Carry out beneficiary-focused social contribution activities
				Make use of the expertise of our employees	① Build a culture of voluntary participation
		Customer Satisfaction	Impress our customers and provide them with higher value	Secure the highest quality	① Systematize quality assurance and HR management ② Advance quality management system (IT system, evaluation process) ③ Implement proactive quality risk management (materials and construction) ④ Strengthen the quality management capabilities of employees and partner companies
Satisfy our customers by providing a timely warranty program	① Provide customers with a quick and accurate warranty program ② Increase customer convenience by offering services such as mobile defect registration				
HR and Welfare	Quality of life and joy of working	Quality of life and joy of working	① Introduce a performance and task-based reward system ② Increase the level of satisfaction of our employees by providing better welfare benefits		
		Strengthen protection for vulnerable workers in worksite	① Offer enhanced protection for special employment workers		
Governance	Ethical Management	Management system to make the company loved by all stakeholders	Internalize basic ethics	① Strengthen participatory ethical management (internal and external stakeholders) ② Build an ethical value chain by business unit ③ Incorporate ethical management into your daily routine (work=ethics=daily practice)	
			Revitalize social ethics	① Create an integrated foundation for sustainable management ② Increase stakeholder engagement and communication ③ Develop and specialize expertise in each domain (economy, environment, and society)	
	Compliance Management	Build a global-level compliance system	Advance compliance system for subcontracting and internal trade	① Create a compliance system based on global standards ② Expand the scope of compliance system ③ Create a culture of compliance	

## Interview with an ESG Advisor

LOTTE E&C conducted an interview with an outside ESG expert to obtain professional advice and advance the activities of ESG management initiatives. We will continue to listen carefully to the voices of our stakeholders on ESG management directions and seek ways to promote ESG management.



**LOTTE E&C needs to establish detailed ESG strategies by each stakeholder and respond to relevant regulations. In addition, we should build a portfolio of business processes in line with the ESG management philosophy.**

**Jaewook Baek**, Head of ESG Strategy Center

### What are the internal and external trends surrounding ESG management?

The two main issues for ESG management are the qualitative increase in ESG investment and the legalization of ESG management. ESG management is now in the realms of regulation as legislation, which includes mandatory publication for sustainable management, EU taxonomy, laws on due diligence on supply chains, and more. Furthermore, investors are employing more advanced strategies. There is a growing concern over greenwashing in ESG. Investors are trying to select companies that truly practice ESG management, not the ones that pretend to do so. While investors used ESG negative and positive screening strategies for making investments in the past, they now make use of integrated investment strategies in which multifaceted analysis on ESG activities is conducted to make their investment decisions.

### What are the important ESG issues that construction companies should pay attention to?

I believe they include ecological systems, green portfolios, safety and health, and human rights. Given the nature of the construction industry that builds architecture on the ground, environmental impacts on ecological systems must be seriously considered. In addition, the strategies for winning contracts should be linked to the ESG management philosophy, such as introducing more new renewable energy and green plants. It is the construction industry that requires the most sensitive response to the Serious Accidents Punishment Act. On top of these, a mandatory EU system of due diligence requirements through the supply chain is scheduled to go into effect in 2024, and human rights for construction workers at overseas sites are expected to be major issues.

### LOTTE E&C plans to establish ESG management strategies. What could be an important consideration to take in building our ESG strategies?

I think it's important to clearly define the stakeholders surrounding LOTTE E&C, such as the government, investors, partner companies, and local communities, and come up with corresponding strategies for each stakeholder. It would be easier to come up with proper response measures, if you understood and classified regulations according to relevant stakeholders. Take the supply chain, for example. LOTTE E&C could consider issues regarding partner companies from the perspective of the supply chain, review the ways to manage them and devise response measures. Secondly, it's important to incorporate ESG strategies into daily business activities. I think this is what makes ESG management initiatives different from sustainable management. While the concerns over sustainable management strategies were how to fulfill corporate social responsibilities while conducting business activities, now companies need to come up with how to integrate ESG strategies into their business activities. For example, they should devise process portfolios in line with the ESG management philosophy. They should incorporate ESG strategies into the way they introduce new technologies and make investments in a consistent manner.

### What are the expectations for LOTTE E&C's ESG management initiatives?

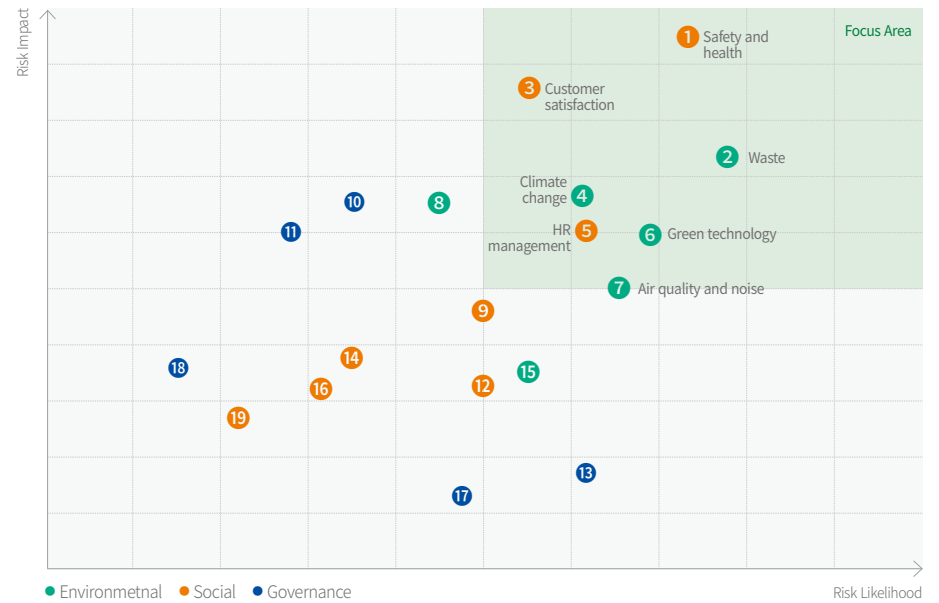
ESG management is not a fad. For the sustainable growth, I hope LOTTE E&C has genuine intension and strong determination to practice ESG management in a continuous manner.

# Materiality Assessment

LOTTE E&C carried out materiality assessments based on the Global Reporting Initiative Standards, a guidelines for reporting sustainable management. We conducted a comprehensive analysis on internal data, international standards for sustainability, ESG assessment indicators, benchmarking, media and stakeholders' surveys, and discovered and reported issues of materiality.



**Materiality Assessment Matrix**










**Topic Pool**

Rank <sup>1)</sup>	ESG TOPIC
1(-)	● Safety and health
2 (▲2)	● Waste
3 (▲6)	● Customer satisfaction
4 (▲1)	● Climate change
5 (▲3)	● HR management
6 (▲1)	● Green technology
7 (new)	● Air quality and noise
8	● Water and sewage
9	● Management of partner companies' ESG initiatives
10	● Ethics and anti-corruption

Rank <sup>1)</sup>	ESG TOPIC
11	● Information security
12	● Local community
13	● Discovery of new businesses
14	● Human rights, diversity and inclusiveness
15	● New renewable energy
16	● Welfare benefits
17	● Digital conversion
18	● Board of Directors
19	● Shared Growth

1) Ranks changed compared to previous year's materiality assessment

# Management Approach

Material topics	Impact of internal and external stakeholders	Goals	Strategic approach	Incorporating into performance
<b>Material Topic 1.</b> <b>Safety and Health</b>  page.047	<ul style="list-style-type: none"> <li>Competitiveness in winning contracts, the image of the company, Financial impact of an investment in safety</li> <li>Sustainable management of partner companies</li> </ul>	<ul style="list-style-type: none"> <li>Zero Accidental Falls to Death</li> <li>Internalization of and voluntary activities for safety and health</li> </ul>	<ul style="list-style-type: none"> <li>Conduct safety prevention activities led by management</li> <li>Expand the investment budget for safety</li> <li>Increase the application of smart technologies for safety and health</li> <li>Create and spread a safety culture</li> </ul>	<b>Employees' Council for Safety and Health</b> Newly established <hr/> <b>Organization devoted to safety and health</b> Expanded
<b>Material Topic 2.</b> <b>Waste</b>  page.039	<ul style="list-style-type: none"> <li>Environmental impacts by discharging waste</li> <li>Financial consequences of resource efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Contribute to reducing national waste and minimizing environmental impacts</li> <li>Zero violation of environmental regulations for waste management</li> </ul>	<ul style="list-style-type: none"> <li>Increase the recycling rate of waste and minimize the amount of landfill</li> <li>Minimize the amount of waste through well-planned construction</li> </ul>	<b>Intensity-based waste generate</b> 10.34 (YoY increase of 13%) <hr/> <b>Recycling rate of waste</b> 99.52% (YoY increase of 2.34%p)
<b>Material Topic 3.</b> <b>Customer Satisfaction</b>  page.072	<ul style="list-style-type: none"> <li>Brand reputation, competitiveness of winning contracts</li> <li>Customer satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>Realize customer satisfaction by impressing them and providing them with higher value</li> </ul>	<ul style="list-style-type: none"> <li>Systematize quality management organization and enhance manpower</li> <li>Maintain continuous improvement based on ISO 9001</li> <li>Improve customer communication and convenience</li> </ul>	<b>Number of employees who participated in quality innovation training</b> 883 <hr/> <b>Satisfaction rate with customer Happy Call service</b> 64.9% (Very satisfactory, satisfactory)
<b>Material Topic 4.</b> <b>Greenhouse gas and energy</b>  page.039	<ul style="list-style-type: none"> <li>Financial consequence of resource efficiency</li> <li>Environmental impacts of GHG emissions</li> </ul>	<ul style="list-style-type: none"> <li>Respond to climate change and contribute to achieving a national goal of GHG reduction</li> <li>Zero violations of environmental regulations in construction sites</li> </ul>	<ul style="list-style-type: none"> <li>Monitor GHG emissions, and build and implement a GHG reduction plan</li> <li>Continue to discover GHG and energy reduction items</li> </ul>	<b>GHG emissions intensity (Scope 1+2)<sup>1)</sup></b> 7.47 (2020: 8.07) <hr/> <b>Energy Intensity<sup>2)</sup></b> 0.16 (2020: 0.15)
<b>Material Topic 5.</b> <b>HR Management</b>  page.056	<ul style="list-style-type: none"> <li>Decision-making efficiency and organizational productivity</li> <li>Organizational culture of diversity and inclusiveness</li> </ul>	<ul style="list-style-type: none"> <li>Create a work environment where employees can work happily</li> </ul>	<ul style="list-style-type: none"> <li>Provide performance and job-oriented compensation</li> <li>Increase the level of satisfaction by offering better welfare benefits and enough breaks</li> <li>Expand the coverage of social insurance for special employment workers</li> </ul>	<b>Per capita investment in training</b> KRW 852,687 (YoY 14% increase) <hr/> <b>Per capita average training hours</b> 120 hours (YoY 2.5% increase) <hr/> <b>Number of people who participated in training for a year</b> 3,568 (100%)
<b>Material Topic 6.</b> <b>Green Technology</b>  page.041	<ul style="list-style-type: none"> <li>Competitiveness in winning contracts</li> <li>Financial impacts from technology development</li> <li>Environmental impacts from adopting green technology/process</li> </ul>	<ul style="list-style-type: none"> <li>Achieve zero energy and produce/use hydro energy</li> <li>Develop technologies for reducing CO2 and CCUS</li> </ul>	<ul style="list-style-type: none"> <li>Make an investment in CO2 reduction and green technologies</li> <li>Increase research manpower</li> <li>Strengthen research cooperation with external institutions</li> </ul>	<b>Development cost for green technology</b> KRW 18,878 million <hr/> <b>Eco-energy TFT</b> Newly established
<b>Material Topic 7.</b> <b>Air Quality and Noise</b>  page.039	<ul style="list-style-type: none"> <li>Impacts on a life zone in a local community</li> </ul>	<ul style="list-style-type: none"> <li>Minimize the impacts on the local community through mutual consultation</li> <li>Create social value with response measures to social issues</li> <li>Respond to the demand by changing needs</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen R&amp;Rs of an organization in charge of noise and vibration management, and improve technology development capability</li> <li>Conduct mutual consultation in the local community through communication</li> </ul>	<b>Research performance on reducing noise and vibration</b> 2 <hr/> <b>TFT for Noise and vibration solution</b> Newly established

1) GHG emissions intensity (Scope 1+2) Total GHG emissions (Scope 1+2) / Revenue (KRW 1 billion)

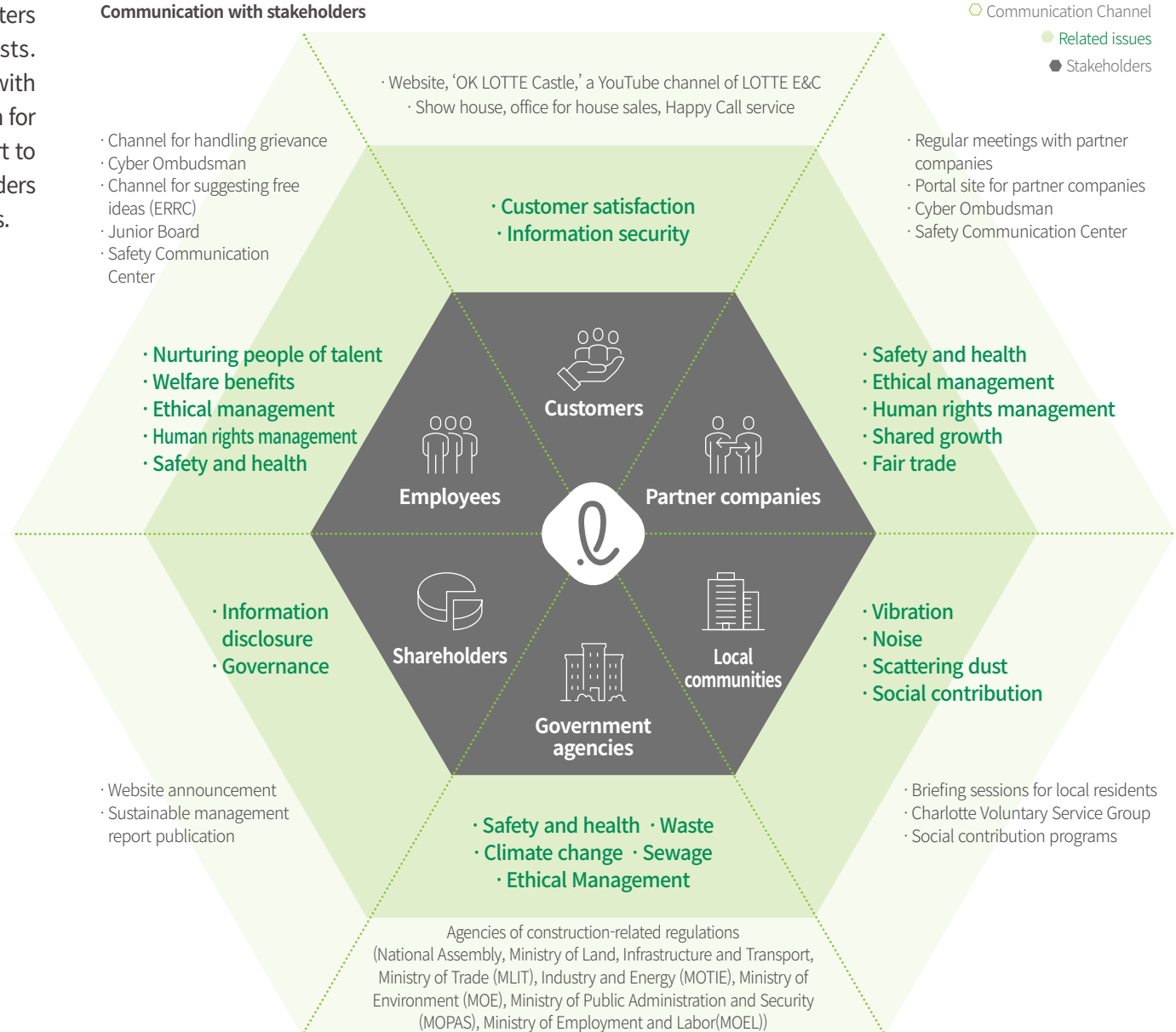
2) Total energy consumption intensity Total energy consumption (TJ) / Revenue (KRW 1 billion)

# Communication with Stakeholders

As a company grows and develops, it encounters various stakeholders with different interests. Under these circumstances, communication with stakeholders becomes an important foundation for sustainable growth. LOTTE E&C makes an effort to communicate with direct and indirect stakeholders in different organizations and construction sites.



## Communication with stakeholders





# ESG Actions for Stakeholders

For Our Planet	034
For Our Employees	046
For Our Partners	065
For Our Customers	072
For Our Communities	077

## FOR OUR PLANET

# Green Buildings That Care the Earth

Climate change is not just a matter of the environment. It is becoming more of security and economic matters that threaten the entire planet. In an effort to prevent global warming, internationally-binding agreements have been made in the Paris Climate Agreement and the world is making its effort to keep the average temperature rise within 1.5°C. The Korean government has also announced its plan to achieve carbon neutrality by 2050. This means that it is imperative for the world to make a systemic transition in infrastructure such as energy and land use, cities, buildings, etc. to move forward to a low-carbon circular economy. With the newly-formed Eco Energy Task Force Team, LOTTE E&C is giving impetus to developing green technologies such as zero energy buildings (ZEB), carbon reducing cement and more. Based on the environmental management system (ISO 14001), LOTTE E&C is making a continuous effort to minimize the environmental impacts of its business by creating eco-friendly construction sites.

UN SDGs



### Contents

Environmental Management	035
Research & Development	041

Training completion rate of person in charge of environmental management

**100%**

(As of 2021, 93 people participated)



Green procurement

KRW **554** billion



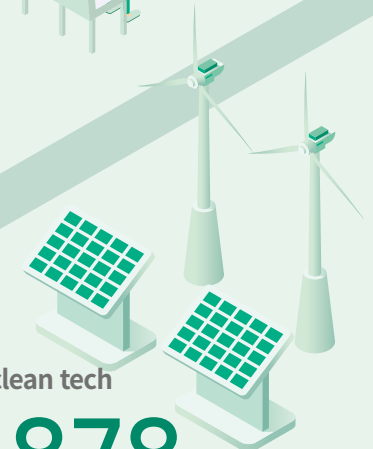
Recycling rate

**99.52%**



Investment in clean tech

KRW **18,878** million

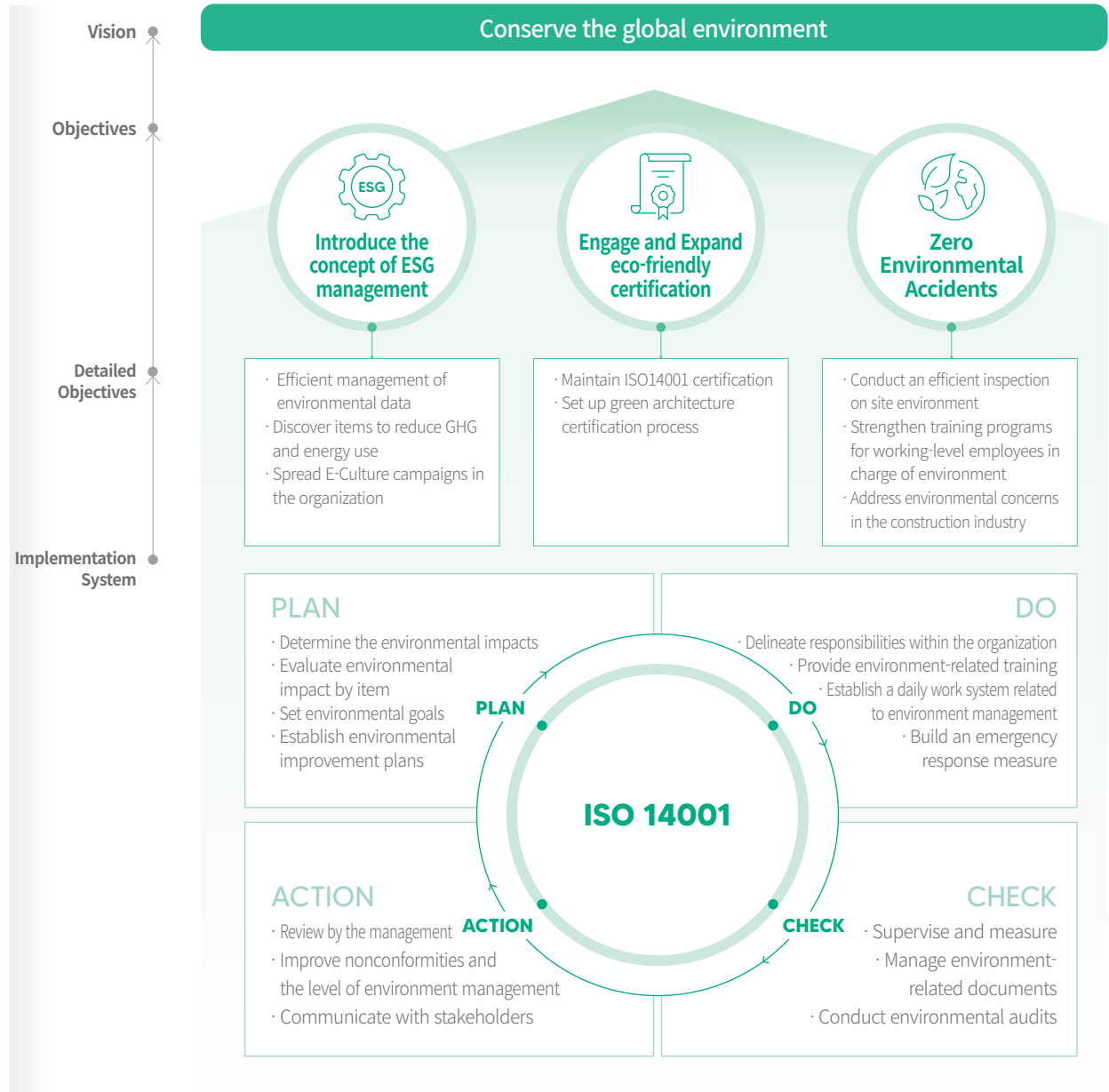
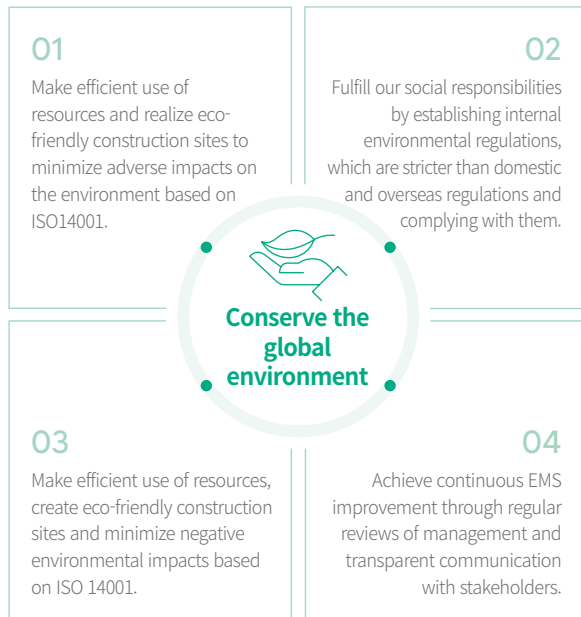


# Environmental Management

## Environmental Management System

Under the environment vision of LOTTE GROUP, ‘conserve the global environment,’ LOTTE E&C continues to put forward environmental management based on ISO 14001, the environmental management system certification. In an effort to respond to climate change in 2021, we established the ESG Team to introduce ESG perspectives and expanded eco-friendly certification, aiming to achieve Zero environmental accidents.

### Environmental Management Practices



## Environmental Management Organization

In LOTTE E&C, the ESG Team oversees the environmental management at the enterprise level.

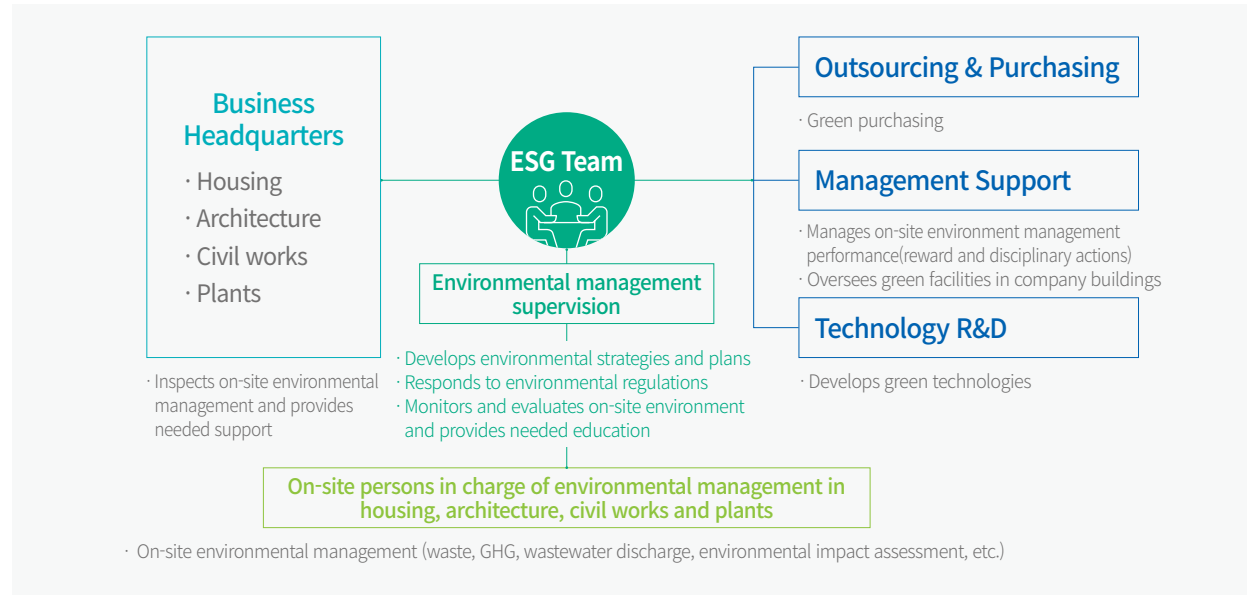
For on-site management, each head office (housing, architecture, civil works, and plants) and the ESG Team work jointly to inspect the environment of sites and provide needed support accordingly. The on-site person in charge of environmental management implements environmental regulations and internal policies to ensure compliance. In addition, close cooperation is maintained with relevant teams and divisions for environmental management, such as green purchasing, green technology development, and more.

## Efficient Management of Environmental Data

As the construction industry collects and manages various on-site environmental data, the data collected should be accurate and be managed efficiently. LOTTE E&C has incorporated major environmental data such as waste, GHG, air and water quality, noise and vibration, etc. into the ERP system and monitor them. We are working to link the ERP system where waste discharge information is entered with Allbaro system<sup>1)</sup> to increase work efficiency and data accuracy. Following this, we intend to manage the waste data in a more integrated manner to raise the accuracy and efficiency of the environmental data. In addition, we provide guidelines on how to enter greenhouse gas and water information so as to collect more accurate and reliable data. We also take inspections on environmental management by LOTTE GROUP on a half-year basis to keep track of environmental data management.

**1) All baro system** A comprehensive waste management system operated by Korea Environment Corporation which monitors the entire life cycle of waste from discharge, reduction, recycling, and proper treatment.

## Environmental management organization and roles



## Enhanced Education Program for Environmental Management Capabilities of Working-Level Employees

LOTTE E&C conducts environment-related education and training for on-site managers to enhance their management capabilities. The education and training cover the concepts of ESG, environmental regulations and ESM manuals. In 2021, a number of contact-free education and training were provided amid the COVID-19 pandemic, and a total of 93 people in charge of EMS management have completed their courses. We plan to continue this education and training on a regular basis to further strengthen the environmental management capabilities of our employees.



Training completion rate of person in charge of environmental management

93



Education Program for Environmental Management

## Environmental Management KPI

In an effort to improve on-site environmental performance, LOTTE E&C evaluates the performance of on-site environmental management led by the ESG Team. The status and conditions of on-site environmental management are regularly inspected and assessed, and the results are reflected in the KPI and BSC<sup>1)</sup> of corresponding sites and teams. Furthermore, a comprehensive yearly evaluation is made on executives and employees records of outside award winnings, violations of environmental regulations, etc. LOTTE E&C continues to internalize the culture of environmental management by identifying areas for improvement through evaluation, sharing best practices, and providing appropriate incentives. In 2021, the two sites with best practices of environmental management were selected and awarded.

1) BSC (Balanced Score Card) A performance management system where performance indicators in four perspectives (finance, customers, internal process, learning and growth) are aligned with organization's vision and strategic objectives.

## Green Building Certification

To minimize the environmental impacts of our business in operational phases, LOTTE E&C has been certified with Leadership in Energy and Environmental Design (LEED) overseas and Green Standard for Energy and Environmental Design (G-SEED) in Korea for its construction work and architecture. We have provided a total of 108 eco-friendly buildings since 2005 and have kept securing LEED Accredited Professionals (AP) to enhance our capabilities in designing green products.



Number of LEED AP License Holders

45

### Key green building certification in 2021

Buildings	Certification
Gayang Station Knowledge Industry Center	· G-SEED (Green 2) · Building Energy Efficiency Rating (Grade 1++)
Hwaseong Dongtan Multi-Modal Transfer Center Anchor Block Contest	· Building Energy Efficiency Rating (Grade 1)
Rebuilding of Lotte Academy Osan Campus	· G-SEED (Green 1) · Building Energy Efficiency Rating (Grade 1+)
Sin-dong, Yeongtong-gu, Suwon Knowledge Industry Center	· Building Energy Efficiency Rating (Grade 1++)
Apartment houses in station's sphere of influence in Sangdo New project	· G-SEED (Green 2)
Enterprise type rental housing in Doksan Station	· G-SEED (Green 2)
Gwacheon national housing apartments, complex 2 Housing reconstruction and maintenance project	· G-SEED (Green 1)
Hwaseong Byeongjeom station's sphere of influence Development project of apartment houses	· G-SEED (Green 3)
Songpa Signature LOTTE Castle	· G-SEED (Green 1)
LE EL Daechi	· G-SEED (Green 3)
Uiwang Ojeon Section Ga Housing reconstruction	· G-SEED (Green 2)

## Green Procurement

LOTTE E&C purchases green products in the entire business life cycle, from procurement of materials to construction to operation. Starting in 2009, when we signed the 'Voluntary Agreement on Green Procurement in Businesses', the company has been purchasing green materials and products. By operating a green procurement system, we endeavor to find qualified and certified suppliers of green products. In 2021, LOTTE E&C purchased certified green products worth of KRW 55.4 billion.

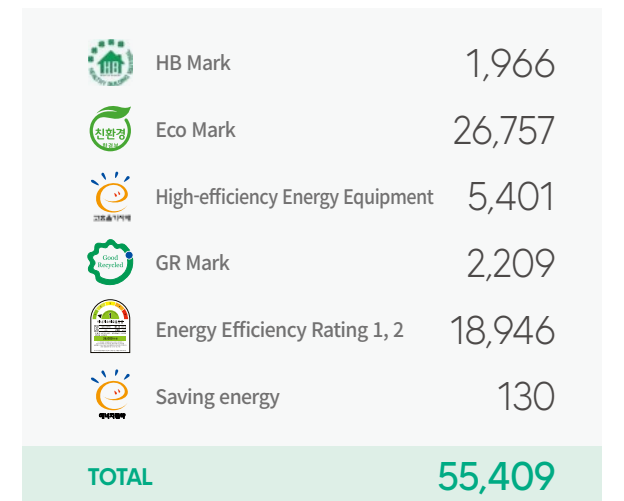
### Green procurement

(Unit : KRW million)



### Green procurement by category

(Unit : KRW million)



## Reducing On-site Environmental Impacts

LOTTE E&C continues to establish environmental management plans to minimize the environmental impacts of air, water, noise, vibrations, and waste generated during the construction process. We also install pollution prevention facilities and carry out relevant activities to reduce the environmental impacts. We require all construction sites to prepare an environmental management plan and install proper facilities to decrease environmental pollution based on the plan and rental application. Each site conducts a regular self-inspection to come up with improvement measures for environmental risks, and the head office conducts an annual inspection of a construction site. In addition, we operate a “registration system for environmental management status” where information from rental application and environmental facility installations is entered into the ERP system. Through this, the company intends to make a preemptive response and check compliance with relevant regulations.

### Eco-friendly construction goals

#### Reduce GHG emissions

- For carbon neutrality, monitor GHG emissions, and build and implement its reduction plan
- Promote continuous reduction of GHG by replacing fuels for curing and temporary lighting

#### Prevent civil complaints about noise, etc.

- Obtain low-noise construction machinery and method to actively comply with regulations on living noise
- Continuously measure and monitor the level of noise to prevent civil complaints

#### Minimize fine (scattering) dust

- Minimize the use of deteriorated construction machine and equipment to prevent fine dust
- Install and operate facilities with stricter criteria to reduce scattering dust

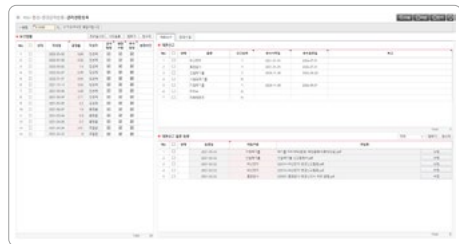
### Eco-Friendly Construction Goals

#### Minimize construction waste

- Minimize waste by conducting thoroughly-planned construction activities
- Improve recycling rate by separately collecting and discarding waste by shape and form, and minimize the amount of landfilling

#### Contribute to local communities and environment

- Designate Environment Day and conduct clean-up activities in nearby roads, streams, parks, etc.
- Install and operate prevention facilities for water pollution to protect local ecosystem



Environmental management status



Environmental inspection



## Raise the Standard for Reporting Violations against Environmental Regulations

To achieve ‘Zero Environmental Accidents,’ LOTTE E&C has adopted the procedure where all the sites are required to immediately report any violations of environmental regulations to the ESG Team. Previously, our focus was not to be imposed with fines and penalties due to violations of serious environmental regulations. In 2022, we enhanced the standard for reporting, extending the reporting scope to include any administrative measures regarding the environment such as warnings and document-basis improvement orders. Through this timely reporting of any violations of environmental regulations, LOTTE E&C takes improvement actions and occurrence prevention measures in a swift manner.

## Minimize Scattering Dust

The scattering dust is generated mainly in sites during construction and demolition processes, and this could cause damage to local residents nearby, who can file civil complaints. In an effort to manage the impacts caused by scattering dust, LOTTE E&C keeps monitoring the status of scattering dust generation by site according to a voluntary agreement on fine dust management with the Ministry of Environment. We use dust control spray equipment<sup>1)</sup> to clean construction equipment before it is moved out of the site to prevent scattering dust from being carried away to the outside. Furthermore, we operate additional water sprinkler vehicles outside working areas, and have made it mandatory to put covers on cargo boxes and dust-proof covers on open-air storage.

1) **Dust control spray equipment** Machine that cleans dust or sands on the wheels of vehicles running in and out of construction sites

## Waste Management

### Construction Waste

Waste is one of the factors that influences organizational productivity and operational efficiency. To minimize waste generation, LOTTE E&C classifies and discards the construction waste in accordance with the guidelines and waste specifications. The entire construction waste is commissioned to a professional recycling company who makes the most use of the waste by recycling it as recycled aggregate. The life cycle of waste data from taking out to transfer and final treatment is managed by the ‘All baro system’ in real time to manage the on-site waste.

### Oil and Designated Waste

LOTTE E&C installs and operates dedicated storage containers to prevent designated waste such as waste oil and waste paint from being leaked into the soil. Impermeable materials are laid at the bottom of the containers where the designated waste is cured first, and another layer of felt or absorbent pad is placed on top of it for a second curing to strictly manage possible leakage of waste oil.

Category	2019	2020	2021
Amount of waste recycled	463,791	453,241	589,348
Waste recycling rate	96.68	97.18	99.52

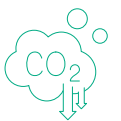
## Reduce GHG Emissions

With the LOTTE Environmental & Energy Total Solution (LETS), LOTTE E&C monitors GHG emissions and energy data to minimize their consumption. Since 2019, we have reduced the carbon footprint by entirely replacing winter fuel for concrete curing from brown coal to kerosene heaters. In the headquarter, we have brought down energy use by replacing fluorescent lights with high-efficient LEDs.

Category	2019	2020	2021
Scope 1	9,371	9,791	6,577
Scope 2	35,041	31,360	35,983
<b>Total</b>	<b>6,577</b>	<b>35,983</b>	<b>42,560</b>

Achievement by replacing concrete curing fuel

**4,432** tCO<sub>2</sub>-eq



Reduction by replacing LED lamps

Energy reduction  
**148,884** kWh

GHG Reduction  
**69.417** tCO<sub>2</sub>-eq

## Turbid Water, Dirty Water and Wastewater Management

### Turbid Water Management

When construction activities produce turbid water due to rainfall or underground water, LOTTE E&C treats the turbid water by passing it through soil runoff prevention facilities such as grit chambers and settling tanks. In this way, suspended solids are deposited, and only clean water can be discharged. In this process, we pay extra attention not to discharge earth and sand above the standard.

### Dirty Water Management

We have installed sewage purification facilities such as septic tanks and wastewater treatment facilities to manage dirty water produced during the operation of site offices and restaurants. To comply with effluent quality standards, the company conducts regular inspections and cleaning activities according to management criteria.

### Wastewater Management

In order to manage wastewater that is generated during tunnel construction and has high pH and suspended solids, LOTTE E&C operates wastewater treatment facilities. We comply with effluent discharge standards by installing needed facilities according to the amount of wastewater generated and placing the proper technicians. We also commission professional companies for wastewater treatment to prevent water pollution as much as possible.



## Environment Cleaning Activities

LOTTE E&C conducts cleaning activities in the roads around construction sites, parks and streams. We also encourage Charlotte Volunteer Service Groups of each team and site to actively participate in the cleaning activities. We continue to raise the awareness of our employees and site workers in environmental management, and to create cleaner communities through these green activities.

## Biodiversity Protection

LOTTE E&C undertakes an environmental impact assessment (EIA) for needed construction sites before we commence the project to predict and manage any negative impacts on ecological systems caused by the work. By carrying out the construction work in accordance with the approved EIA, we are minimizing environmental impacts on the ecosystem

## Noise Management

It is essential to predict the precise level of noise in the surrounding and indoor environment during or after the construction process in order to establish proper measures for noise management. By using a noise impact program, LOTTE E&C quantitatively measures the noise and develops preventive measures that fit for each construction site. When using noise-generating equipment and machinery at sites, we install movable anti-noise walls to minimize noise generation. In downtown areas, we place noise warning signs on anti-noise barriers to comply with noise regulations. In addition, we organize briefing sessions for local residents prior to the start of construction so that they can have a better understanding of possible noise and vibrations. When significant noise and vibration impacts are anticipated, we modify construction techniques and methods prior to construction to minimize violations of residents' rights.

### Biodiversity protection activities

Sites	Legally Protected Species					Protection activities
	Birds	Mammals	Fish	Amphibians and reptiles	Plants	
Section 2 of Goseong - Masan	-	· Otter (Critically endangered, natural monument)	· Kestrel (natural monument) · Buteo hemilasius (Endangered) · Eagle (endangered)	-	-	· Installation of wildlife crossings and fences · Installation of silt protectors
Siheung Janghyeon district Section 2	No legally protected species found					· Selecting and grafting 12 pine trees and 388 oak trees · Planning waterfront area and ecological stream · Installation of eco-bridges
Geumgang Pedestrian Bridge	· Bean goose (endangered) · Mandarin duck (natural monument) and seven other species	· Otter (Critically endangered, natural monument) · Wildcat (endangered)	-	· Kaloula borealis (endangered) · Pelophylax chosenicus (endangered)	-	· Installation of silt protectors · Installation of diversion water channel · Installation of grit chamber

# Research & Development

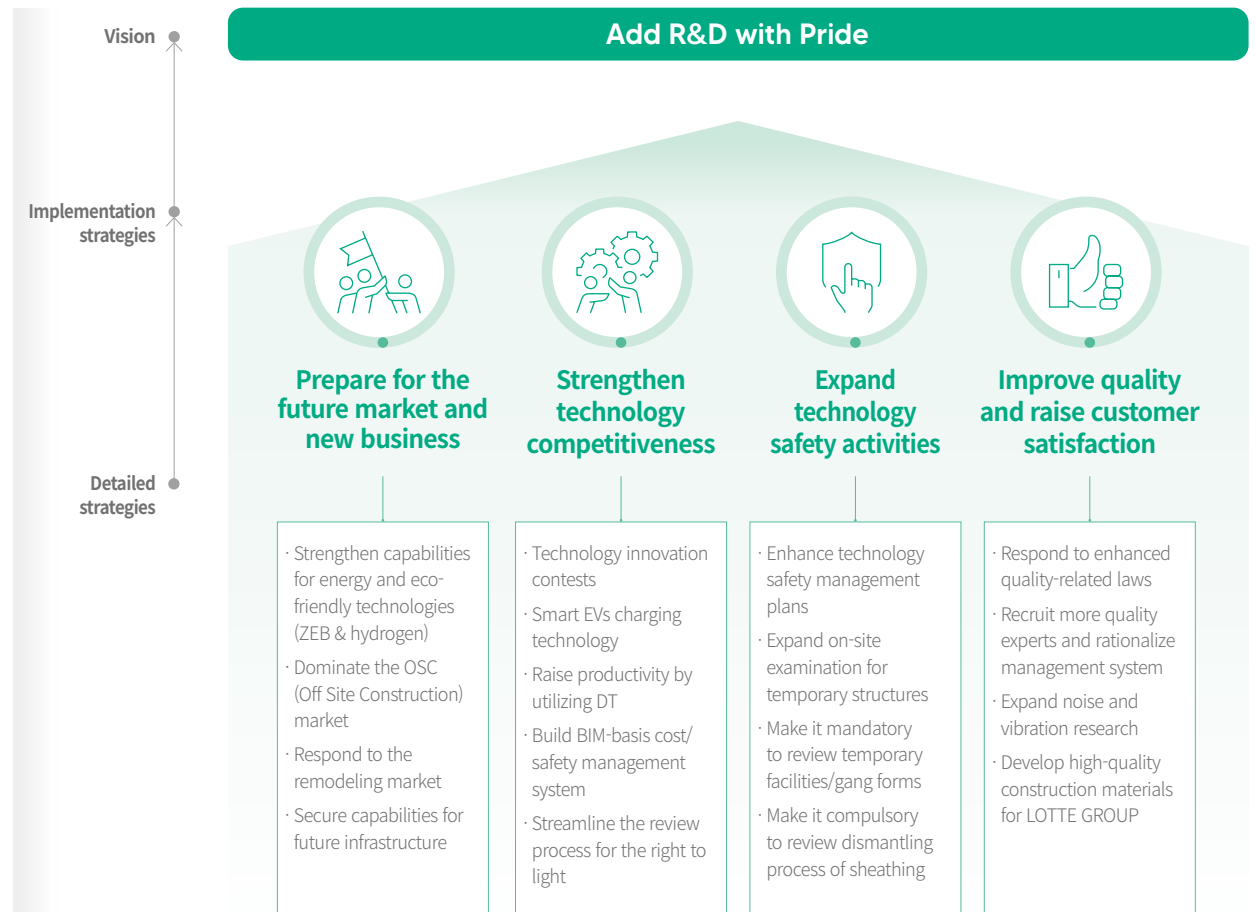
## Research and Development (R&D) System

Since its founding in September 1986, LOTTE E&C's R&D Center has continuously responded to mega trends in the construction industry and focused on developing high-value added technologies. Based on development activities, the R&D Center is playing a pivotal role as a think tank by raising customer satisfaction. The Center strives to secure future competitiveness by developing green technologies, precast concrete modular methods, digital conversion technologies, and more, not just in civil works and architecture. In 2021, a mid- and long-term investment plan was established to enhance research capabilities by supplementing research organizations, facilities, and development costs.

Furthermore, the R&D Center has advanced its strategies on social issues such as floor noise, new renewable energy, and improved technology for digital conversion. In order to respond to social demands, the Center has newly formed task force teams for floor noise solutions and eco-energy, and is expanding research infrastructure.

By conducting technology innovation contests, the Center aims to select and apply further advanced technologies to the sites. In mid and long-term, we intend to expand regular research manpower and discover new technologies by investing in capable startup companies.

### Technology R&D



### R&D costs

KRW **23,877** million

### R&D objectives

Maintain **0.5** % of Sales

### Secure

**5** % or more against regular workers

## Newly-Formed Eco Energy TFT

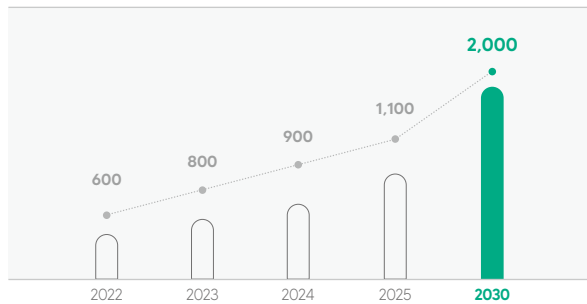
LOTTE E&C prepares for high value-added future construction by continuously developing green technologies for low-carbon green growth. LOTTE E&C has newly established an Eco Energy TFT under its R&D Center to realize carbon neutrality and respond to government requirements for zero energy buildings (ZEB) which will be applied to every new building from 2025. The TFT plans to secure technologies for producing hydrogen energy, constructing ZEBs, devising green remodeling and source technologies needed for waste resources and water management. With close cooperation with government-funded research institutions, LOTTE CHEMICAL and overseas research centers, LOTTE E&C will reinforce its technological competitiveness.

### Green technology development objectives (Unit: KRW million)



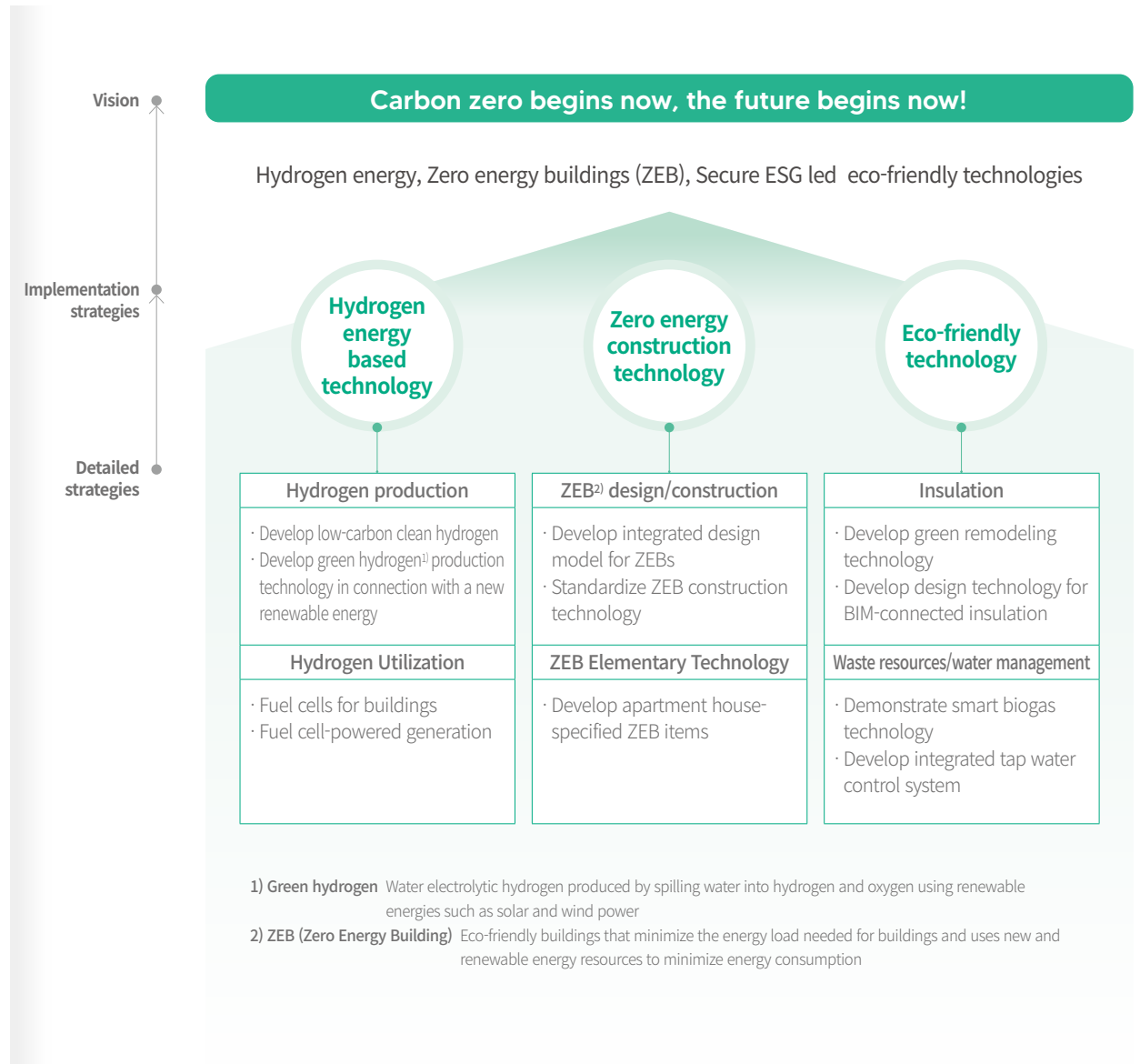
· Research expense for eco-friendly projects (Technology R&D)

### Green R&D investment (Unit: KRW million)



· Calculation criteria Net R&D cost + R&D labor cost

## Eco Energy TFT



## Green Technology Development

### Developing Low-Carbon Clean Hydrogen Technology

LOTTE E&C continues to develop the technology to produce clean hydrogen by using high-efficiency liquid catalysts, which is differentiated from the existing technologies. By producing graphite instead of carbon dioxide (CO<sub>2</sub>) generated when hydrogen is produced using fossil fuels such as natural gas, economic feasibility can be increased and GHG emissions can be reduced at the same time. By signing a business agreement with Korea Institute of Industrial Technology (KITECH), we are jointly developing 'technologies for producing clean hydrogen and realizing carbon neutrality.' We are also jointly carrying out a national project with the National Research Foundation of Korea (NRF).

### Technology to Block Floor Noise by Using Eco-Friendly EPP Shock Absorber

LOTTE E&C has developed a shock absorber which is effective in reducing the crashing noise from medium and light-weighted objects to reduce noise between floors. The new shock absorber uses expanded polypropylene (EPP), a green material produced by LOTTE CHEMICAL, as a main material, which proved to be more effective in reducing lightweight impact noise and relatively better in reducing mid-weight impact sound compared to expanded polystyrene (EPS), a previously-used shock absorber. We intend to continue relevant R&D activities and apply the material to apartment houses.

### Developing Indoor Smart Farm Using Fuel-Cell Captured CO<sub>2</sub>

A fuel cell, one of the new renewable energy sources, uses the chemical energy of hydrogen to generate heat and electricity. It is also one of the major systems for the shift toward a hydrogen economy. To contribute carbon neutrality, LOTTE E&C intends to develop a carbon capture technology model where captured CO<sub>2</sub>, which is a byproduct of fuel cells, can be used for the smart farm facilities inside a building. In this way, the productivity of the crops can be increased. Currently, we are participating in 'New Renewable Energy Core Technology Development Project' led by the Ministry of Trade, Industry, and Energy (MOTIE), and plan to further secure design, construction, and operation technologies for indoor smart farm systems to make further use of fuel-cell captured CO<sub>2</sub>.

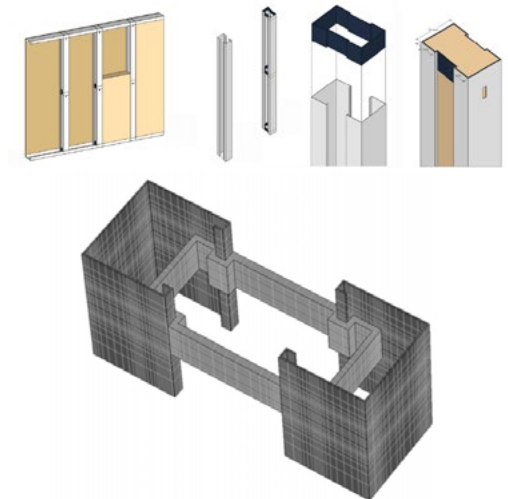
### Developing Smart Biogas Plant System

A biogas plant is a facility that converts organic waste such as livestock manure, food waste, and sewage sludge into biogas by using anaerobic digestion. In an effort to promote differentiated new projects to keep abreast with government policies of expanding new renewable energy sources and resource recirculation, LOTTE E&C has taken part in a national project led by the Ministry of Trade, Industry, and Energy (MOTIE) since 2018 and has been developing an integrated operation system for biogas plant, applying IoT platforms and the fourth industrialization technologies. Currently, we have completed registrations of two domestic patents and one copyright for a program, and their performance suitability was validated by authorized tests.

### Research and Development of Stud Structure to Reduce Thermal Bridge

By participating in the Energy Technology Development Project with the MOTIE in 2020, we are currently developing a lightweight drywall with high insulation which can be used for constructing new buildings or remodeling old ones. The stud structure enables us to design inner walls with more flexibility and decrease construction defects causing condensation, mold, and discoloration of finishing materials due to loss of heating energy in C-stud areas of previous drywall. We aim to secure insulation, fire proofing, and sound insulation structure performance by using the drywall with thermal bridge-reducing studs and applying them to our construction sites.

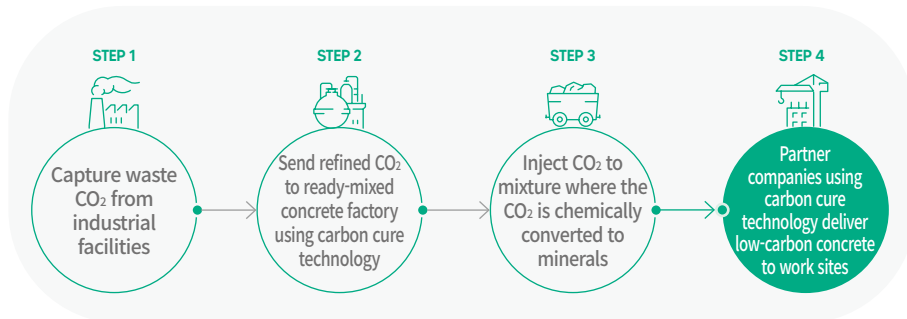
#### Drywall stud structure that reduces thermal bridge





## Developing CO<sub>2</sub>-Curing Cement and CO<sub>2</sub>-Absorbing Concrete

LOTTE E&C is currently undertaking two national projects with the goal of reducing CO<sub>2</sub> emissions in the cement industry, which accounts for 8% of CO<sub>2</sub> emissions in Korea. One of them is to develop ‘carbonation curing cement,’ where the CO<sub>2</sub> emissions can be decreased by producing the cement in lower temperature than before, and by using CO<sub>2</sub>, not water, to cure the cement. The other is ‘In-situ carbonation technology,’ where CO<sub>2</sub> emitted during cement production is captured, purified, and then injected again into concrete production. As a sole consumer and a joint researcher, LOTTE E&C is taking part in these projects, aimed at becoming an engineering and construction company that leads carbon neutrality initiatives.



## Developing Carbon Reducing Green Cement

The most widely used and important material in the construction industry, cement emits 0.94Kg of CO<sub>2</sub> when one kilogram of it is produced. LOTTE E&C makes continuous efforts to find ways to reduce the use of cement and the amount of CO<sub>2</sub> it produces. Part of those efforts includes using slag, a byproduct when metal is produced, as the main materials. In doing so, we have decreased the use of cement by 95% and the emission of CO<sub>2</sub> by 6%.

### Case Study

## Lotte Mall Hanoi Built by ‘Green Concrete Method’

An eco-friendly concrete method was applied in building Lotte Mall in Hanoi. We used ready-mixed concrete mixture with about 15% of fly ash other than cement as a concrete binder. As a steel plant was built in Hanoi in 2019, however, the production of slag was made possible, and we carried out a joint study with IBST, a construction research institute under the Vietnamese Ministry of Construction, on concrete mix by using ground granulated blast-furnace slag. As a result, we have developed concrete with lower hydration heat generated during the curing process by 10°C compared to the previous one, higher long-term strength by 20% after 90 days, and improved watertightness to level 2(33%). This method reduces GHG by alternately using fly ash and ground granulated blast-furnace slag, whose CO<sub>2</sub> emissions are about 3% lower compared to cement. By applying this method to Lotte Mall in Hanoi, we were able to reduce approximately 4,920 tons of CO<sub>2</sub> emissions.



Lotte Mall construction site in Hanoi



Amount of CO<sub>2</sub> reduction  
approximately  
**4,920** tons



## Excellent Technology Award at Technology Innovation Contest

LOTTE E&C held a Technology Innovation Contest to discover excellent partner companies that have competitiveness in technology and cost, and to promote a win-win cooperation. At the contest held in May 2021, a total of 190 technologies in four areas of quality improvement, smart construction, ESG and cost reduction were applied. Based on criteria of creativity, advancement, economic feasibility, and applicability, we conducted evaluations on documents and presentations, and selected the final awardees with excellent technology. EVAR was awarded the Grand Prize with its technology of ‘power-sharing smart EV charging infrastructure,’ which can be installed throughout the parking lot without increasing the capacity of electricity facilities. Additionally, ten excellent technologies were chosen that cover the entire process, such as architecture, civil works, electricity, facilities, etc., including the technology that improves finishing and defects. The awardees are given additional score points for regular evaluation, registered as partner companies, provided with a site for technology application and supported with technology development costs.



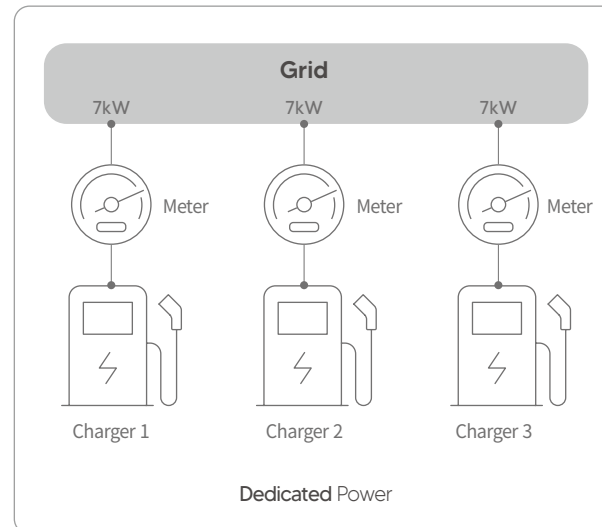
Agreement Ceremony for Smart EV Charging Technology Testbed

### Case Study

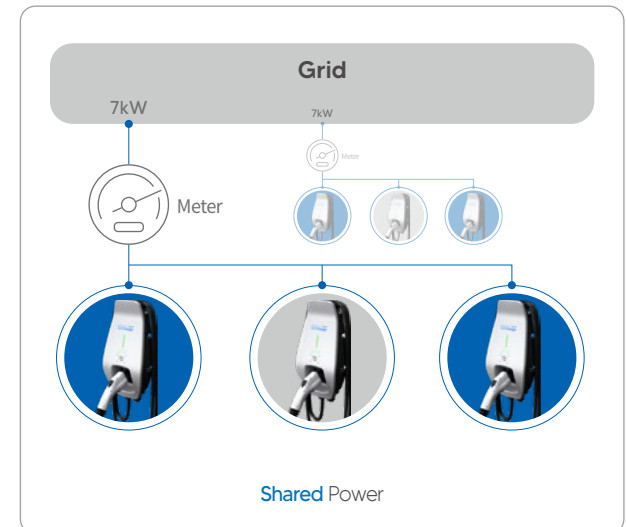
## Testbed Project for Smart EV Charging Technology in Apartment Houses



In an effort to cope with a shortage in EV charging stations in apartment houses, LOTTE E&C plans to discover a technology that can expand the EV charging area by five times without installing additional electricity facilities and apply it to the ‘Testbed Project for Smart EV Charging Technology in Apartment Houses’. EVAR’s ‘Smart EV charging technology,’ awarded the Grand Prize in the first LOTTE E&C Technology Innovation Contest makes it possible to charge EVs at a relatively cheaper price by distributing electricity with parallel connections. The technology will be gradually applied to the apartment houses constructed by LOTTE E&C and an integrated platform will be built for EV charging in apartment houses. In addition, we will jointly develop the charging technology with EVAR and try to commercialize the technology.



Traditional Charger



EVAR Smart Charger

## FOR OUR EMPLOYEES

UN SDGs



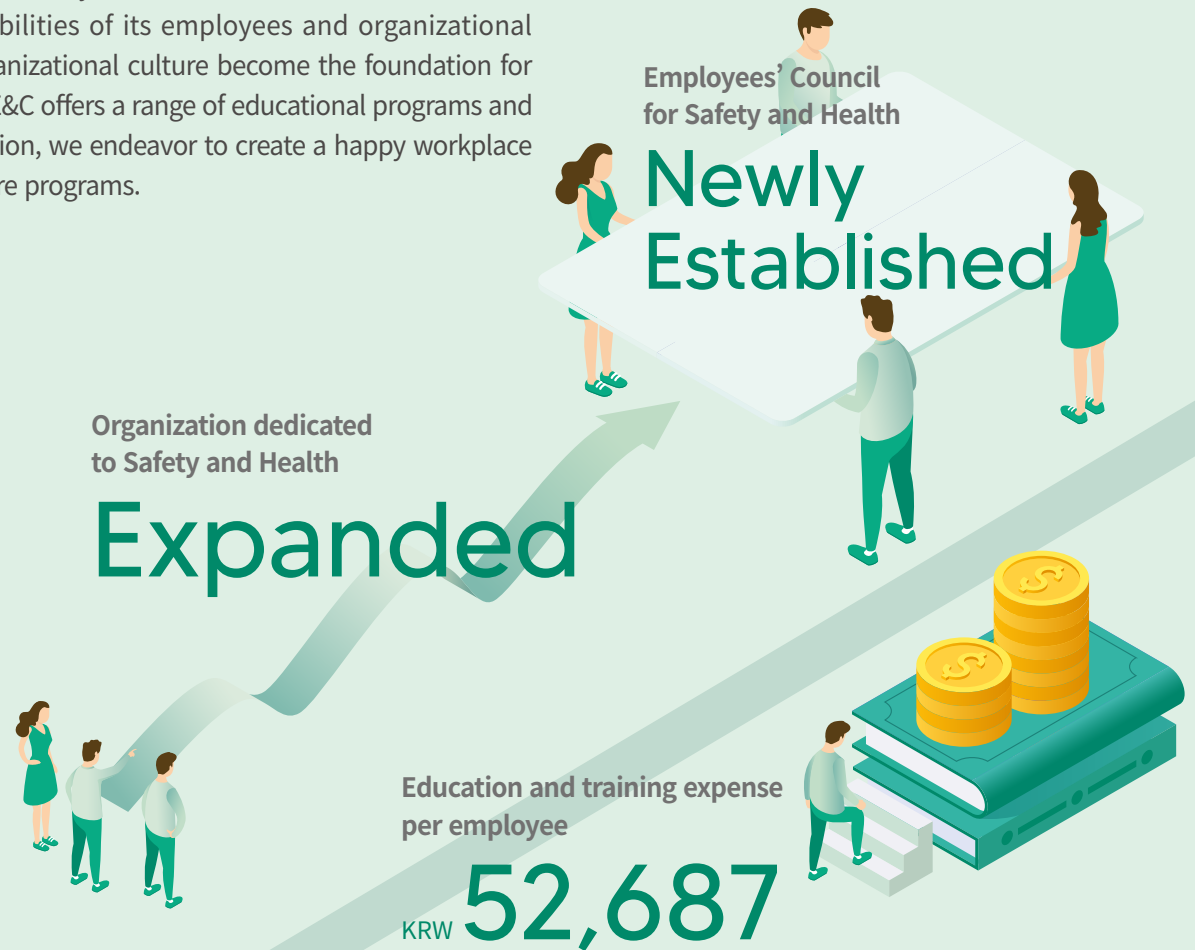
# Happy Employees who Continue to Develop Themselves

The enforcement of the Serious Accidents Punishment Act has increased the interest in the safe management of workers and the responsibilities of management for safety and health. With the philosophy of respect for life, LOTTE E&C places the highest value on safety and health management among all management activities and carries out preventive measures for safety accidents.

The productivity of an organization is linked to the capabilities of its employees and organizational culture. Enhanced capabilities of employees and strong organizational culture become the foundation for sustainable growth. Utilizing the metaverse platform, LOTTE E&C offers a range of educational programs and works to develop the talent of its female employees. In addition, we endeavor to create a happy workplace for employees by providing them with best and various welfare programs.

### Contents

Safety & Health	047
Human Capital Development	056
Welfare Benefits	061



# Safety & Health

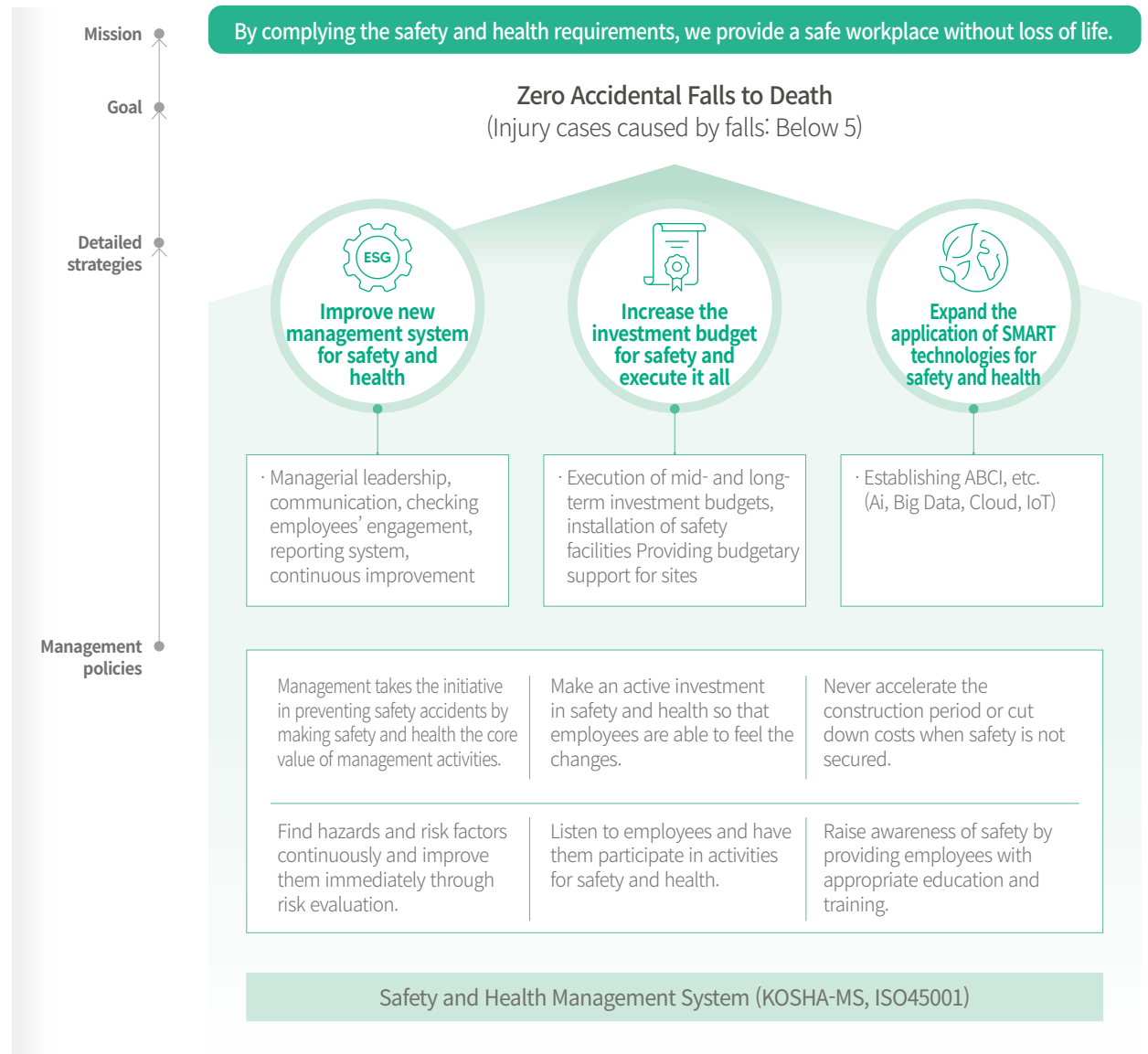
## Safety and Health Management System

LOTTE E&C announced the safety and health goal of ‘Zero Accidental Falls to Death’ in 2022 in order to achieve our mission of ‘creating safe workplace without loss of life.’ By establishing safety and health management policies and embracing the ‘respect for life’ philosophy, we declare that safety and health management is the priority of all business activities and strictly implement the policies to create clean and safe workplaces for workers. In an effort to advance safety and health management, we have chosen and are implementing key tasks of improving new safety and health management systems, expanding investment budgets and SMART technologies for safety and health. The company strives to encourage safe work activities by incorporating safety and health management indicators into KPI and BSC evaluation and maintain KOSHA-MS and ISO 45001 certifications by conducting annual reviews on safe business activities.

### Organization Devoted to Safety and Health Management

We have expanded the organization dedicated to safety and health management and newly established the safety team at the business headquarters to strengthen the support system for safety and health management. Safety and Health Department operates safety and health systems, inspects the implementation of requirements, examines disasters, establishes preventive measures, and provides education and training for safety and health. To manage the risk of construction and design, the Safety Team of business headquarters and Technology R&D are working together to prevent possible accidents caused while using technologies, deploying workers to sites and inspecting compliance of requirements.

Safety and Health Management System





## Management-Level Safety Activities

### Safety and Health Management Meetings

LOTTE E&C holds monthly meetings for safety and health management hosted by the CEO to increase management interest in safety and needed support. At the meeting, we share the results and future plans of safety and health management activities at the company level and come up with areas for improvement.

#### Safety and health management meetings

<b>Key Agenda</b>	<ul style="list-style-type: none"> <li>· Current status of industrial accidents</li> <li>· Pending issues about safety and health</li> <li>· Performance of safety and health activities</li> <li>· Policy changes, etc.</li> <li>· Actions needed to comply with the requirements of safety reporting</li> </ul>
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### Safety Communication Day

We have held a ‘Safety Communication Day’ hosted by the CEO for 10 days since 2016 to vitalize safety communication between the head office and construction sites. The CEO, executives of the head office, and CEOs of partner companies visit work sites to check the status of the safety and health management system and its implementation, and the environment of workplace. In addition, we open up opportunities for communication between the head office and worksites where the voices of site workers and partner companies are heard and needed support is provided.

### Newly-Established Employees’ Council for Safety and Health

In November 2021, LOTTE E&C established the Employees’ Council for Safety and Health to expedite the decision-making process for organization, human resources, budgets, and policies related to safety and health. Hosted by the Chief Safety Officer (CSO), the Council is held every month where division executives and executives in charge of safety management review, deliberate, and decide matters to be expeditiously resolved, such as providing additional budget and human resources.

#### Performance of Employees’ Council for safety and health (Nov. 2011 ~ May 2022)

<b>Resolved matters</b>	19
<b>Number of Council held</b>	11
<b>Key agenda</b>	<ul style="list-style-type: none"> <li>· Establishing a safety organization in business division</li> <li>· Providing support fund for sites lacking safety management cost</li> <li>· Offering support fund for safety management costs for partner companies</li> </ul>

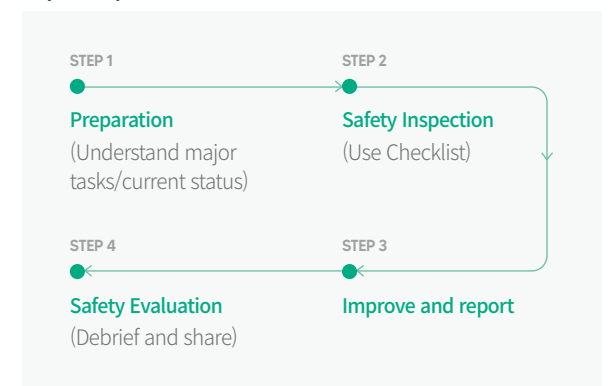


Employees’ Council for Safety and Health

### Random Inspection on Site Safety by Executives

We have carried out random inspections on site safety by executives since 2019 to raise the awareness of safety and made practical improvements in safety and health-related risks. The entire executives take part in safety and health management to discover potential risk factors and come up with measures to make immediate improvement. In 2021, a total of 43 executives conducted 449 random inspections on sites.

#### Inspection process



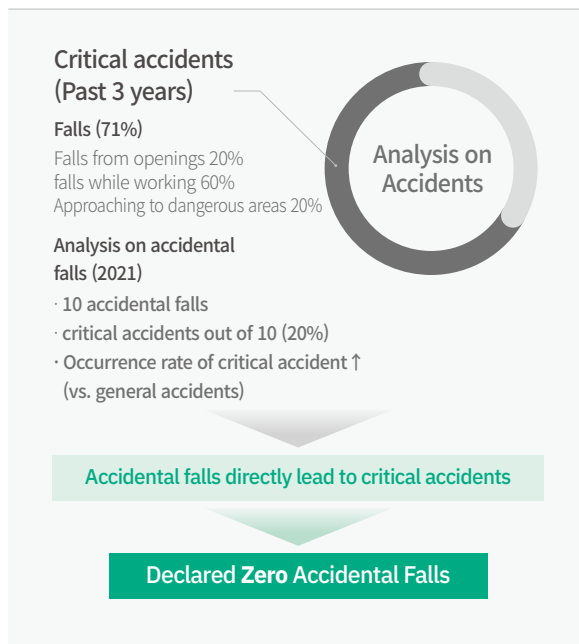
Safety Communication Day

## Safety and Health Activities

### Analyzing Causes for Accidents and Finding Preventive Measures

LOTTE E&C makes analysis on safety accidents and their causes, and devises preventive measures for them. Over the past 3 years, we have analyzed critical accidents and found a higher occurrence rate of critical accidents from accidental falls. For this, the company declared Zero Accidental Falls in 2022, and has made a continuous effort to prevent accidental falls in construction sites. In addition, we conduct analyses on internal and external risks to better understand the risk factors surrounding LOTTE E&C and come up with measures required for safety and health management.

#### Analysis on accidents



#### Internal and external risk analysis

Internal risk analysis			
Type	Accident analysis	Internal assessment	Increase of risk factors
Description	<p>① Unsafe behaviors 82% ② Others 18%</p> <p>Continuous unsafe behavior by workers</p>	<p>① Management of hazardous risks 50% ② Equipment 10% ③ Health 5% ④ System 17% ⑤ Administration 17.5%</p> <p>Lack of hazardous risk management, equipment and health system</p>	<ul style="list-style-type: none"> <li>· Increase in revenue and the number of construction sites</li> <li>· Increase in site risk index (Risk index: Criteria to decide whether the number of risk factors in sites are higher or lower)</li> <li>· Increase in risk factors for accidents</li> </ul> <p>Risk level for accidents expected to increase</p>

Countermeasures	Establish and expand safety culture	Expand the budget on safety and health, and increase its execution	Operate integrated risk index system
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#### External risk analysis

Type	Strengthened social responsibilities	Decrease in working age population	Lack of human resources in safety and health management
Description	<ul style="list-style-type: none"> <li>· Implementation of Serious Accidents Punishment Act</li> <li>· Emphasis on corporate social roles and responsibilities</li> <li>· Concerns over confusion until the act is enforced and settled</li> </ul>	<ul style="list-style-type: none"> <li>· Decrease in working age population due to COVID-19 and Omicron variant</li> <li>· Decrease in skilled and foreign workers</li> <li>· Increase in unsafe factors as unskilled workers have been hired</li> </ul>	<ul style="list-style-type: none"> <li>· Increase in demand for safety and health managers in the entire industry as revenue is on the rise in construction industry</li> <li>· Misunderstanding in safety and health managers and concerns over safety and health management capabilities</li> </ul>

Countermeasures	Strengthen safety and health system	Diversify types of employment	Conduct needed activities to improve the quality of safety and health management
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## Risk Assessment and Management Process by Risk Levels

LOTTE E&C makes risk assessments based on the severity and frequency of hazardous and risk factors in sites and classifies them into 4 different levels according to which management procedures and criteria are decided. We conduct initial assessments before groundbreaking, regular assessments in the beginning of every year, and occasional assessments every day or every month. Workers take part in monthly assessments through meetings of the safety and health council to make their voices heard. High-risk works in CA level categorized based on risk assessment are managed by a specific procedure that involves joint cooperation between sites and relevant teams in the head office from the time of groundbreaking preparation to the time of actual construction work.

Management criteria by risk level

Level	CA (High-risk works, Company/ Division)	C1 (Risks involved with death or permanent disability)	C2 (Risks involved with temporary incapability of work or disease)	C3 (Minor injury)
Severity	<ul style="list-style-type: none"> <li>Absolutely critical risk that may tarnish external image and cause loss in company's management</li> </ul>	<ul style="list-style-type: none"> <li>Critical risk where new works are prevented until the level of risk is decreased to an acceptable level</li> <li>If unlimited input of resources doesn't decrease the level of risk, the work is continuously suspended</li> </ul>	<ul style="list-style-type: none"> <li>Risk that can be controlled without significant system damage</li> <li>Damage may occur due to negligence</li> </ul>	<ul style="list-style-type: none"> <li>Minor but acceptable risk which can be managed and maintained by current practices and operational procedure</li> </ul>
Management Criteria	<ul style="list-style-type: none"> <li>Put the agenda for Safety and Health Council</li> <li>Review and approval by Safety and Health Department and Business Division (Within D-7)</li> <li>Impossible to lower risk level</li> </ul>	<ul style="list-style-type: none"> <li>Incorporated into safety and health goals</li> <li>Put the agenda for Safety and Health Council</li> <li>Monitor and obtain feedback from the head of safety team</li> </ul>	<ul style="list-style-type: none"> <li>Close management of partner companies (daily feedback, inspection logs, safety training)</li> </ul>	<ul style="list-style-type: none"> <li>Acceptable risk (Morning TBM, no additional management needed)</li> </ul>

Risk assessment process



### Integrated Risk Index System

As risk factors vary depending on the conditions of construction sites, such as work types, process rate, and construction period, LOTTE E&C is implementing an integrated risk index system where a quantitative risk index based on the same criteria is applied to all sites. On a monthly basis, the data required to calculate the risk level of each site is entered to find a high-risk worksite. The high-risk worksite is categorized as the site of priority review for human resources and additional budgets and is intensively managed. The big data entered will be used to predict the changing trend of risk factors such as business divisions, progress rates, construction size, etc.

#### Integrated risk index system

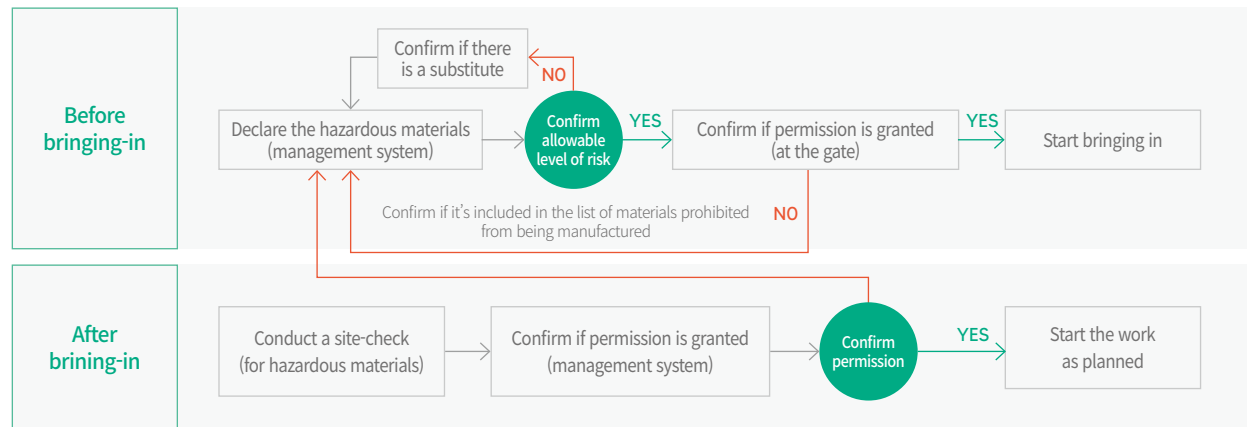


Administrative resources		Risk index [▼]	<ul style="list-style-type: none"> <li>Resources used to manage risk factors</li> <li>Safety and health managers, facility workers, etc.</li> </ul>
Risk index	Physical	Risk index [▲]	<ul style="list-style-type: none"> <li>Harmful risk factors causing accidents</li> <li>Dangerous works and places, equipment</li> </ul>
	Administrative		<ul style="list-style-type: none"> <li>Site conditions increasing the risk level</li> <li>Lack of budget, excessive deployment of construction workers, etc.</li> </ul>

### Developing a Website to Manage Hazardous Materials

LOTTE E&C has developed and operated a website where hazardous materials must be registered before they are brought into workplaces in order to prevent acute poisoning accidents from occurring and noncompliance with requirements by identifying hazardous materials to be brought in. Before bringing in any hazardous materials into sites, proper permission should be obtained, and unauthorized materials are restricted from being brought in or used.

#### Process to bring in hazardous materials

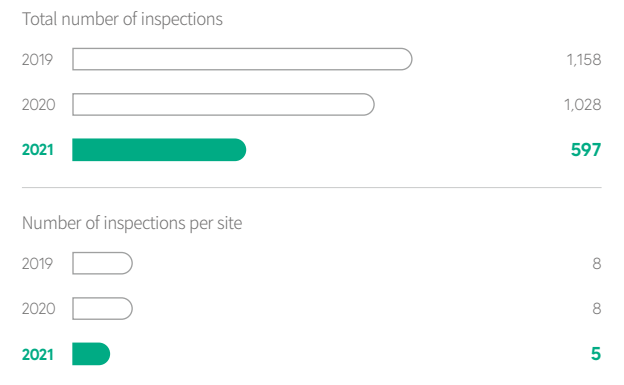


### Improving Safety Inspection System

LOTTE E&C has improved the safety inspection system to fulfill its obligation of securing employees' safety and health according to the Serious Accidents Punishment Act and to establish a comprehensive safety diagnosis system to prevent serious accidents from occurring. In 2022, we carried out internal assessments, external commissioned-inspections, initial inspections at groundbreaking and special inspections to ensure that we comply with safety and health-related obligations and established a diagnosis system where areas with fundamental vulnerabilities are discovered and managed with proper support.

#### Safety inspection at sites

(Unit : Case)



· The number of face-to-face safety inspections has decreased temporarily due to COVID-19 pandemic.

## Emergency Response Training

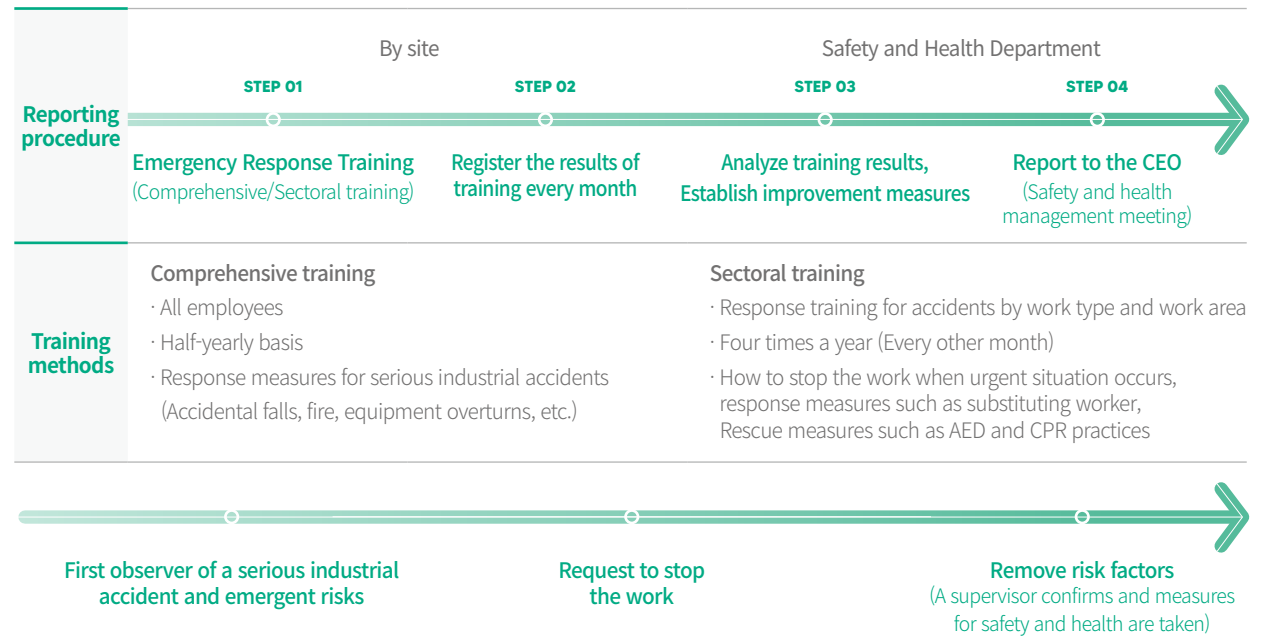
LOTTE E&C carries out emergency response training to remove risk factors for serious industrial accidents and minimize the impact of accidents if they occur. In order to prepare for serious industrial accidents or urgent risks that can lead to serious industrial accidents, we have established the ‘guidelines to prepare for serious industrial accidents.’ Based on the guidelines, we conduct comprehensive training and sectoral training so that the process of reporting and taking measures can be conducted without disruption. The comprehensive training takes place twice a year where all workers practice response measures for serious industrial accidents such as falls, fires and equipment overturns.

On the other hand, sectoral training is conducted four times a year where workers involved in particular work types and areas practice how to stop their work and evacuate in a rapid and accurate manner when there are urgent risks. In addition, they practice how to use AED<sup>1)</sup> and CPR<sup>2)</sup> to learn basic rescue techniques in the event of an emergency. The Safety and Health Department makes an analysis of the results of training done at sites, supplements manuals and procedures for improvement, and reports them to the CEO at safety and health meetings on a half-year basis.

1) AED Automated external defibrillator, a device used to deliver electric shock through the chest of a patient with sudden cardiac arrest to bring back the heart rhythm

2) CPR Cardiopulmonary resuscitation, emergency lifesaving technique used to maintain breathing and blood circulation when someone’s breathing or heartbeat has stopped

### Actions taken by guidelines to prepare for serious industrial accidents



### Examples of urgent risks

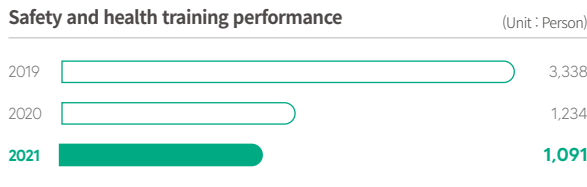
01	When there is a high risk of accidental falls due to the lack of scaffolding, safety handrails, etc.
02	When the installation of scaffoldings, molds, supporting posts are not done properly or inappropriate materials have been used for them
03	When there is a high possibility of collapse due to deformation of soil, fixtures, etc.
04	When there is a possibility of fire and explosion because combustible and flammable substances are handled in authorized areas
05	When there is a possibility of leakage of chemical materials due to failure or deformation of facilities that handle hazardous and dangerous chemical substances
06	When oxygen concentration is not measured before working in a closed area
07	When a local air exhaust system is not installed at sealing facilities for hazardous chemical materials
08	When there is a risk of falling or collision of cranes and excavators while using them
09	Other instances where it is deemed to be an urgent risk



## Strengthening and Spreading Safety and Health Culture

### Training on Safety and Health

LOTTE E&C offers a variety of education and training curricula for employees so that they can internalize the importance of safety and health. In 2021, we developed customized training materials for foreign workers and built the training infrastructure to increase the effectiveness of training, which included a mobile safety management system and a safety and health experience center. In addition, we commissioned external training by specialized institutions for training courses on equipment specialists to prevent related accidents and strengthen the workforce in charge of handling equipment. We plan to expand small-sized in-person training and training linked to the experience center so that what was learned during training can actually be applied to sites.



Training on safety and health

### Opening Safety and Health Experience Center ‘Safety On’

In February 2022, we opened a safety and health experience center called ‘Safety On,’ where our employees can have direct and indirect experiences in unsafe conditions with various risk factors that can lead to safety and health accidents so that they can learn how to recognize the risk factors in advance and raise the awareness of safety and health. The center has experience facilities for 14 different safety accidents, which include falling from colliding cranes and ladders, accidents caused by safety belts, fires and how to use fire extinguishers. It also provides practice training on first aid and VR experiences for 13 kinds of industrial accidents that can occur at construction sites. With the Safety On, where executives and employees can have in-person experiences of safety accidents, LOTTE E&C intends to help our employees have increased awareness of safety by recognizing potential risk factors in advance and have enhanced coping skills to prevent serious accidents. We plan to expand this training to employees of partner companies and workers, as well as executives and employees of LOTTE E&C.



Experiencing possible accidents through VR

### Safety and health training in 2021

Type	Target	Contents	Training hours & cycle	Remark
1	Executives and employees	Season 2. You see what you know.	Once, 5 hours/year	In-house training
2	Supervisors	Training for highest-ranking supervisors	Once, 2 hours/year	In-house training
3	Safety and health managers	Newly-hired safety and health managers	Once, 8 hours/year	In-house training
4	Safety and health managers	Specialization training	Differs by course (16-34 hours)	In-house training
5	Safety and health managers	Commissioned training to nurture in-house instructors	Once/quarter	Commissioned
6	Safety and health managers	Workshop for nurturing in-house instructors	Once, 16 hours/year	In-house training
7	Safety and health managers	Commissioned training on construction equipment by external institution	Once, 8 hours/year	Commissioned
8	Workers	Safety and health training for foreign workers (Vietnamese workers handling reinforcing bar)	Once, 8 weeks/half year	In-house training
9	Workers	Video training on safety and health in multiple languages	Once, 1 hour/month	In-house training
10	Heads of construction sites	Refresher training on safety for newly-hired heads of sites	-	In-house training
11	Supervisors	Regular training materials for supervisors	Once, 7 hours/half year	In-house training
12	Safety and health managers	Support training before newly-appointed safety team leaders are deployed	Once/quarter	In-house training

\* Trainings were conducted separately because of COVID-19 restriction on collective training

## Site Safety Culture

We are implementing a variety of systems to create and foster a safety culture which include Zero Accident 365+, a safety culture promotion project, and Let's Walk Together initiative. In addition, we have signed MOUs with professional institutions outside, obtained certifications for good workplace with a safety culture, and been awarded for good practices for safety and health activities to motivate our employees, which, in turn, fosters a safety culture across the company. We will continue to foster the safety culture of a 'mutual cooperation' where every single worker of the company and partner companies takes it for granted that they should work safely.

## Establishing Safety Communication Center and Enhancing Reward System

LOTTE E&C has recently opened a communication channel for safety where all workers can easily report risk factors found on construction sites and suggest improvement measures for safety and health anytime and anywhere. They can contact 'Safety Communication Center' through landline phones or its official website. Reports and suggested ideas are reviewed by the relevant department, who then comes up with implementation measures. If immediate actions can be taken for reported cases, the actions are taken in advance and responses are sent to the reporter later, and these results are announced on a half-year basis. In order to further encourage safety and health practices, we are going to award the best suggestion on a monthly and half-yearly basis. Currently, we award prizes for good suggestions, good practices, those who achieved zero accidents, work sites, workers, and supervisor of sites with good safety and health activities.



Signing ceremony for Safety Culture Promotion Project

### LOTTE E&C safety prizes

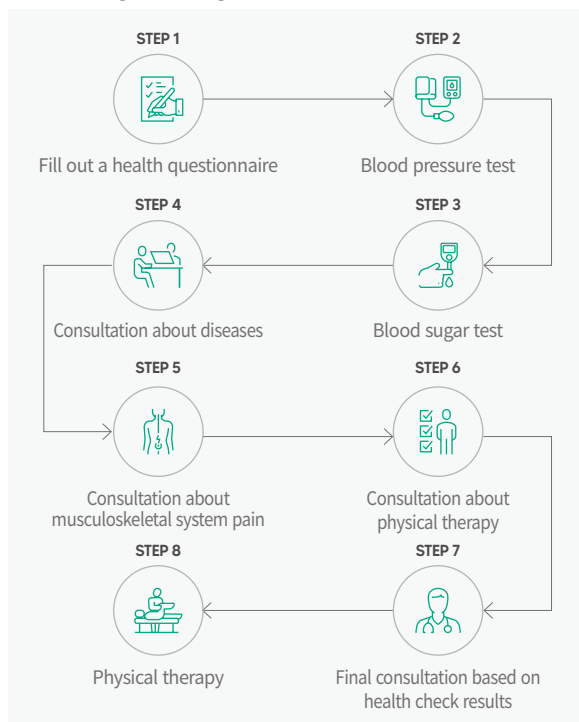
Type	Name of prizes	Criteria	When	Prize money
Best suggestion	Safety Communication Center	Good suggestions for improving safety	Every six month	Up to KRW 1 million
	Best practice for safety and health	Most recommended case on MOIN, a bulletin board for sharing best practices for safety	Every year	Up to KRW 3 million
Best practice	Best team which conducted preventive activities for safety accidents	Best construction team with preventive activities	Every six month	Up to KRW 2 million
	Let's Walk Together initiative	A worker of best practice and the person who discovered the worker	Every month	Up to KRW 0.5 million/person
	Best leader in safety and health	Head of a site from a partner company who conducted good preventive measures	Occasionally, every six month	Up to KRW 3 million/person
Achievement of no accident	Zero Accident 365+	Site in which the number of zero-accident days is achieved	Every month	Up to KRW 7.5 million

## Health Management

### Health Management Program for On-site Workers

In connection with a health care center, LOTTE E&C provides health checks and post-management programs for on-site workers to raise their awareness of health management. Based on the health check results, one-on-one consultation and management is provided by medical professionals and site health managers. In addition, we have placed devices to measure the stress level and relevant values for cardiovascular diseases at work sites so that on-site workers can easily check their health conditions. We also hand out the safety and health guidelines for working in a heat wave, cold wave, or outside.

#### Health management program for On-site workers



### Response to COVID-19 Pandemic at Site

In an effort to prevent the spread of COVID-19, LOTTE E&C has actively implemented quarantine activities such as social distancing, wearing masks, disinfection and ventilation, access management, etc. We have also distributed free masks and self-test kits to site workers, and continuously informed them of changing quarantine instructions so as to protect them from the COVID-19 pandemic.

#### COVID-19 quarantine activities for blind spots

	Shower room	Limit the number of users, disinfect and ventilate the area
	Rest area	Refrain from sharing and using common items with others
	Office and warehouse	Ventilate and disinfect the area
	Restaurant	Schedule different mealtime for partner companies, install partitions on the table, etc.
	Training facility	Strictly conduct social distancing, limit the number of trainees, ventilate the area, etc.
	Visitors	Comply with clearance procedure such as taking temperature, wearing a mask, etc.
	Machine and equipment, etc	Disinfect before using common machine or equipment, do not share same radio with others, etc.

### Rest Facilities and Work Environment

In order to provide a pleasant working environment and prevent health problems, LOTTE E&C offers sanitary facilities such as rest areas, washrooms, shower rooms, etc. We have secured the needed budget and appointed people in charge of managing and maintaining rest areas who keep the area clean and hygienic. In the event of lacking the area to install these facilities, we set up mobile and temporary facilities to create a work environment that protects the health of site workers.



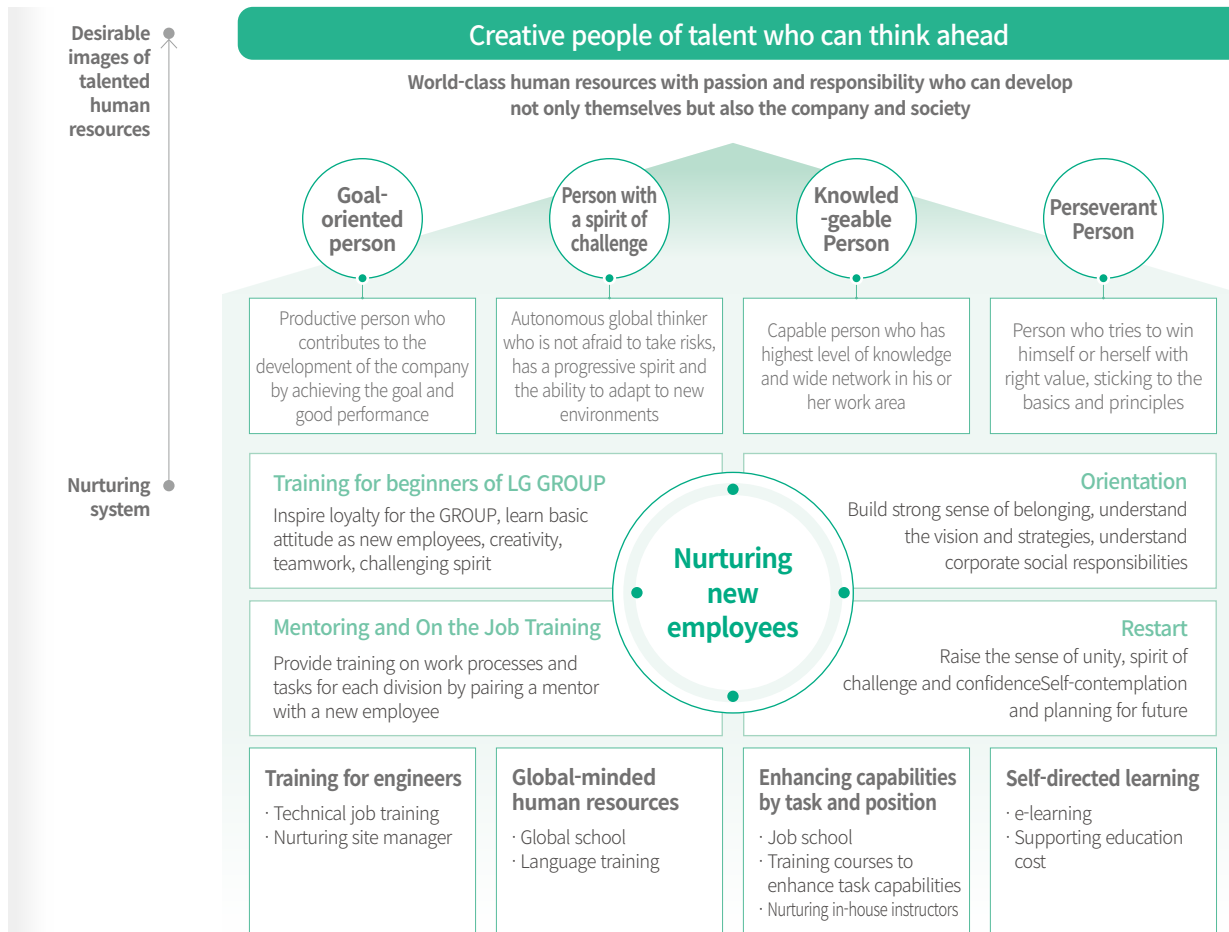
Rest facilities and work environment



# Human Capital Development

## Human Resource Management

Placing higher value on building a brighter future rather than being satisfied with the present, LOTTE E&C is creating a human resource ecosystem where our employees can grow into specialists in their jobs. We seek to nurture future-oriented global human resources of talent who work hard to further develop not only themselves but also the company and society with passion and responsibility.



### Human Resource Training Performance

Total training expenses for executives and employees		(Unit : KRW Million)
2019		3,610
2020		2,480
<b>2021</b>		<b>3,042</b>
Per capita training expenses		(Unit : KRW won)
2019		1,074,400
2020		746,300
<b>2021</b>		<b>852,687</b>
Number of training participants per year		(Unit : Person)
2019		3,360
2020		3,323
<b>2021</b>		<b>3,568</b>
Per capita average training hours		(Unit : Hour)
2019		115
2020		117
<b>2021</b>		<b>120</b>

## Hiring and Nurturing Human Resources

### Recruiting

LOTTE E&C has an occasional recruitment system and operates campus recruiting programs and Job-Café to find competent human resources who have a comprehensive way of thinking, pursuing the same value with LOTTE GROUP. We do not discriminate against job applicants by gender, educational background, or birthplace and select professional human resources based on principles of fairness, diversity, suitability, and rationality.



Total number of new employees

196



Average training hours per employee

120 hours

### Developing Capabilities of Executives and Employees

LOTTE E&C offers common training and on-the-job training by each division to provide specific training tailored by job and experience. Led by the HR team, the company-level common training is designed to support new employees to develop capabilities needed for jobs and positions, whereas the on-the-job training by division is intended to enhance technical skills and expertise. It consists of theoretical classes, case studies, team projects, and presentations where technical know-how of LOTTE E&C can be shared.

### Leadership Diagnosis

LOTTE E&C implements the leadership diagnosis program where executives, team leaders, and site managers can check their leadership styles and required capabilities. Through the program, we support them to make the actual changes needed in their behavior as leaders and translate that into better performance. Launched in 2014, the leadership diagnosis program aims to nurture leaders whose leadership styles are suitable for the job and business environment, seeking to achieve balanced growth between organizations and leaders. Every September, the company conducts a PC and mobile-based survey to find the gap in how employees and leaders see types of leadership and its level, and help leaders to change their leadership style the way employees want. In 2021, a total of 2,812 employees took part in the program, making an effort to narrow the gap in the types and levels of leadership between employees and their leaders.

### Welcome Course for the New Employees

We have recently hired a large number of college graduates and experienced workers to expand overseas businesses and strengthen our capability as a developer to prepare for future growth. A training program to help new employees familiarize with the organization, the Welcome Course consists of an introduction to the company, a description of organization, tasks and projects, special lectures from executives, opportunities to get to know each other. The Welcome Course is intended to help them understand and adapt to LOTTE E&C in a swift manner. After the Course, job training by each division is provided to further strengthen the job expertise of the trainees.

#### Training

<p><b>Company-level common training</b> Secure needed capabilities</p>	<ul style="list-style-type: none"> <li>· Introduction course for new employees</li> <li>· Commissioned training on the job by external institution</li> <li>· Leadership course for female employees</li> <li>· A Grade</li> <li>· Training for the head of organization</li> <li>· CEO course</li> <li>· Language program for executives</li> <li>· e-Learning</li> </ul>
<p><b>On-the-job training</b> Strengthen technical skills</p>	<ul style="list-style-type: none"> <li>· Civil works, 6 courses</li> <li>· Plants, 15 courses</li> <li>· Architecture, 11 courses</li> <li>· Housing, 10 courses</li> </ul>

### Employment Stimulation Policies for Veterans and the Disabled

LOTTE E&C makes an effort to hire national veterans and the disabled to fulfill its social responsibilities and secure diverse human resources. We provide a wide range of opportunities to office workers and technicians by implementing ‘recruitment of new employees eligible for employment support (Ministry of Patriots and Veterans Affairs)’ and ‘recruitment of new employees for the disabled.’ In addition, we offer mentoring programs and job-related training so that our employees can strengthen and demonstrate their capabilities.

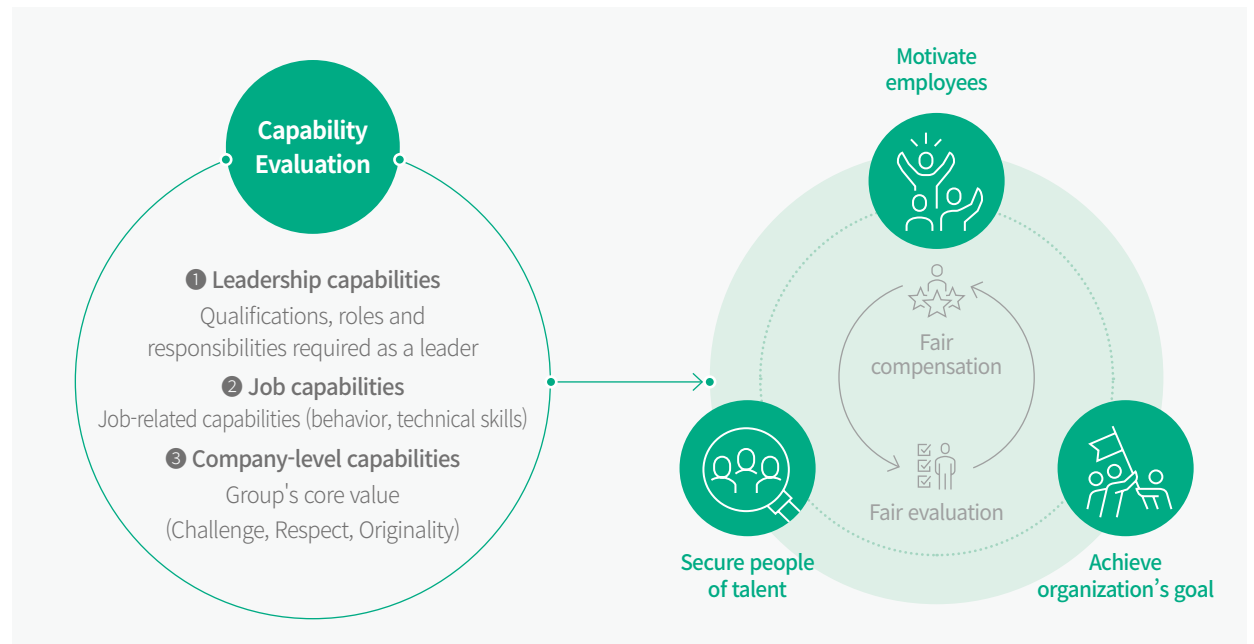
### Fair Evaluation and Adequate Compensation

LOTTE E&C tries to provide the employees with reasonable compensation through fair evaluation of performance and capabilities that executives and employees have achieved. Led by the HR team, we conduct two evaluations on employees' performance a year and one evaluation on their capabilities whose results are factored in promotion, compensation, and training. In addition, we provide occasional prizes and incentives to executives and employees with excellent performance to continuously motivate them. Through this, we intend that achieving the vision and goals of the company should translate into the opportunities for growth for individual employees. In 2022, we revamped the compensation system in such a way that the level of annual salary is decided by performance achieved, not by position. With this, we provided a record-high performance pay to employees so that their achievements could be reasonably rewarded. Starting from 2023, we will further strengthen the capability and performance-based compensation systems by offering different increase rates of salary according to the level of performance achieved.

#### Evaluation system

Type	Individual evaluation		Organizational evaluation
	Achievement	Capabilities and core value	
Cycle	Twice a year	Once a year	Once a year
Target	All employees	All employees	Divisions, teams and sites
Method	Evaluation on job checklist	360-degree feedback based on capability model and core value of the Group (Heads of organizations)	BSC indicators
Application	Promotion, Different level of bonus by performance	Promotion	Promotion, Different level of bonus by performance
Host	HR Team under HR Division		Planning Team under Strategic Planning, Budget Management Team

#### Capability evaluation





Case Study

### Nurturing Talented Female Employees

For Generation MZ<sup>1)</sup>, the construction industry is no longer a male-centered sector. They see it as a place where fair opportunities and equality are guaranteed. While other companies were reluctant to hire new employees due to the economic recession, LOTTE E&C has increased the size of the newly-employed and diversified training programs, believing that hiring more talented female employees is an effective way to enhance our competitiveness. We are deploying more female employees to construction sites, which used to be dominated by male workers. The new female employees spend certain period of time in the sites of civil works, architecture, plants, and housing to have practical experience before they apply for the job that they want. As a result, the proportion of newly employed female workers increased by three times in five years, and we witnessed more female workers applying for jobs in construction sites than male workers did.

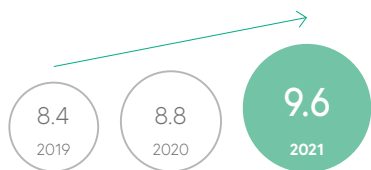
In order to be a more dynamic company, LOTTE GROUP has held the ‘LOTTE Diversity Forum’ since 2012. The Way of Women (WOW) Forum, in particular, is mainly for female employees in LOTTE GROUP and has been improved in ways to include various subjects. The slogan for the 2021 LOTTE Diversity Forum was ‘Technology, Talent and Tolerance,’ and the themes of the programs included generation, gender, disability, and global, where cases of best employees were introduced and lectures and panel discussions were held.

In line with this trend, LOTTE E&C has conducted an annual ‘W-Leadership Program’ since 2018 to enhance the capabilities of female employees in organization management. In 2021, a live lecture on YouTube on the subject of strengthening leadership was broadcast for all female employees, where well-known outside instructors gave lectures and success stories of female executives were shared. The forum was a great opportunity where the determination of LOTTE E&C in nurturing female leaders was demonstrated and the self-esteem of talented female employees was raised. We will continue to plan more programs like this, focusing on diversity in the organization.

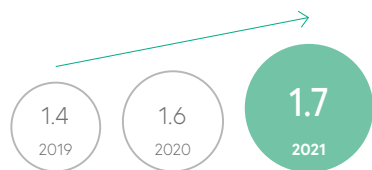
1) **Generation MZ** The millennial generation who were born from early 1980s to early 2000, and generation Z who were born from mid 1990s to early 2000

#### Female employees

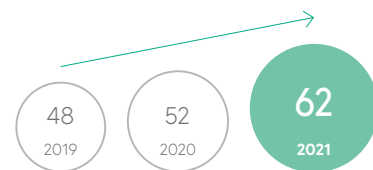
Proportion of female employees (%)



Proportion of female management (%)



Number of female management (Person)



LOTTE Diversity Forum



LOTTE E&C 2021 Talented Female Leadership Forum

Case Study

## Managing Talented Employees Using Metaverse

LOTTE E&C makes effective use of metaverse<sup>1)</sup> to shed the conservative image of a construction company and to create younger and brighter image for our employees in their 20s and 30s. In August 2021, we held a recruitment briefing session in the metaverse. The metaverse recruitment enables recruiters and Generation MZ candidates to have a candid bilateral communication, not just unilateral way of information sharing. The metaverse can be used in many ways as attendees are free from the constraints of time and distance, and COVID-19 restrictions.

The recruitment briefing session this time had approximately 400 job applicants who had the chance for mock-up interviews. The person in charge of hiring hosted a live show introducing the company and having a real-time conversation with applicants. Representative architecture built by LOTTE E&C, such as LOTTE CASTLE, LOTTE WORLD TOWER and LOTTE WORLD was displayed in the virtual space to make it look like a real world.

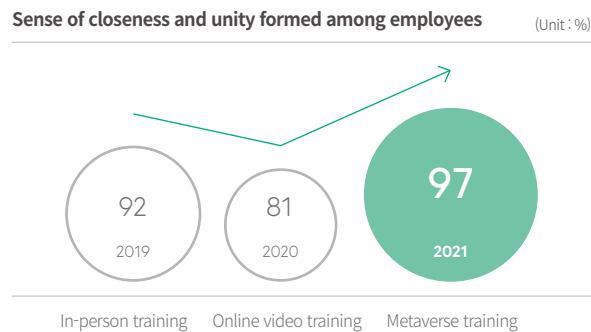
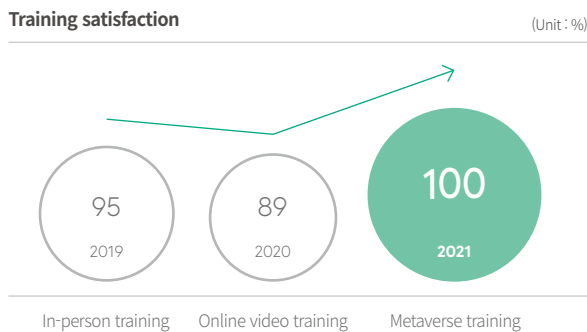
Following this, we introduced the metaverse training for new employees in October 2021. In order to overcome the limitation of contact-free training due to COVID-19 restrictions, we created a virtual world where Generation MZ new employees could use their avatars to freely communicate with each other through video calls and screen sharing, which was effective in raising their concentration on training and sense of closeness. To strengthen the sense of belonging and unity, we offered a variety of metaverse programs such as lectures, congratulatory messages from the CEO, online trips, online sports events, mini-games and more. It turned out that 97% of new employees were satisfied with metaverse training, saying that it made them communicate freely and friendly even though it was contact-free.

To truly understand the mindset of Generation MZ and communicate with them accordingly, we plan to expand the use of metaverse for a launch event of promotion supporters and regular junior board meetings, not just for recruitment briefing sessions and training.

1) **Metaverse** A network of 3D virtual worlds. A coined-word of meta which means abstract virtual and universe which means real world



Job consultation zone in metaverse recruitment briefing session



LOTTE E&C metaverse training program

# Welfare Benefits

## Welfare Benefit System

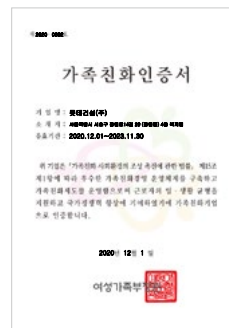
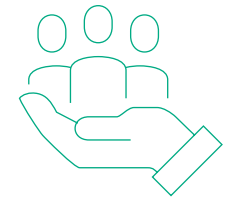
LOTTE E&C operates a selective employee welfare system in which individual employees are allowed to choose welfare items that meet their specific requirements. We also offer basic welfare benefits such as providing a health diagnosis, insurance, housing loans, paying tuition fees for their children, and paying congratulatory and condolence money on important occasions. Since January 2022, in particular, we have expanded the welfare benefits system in ways to consider personal preference and demands. The company pays for the entire group insurance, which used to be deducted from the welfare points of each employee. The scope of group insurance has expanded to include the spouse of the employee. We have also raised the amount of welfare benefit points provided to employees to a great extent. In response to the COVID-19 pandemic and the restrictions imposed by it, we introduced the ‘Maumi Program,’ a professional psychological counseling program, in 2021 to help our employees manage the stress from work and life, and Corona-blue depression, which was well received by our employees.

## Work and Life Balance

LOTTE E&C has made continuous efforts for the balance of work and family for our employees and was acknowledged by acquiring the family-friendly company certification in 2015 and the leisure-friendly company certification in 2019. In addition, we have implemented the system for ‘active use of vacation’ since January 2021 where, all employees can use at least 5 days of leave per year. Furthermore, we are operating an automatic parental leave system and a workplace daycare center to support our employees’ childrearing needs.

### Welfare benefit system

Selective benefit system		Best Workplace, Best Welfare System A system that provides various choices for welfare benefits to employees where a company switches the welfare expenses to individual budget and the employees design the welfare benefit system that they need
Health promotion	<ul style="list-style-type: none"> <li>· Health check for the spouse</li> <li>· Group insurance 1 for parents/parents of the spouse (death, cancers)</li> </ul>	
Welfare Cards	<ul style="list-style-type: none"> <li>· Corporate credit card (Self-development, leisure, entertainment, others)</li> </ul>	
Basic welfare		Fun Workplace A workplace that offers basic support for daily lives such as support for children’s education, housing and accidents, and other supports including prizes, clubs, etc.
Health promotion	<ul style="list-style-type: none"> <li>· Health check</li> <li>· Group insurance 1 (death, cancers)</li> <li>· Group insurance 2 (hospitalization/outpatients)</li> </ul>	
Children’s education	<ul style="list-style-type: none"> <li>· Education fees for children (kindergarten, college)</li> </ul>	
Housing	<ul style="list-style-type: none"> <li>· Loan for housing or living</li> <li>· Congratulatory and condolence money, items or leaves</li> <li>· Financial support for moving and packing service, moving to a new post</li> </ul>	
Fun Workplace	<ul style="list-style-type: none"> <li>· Support for clubs</li> <li>· Prize for employees with long-term service</li> <li>· Souvenirs for regular retirement</li> <li>· Regular and occasional prizes</li> <li>· Gifts on Workers’ Day, Foundation Day</li> <li>· Regular vacation, annual leave</li> <li>· Financial support for mobile phone service, cars and car insurances</li> </ul>	



Welfare benefit expenses per person in 2021

KRW 13.5 million



## Innovating Organizational Culture

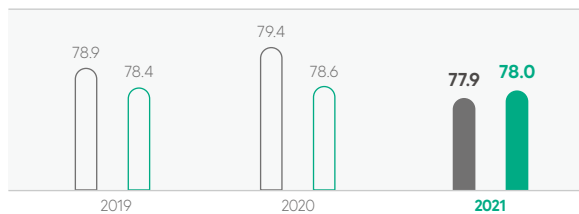
### Fostering a Company-Wide Innovation Culture

LOTTE E&C continues to create an innovation culture across the company to encourage employees to work toward achieving management goals and secure future competitiveness. We carry out a variety of innovation activities in different areas, including activities to enhance our competitiveness, improve construction methods and quality, reduce costs, and encourage employees to make suggestions. At the end of each year, we share exemplary innovation cases within the company during the year and hold a ceremony to reward employees who performed well in innovation activities.

### Assessing the Value Creation Culture

We assess our value creation culture to measure employees' awareness of our corporate culture and improve the work environment by identifying areas for improvement. For the assessment, we carry out improvement activities in areas that lack awareness in three areas, including the basic factors(fundamental belief in core values), practical factors(employee happiness, corporate values and social values), and resulting factors.

#### Assessment Results



● Basic factors ● Practical factors

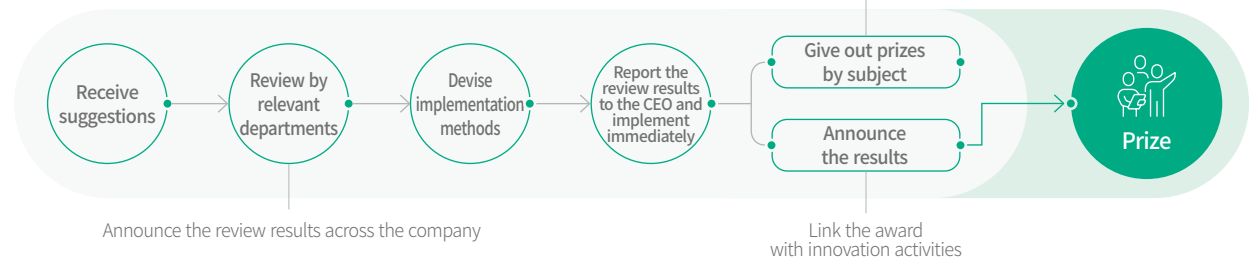
### ERRC Suggestion Campaign

In an effort to innovate work culture, raise work efficiency, and spread work-life balance culture, LOTTE E&C carries out an ERRC suggestion campaign. Announcing the start of the campaign in March every year, we encourage our employees to come up with good ideas for work innovation. Those ideas suggested by the employees go through online votes of employees and panel evaluation to be selected as the grand prize and second prize. In 2021, twenty ideas out of 62 suggestions were put into practice. The entire executives and employees of LOTTE E&C continue to improve the way of working and culture.

#### ERRC campaign

<b>Eliminate</b>	Eliminate malpractices that interrupts achieving my work goal
<b>Reduce</b>	Reduce unnecessary resource waste
<b>Raise</b>	Raise the proportion of good practices which have been done but are needed to increase to achieve the goal
<b>Create</b>	Create new work for better achievement

#### ERRC Process



### Labor-Management Council, Communication Channel for the Two

LOTTE E&C operates a labor-management council where the two can discuss major issues such as the welfare system, salary, health and safety to build mutual trust and promote harmony. Five representatives from the labor side and management gather together on a quarterly basis to discuss a given agenda. When necessary, temporary meetings are held.

#### Major agenda resolved at the Labor-Management council in 2021

Major Agenda
· COVID-19 related support and vaccination leave
· Salary raise and performance pay
· Active use of annual leave and regular vacation leave
· Introducing Maumi Program (psychological counseling service)

#### Total number of agenda resolved

10



### Junior Board

LOTTE E&C operates a Junior Board as a channel where the CEO and younger employees can have direct communication to create a horizontal organization culture. The Junior Board is a bottom-up communication channel for employees aged 35 or younger. They can share their ideas with the Board, and good ones can be taken for formulating company policies. Starting with the first L-Junior Board in 2021, the second board is working hard in 2022. Selected by an open recruitment among all employees, the second L-Junior Board consists of 14 employees in their 20s and 30s working in the head office and sites who play the role of communication channel between management and Generation MZ.

Regular meetings take place every other month. At the 1st regular meeting, different ideas were suggested, which included ‘creating wise commuting culture,’ ‘building a database for job manual,’ and ‘fresh ideas for ESG management’. Currently, relevant departments are making preparations to implement those ideas suggested. While the main focus of the 1st L-Junior Board was to improve work efficiency and change communication methods, the 2nd Board intends to build a horizontal organizational culture and facilitate communication through a variety of activities.

#### Agenda on Junior Board



Directions and policies for long-term development from the perspective of Generation MZ were suggested to the CEO.



Customary issues and ways to resolve them were freely shared with the CEO.

### Strengthening Contact-Free Communication

LOTTE E&C continues to plan a variety of YouTube content and strengthen contact-free communication to keep up the morale of our employees and create a pleasant workplace.

#### UCC Contest for Employees

In March 2021, we carried out an UCC Contest where employees created a 5-minute or shorter video under free themes such as overcoming COVID-19, hobbies, and families. Thanks to the enthusiastic participation of employees, and ‘Motolog,’ a video that filmed everyday work life such as commuting by motorcycle, won the first prize with 20,000 viewers.

#### We Quiz On The LOTTE E&C

In March 2021, we carried out an UCC Contest where employees created a 5-minute or shorter video under free themes such as overcoming COVID-19, hobbies, and families. A total of 2,342 employees took part in the event, and ‘Motolog,’ a video that filmed everyday work life such as commuting by motorcycle, won the first prize with 20,000 viewers.

#### L-Frontier, LOTTE E&C Supporters

In August 2021, LOTTE E&C conducted a ‘launching ceremony for L-Frontier’ by using the metaverse platform SK JUMP. The L-Frontier consists of 8 employees in Generation MZ in LOTTE E&C who gather together to have a monthly meeting and try to find ideas to promote the company and facilitate communication among executives and employees. In addition, the L-Frontiers play various roles, such as creating content with new trends and participating in company events. To name a few, they introduce recent news at ‘LOTTE E&C News’ and share stories of employees in the show called ‘Let’s Talk While Driving Home,’ where employees are taken home by the car after they finish work.



We Quiz On The LOTTE E&C



LOTTE E&C News



Let's Talk While Driving Home

## Human Rights Management System

### LOTTE GROUP Human Rights Management Charter

LOTTE E&C takes a pledge to comply with and practice the human rights management charter of LOTTE GROUP. LOTTE GROUP enacted the 'Human Rights Management Charter' as a standard for behavior and value that all executives and employees should comply with in the process of management and business activities in order to reborn as a GROUP that adds more value to people's lives. In line with this, LOTTE E&C is determined to comply, settle and spread the spirit of the Human Rights Management initiatives. The Human Rights Management Charter is based on international human rights principles and norms such as the United Nations Universal Declaration of Human Rights, the UN implementation principles for enterprises and human rights, the OECD Guidelines for Multinational Enterprises, and the UN Convention on the Rights of Children.

#### Major contents

01	Respect for human dignity and values
02	A ban on discrimination in employment and jobs
03	No forced labor and child labor
04	Comply with work hours and ensure the minimum wage
05	Create a work environment with safety and health as a first priority
06	Protect personal information
07	Comply with environmental regulations
08	Prevent human rights violations and provide active remedies when they occur

· Excerpt from Human Rights Management Charter

### Grievance Handling Program

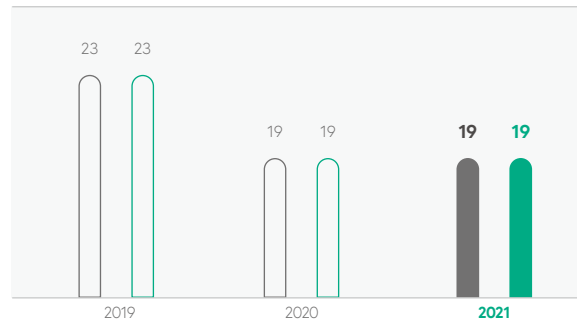
LOTTE E&C runs a grievance handling program to help the employees with work stress, working conditions, personal relations, and sexual harassment. The program ensures anonymity of the person seeking counseling and keeps secret of the counseling content. Login and IP information used when the counseling is requested is automatically deleted from the system when the process is completed. The feedback is given within 10 days from the day of the request. As of 2021, a total of 19 cases were requested and all of them were completed.

#### Grievance handling procedure



#### Status of taking measures

(Unit : case)



● Number of requests ● Number of measures taken

· All requests were related to personal grievance on workplace environment. No human rights violations were committed.  
 · All requests were taken with proper measures (100%).

### Human Rights Education

LOTTE E&C provides education to prevent bullying and sexual harassment in the workplace and improve the awareness for the disabled. With human rights education, we intend to raise the awareness of human rights among our employees.

#### Number of employees who completed training for human rights





## FOR OUR PARTNERS

UN SDGs



# Win-Win Relations with Partner Companies

As an increasing number of business activities are globalized and the size of a company gets bigger, there are more limitations for the company to perform all business activities by itself. Under the circumstances, finding an excellent partner company is a core factor for securing sustainable competitiveness. The capability of a partner company influences the capability of LOTTE E&C. It is also linked to creating more jobs and social value. LOTTE E&C pursues shared growth with its partner companies based on fair trade and mutual exchanges. Not only for the safety management, fair trade, and ethical management of our partner companies but also for their sustainability and prevention of safety accidents, we have recently established an assessment system for the ESG safety capabilities of our partner companies. In addition, we make efforts to strengthen win-win cooperation with partner companies to prevent possible conflicts in the subcontracting process. One of the efforts includes a new establishment of a new consultation body for resolving disputes.

### Contents

Shared Growth 066

Number of employees who participated in quality innovation training

51



Partner companies

## Evaluation system for ESG and safety capabilities



**Win-Win Index**  
(Hosted by Fair Trade Commission(FTC),  
Commission of Shared Growth)

# Good

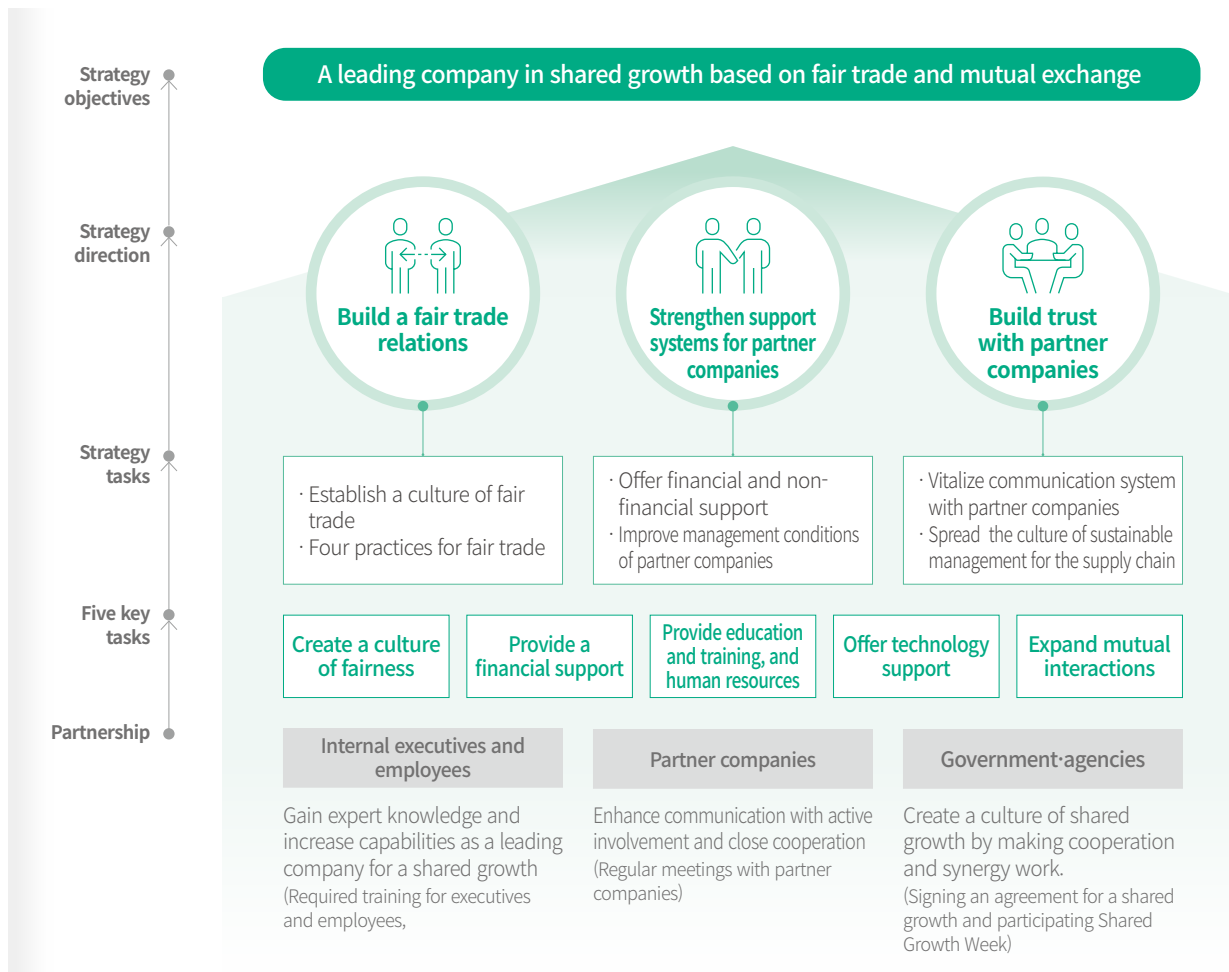
**Implementation of Fair Trade Agreement**  
(Hosted by Fair Trade Commission(FTC))

# Good

# Shared Growth

## Shared Growth Improvement Programs

Setting a strategic objective of shared growth as becoming ‘a leading company in shared growth based on fair trade and mutual exchange,’ LOTTE E&C is working hard to carry out its policies for shared growth and detailed tasks based on the Secretariat of Shared Growth that directly reports to the CEO.



## Shared Growth Promotion Organization

LOTTE E&C has operated the Secretariat of Shared Growth, which was established in 2010 and reports directly to the CEO, to build and implement practical support systems for partner companies. Under the leadership of the CEO as a chairperson, the Secretariat is operated to achieve a shared organic growth across organization of Planning, Funding, Safety, Promotion, Technology and each construction team

### Secretariat of Shared Growth



## Partnership for Shared Growth

LOTTE E&C defines partner companies, employees, and government agencies as three main partners for shared growth. With a balanced partnership with key stakeholders surrounding the company, we strive to fulfill social responsibilities and provide a value of shared growth.

## Selecting and Evaluating Partner Companies

### Selecting Partner Companies

LOTTE E&C selects its partner companies through a fair and transparent process. The criteria, procedures, and results of selection are disclosed on the portals of partner companies. When selecting a partner company, the company should be a relevant organization and there should not be any discrimination between previous partner companies and new ones without a legitimate reason. The criteria for selecting partner companies include construction capability, performance record, revenue, credit ratings, cash flow ratings, etc. We inform the company not selected as a partner of the reason in a written form, and the company can raise an objection in which case we conduct the selection process again as needed.

#### Selection process of partner companies

<b>Announcement of selection process</b>	<p><b>Guidelines for selection criteria and procedure</b></p> <ul style="list-style-type: none"> <li>· Thirty days before the deadline of registration or before the beginning of evaluation (registration for renewal included)</li> </ul> <p><b>Changes of selection criteria</b></p> <ul style="list-style-type: none"> <li>· Written notification (e-document included) sent forty-five days before the deadline of registration</li> </ul>
<b>Announcement of selection result</b>	<p><b>Selection results</b></p> <ul style="list-style-type: none"> <li>· Written notification (e-document included) within 15 days of selecting a partner company</li> <li>· When the registration of a partner company is cancelled due to reasons attributable to LOTTE E&amp;C, the company is immediately registered as a partner</li> </ul>

### Current Status of Partner Companies

There are two types of partner companies for LOTTE E&C; an external subcontractor who carries out construction work and a supplier who provides general construction materials and customized equipment and materials. For those partners who have a trading history with LOTTE E&C, we take into account management indicators including construction capabilities, credit ratings, and revenue, and on-site performance such as safety and health management, to decide the excellent partner companies. Among those companies, we choose a company for the grand prize and the most excellent company, and provide them with additional benefits such as more opportunities for transaction and prize money.

#### Partner companies

(Unit : Number of company)



#### Number of partner companies evaluated

142



#### Proportion of partner companies evaluated (high-risk work type)

84%



### Introducing an Evaluation System for ESG and Safety Capability of Partner Companies

LOTTE E&C has introduced an Evaluation System for ESG and Safety Capability to grow together with partner companies and root out critical accidents. The evaluation system validates not only ESG capabilities but also the safety management capabilities of partner companies to prevent critical on-site accidents in advance. In order to overcome the limitation that it's hard to validate the partner companies' capabilities for managing safety by using general evaluation indicators for ESG management, we have introduced a specified evaluation system for the construction company in collaboration with a credit rating agency to add safety evaluation into ESG management evaluation. Both document evaluation and precise evaluation are conducted.

To guarantee objectivity and reliability of the evaluation procedure, partner companies can raise objections to evaluation results, which means they can be evaluated again. Given the level of risk of construction, we are applying this evaluation system to high-risk work process, such as earth work and reinforcing bar concrete work. And we will continue to expand this to other construction processes as well. Through evaluation of safety capabilities, partner companies can supplement areas for improvement. LOTTE E&C intends to strengthen the safety and ESG management systems with its partner companies by helping them identify areas for improvement and actively supporting them to supplement the areas.



## Expanding Evaluation of Partner Companies and Reward Systems

We periodically evaluate the technical quality levels of partner companies; safety and environmental management; ethical management; and management performance to improve the competitiveness of our supply chain. After taking into account our trading history, transaction amounts, and regular evaluation results, we classify our partner companies as excellent (best), major, or general partners. We offer practical benefits to partner companies selected as excellent partners, such as priority bidding status, waiver or reduction of guaranteed securities for contract implementation, financial support, education, and management support. In 2021, the reward system for excellent partner companies was expanded to strengthen shared growth. We increased the number of the most excellent partner companies to five from three, and offered them the prize money of KRW 30 million, respectively. We also introduced a prize money system in which we provided some 50 excellent partner companies with KRW 5 million each.

### Excellent partner companies selected

**51** Companies (2021)



### Incentives for excellent partner companies

<b>Awards for excellent partner companies</b>	Awarding excellent partner company plaques and signing shared growth agreements
<b>Expansion of contract opportunities</b>	Priority to participate in bidding
<b>Expansion of interactions</b>	Supporting LOTTE Partners activities for excellent partner companies
<b>Waiver or reduction of performance bonds</b>	Waiver or reduction of performance bonds on a differential basis depending on the number of times a partner company has been selected as an excellent partner
<b>Training and management support</b>	Offering domestic and international training and inspection opportunities to CEOs of excellent partner companies Providing training priority to employees of partner companies, and providing management consulting programs with professional agencies
<b>Financial support</b>	Giving priority to excellent partners that request loans

LOTTE E&C conducted an interview with our excellent partner company to share its best practices. We will continue to support the sustainable growth of our partner companies and seek ways to further strengthen the relationship with them.



**We believe that the life and safety of people and human rights must be a top priority. We hope that the 20-year-long partnership continues for shared growth based on mutual understanding and trust.**

CEO of DOOSONG Construction | **Myeong Geun Song**

### Can you talk a little bit about the partnership?

DOOSONG is a company specializing in producing construction framework and rebar concrete. We have worked together with LOTTE E&C for 20 years now. The recent projects we worked together with LOTTE E&C include Cheongnyangni residential and commercial complex and Hannam Nive One. What makes the partnership with LOTTE E&C special is the mutual trust between the two companies. Our long-term cooperation is built on mutual understanding and respect.

### What is the secret to being selected as an excellent partner company?

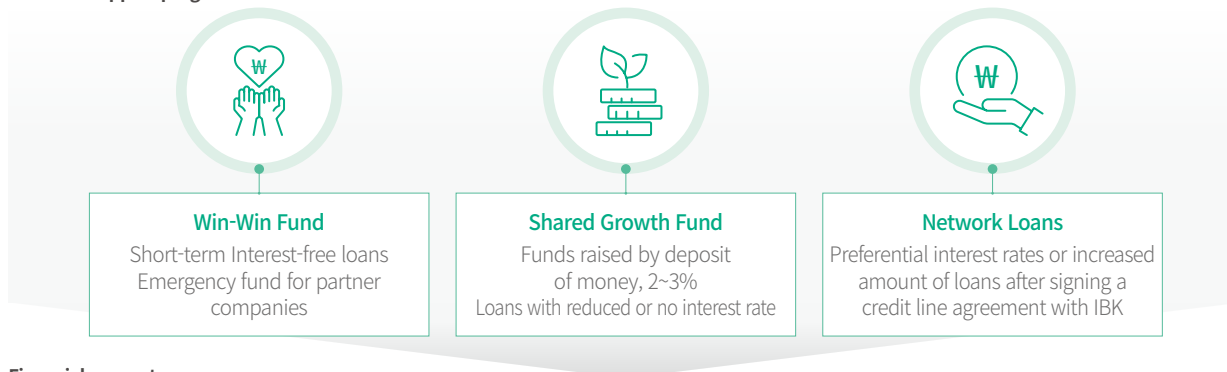
I believe that the first and foremost reason was that we put safety first. In order to become a safety- and health-friendly company, DOOSONG aims to achieve zero critical accidents and reduce the annual accident occurrence rate by 20%. We also hold a meeting every day for quality and safety checks. Close communication between the Head Office and construction sites, in particular, is one of the strengths of DOOSONG. Through this communication, LOTTE E&C's policies and instructions about safety and health can be immediately shared with construction sites. According to Heinrich's law, there are 29 accidents that cause minor injuries and 300 accidents that cause no injuries before an accident that causes a major injury occurs. As LOTTE E&C makes proactive efforts to prevent safety and critical accidents from occurring, we also try to thoroughly manage the safety and health in the construction site so as not to ignore even minor injuries (falls and fracture, etc.). To this end, we conduct quarterly meetings with the heads of construction sites and invite external instructors to provide safety education to our workers. We also give a prize to workers for best practice. Furthermore, the company makes various efforts to check safety and assess possible risks. We believe that the life and safety of people and human rights must be a top priority. Based on these efforts, DOOSONG was able to be selected as the most excellent partner company in the category of safety that LOTTE E&C selects every year. We hope that this partnership continues for shared growth based on mutual understanding and trust.

## Shared Growth Programs

### Financial Support

LOTTE E&C offers a variety of financial programs in connection with the financial sector to help small- and medium-sized business partners relieve financial stress. As a direct financial support, we give out short-term interest-free loans to partner companies. The size and period of the loans were extended in 2021 to KRW 10 billion for 12 months from KRW 5 billion for six months. The company also pays for the issuance cost of a payment guarantee bond, which was previously paid by partner companies. The combined financial support which began with KRW 10 billion in 2010 has increased its size every year to reach KRW 557 billion in 2021. By using this, partner companies can enjoy reduced interest rates by up to 3%. In connection with Industrial Bank of Korea, we indirectly support our partner companies to make an increased size of loans with a lower interest rate based on their revenue performance. LOTTE E&C will continue to increase the size and types of financial support, such as emergency financial support, for the financial soundness and stable growth of partner companies.

#### Financial support programs



#### Financial support programs

Type	Size	Remark
Direct loan	KRW 9.8 billion	Out of KRW 10 billion
Issuance cost of Payment Guaranteed	KRW 118 million	
Shared Growth Fund	KRW 28.5 billion	from LOTTE E&C and IBK, respectively
Prize money for excellent partner companies	KRW 380 million	

### Cash Payment of Subcontract Prices

Since February 2020, LOTTE E&C has made payment of 100% of subcontract prices in cash for small- and medium-sized partner companies.

### Training and HR Support

LOTTE E&C believes that the competitiveness of partner companies is the competitiveness of LOTTE E&C. Therefore, we try to provide training programs that are customized to what partner companies need. In 2021, we conducted online training on the Basic Act on Construction Industry and Act on Subcontracting to help partner companies better understand the revised regulations. A total of 339 partner companies voluntarily participated in the training at the expense of LOTTE E&C. In addition, we offered another online training on the Serious Accidents Punishment Act for CEOs and safety managers in some 200 partner companies, along with management consultations for another 21 partners. Through commissioned advisory services, we provided our partner companies with professional advice on production, QA, marketing, technology development, and family business succession at our expense. We hope that this training will increase the management efficiency of our partner companies.

#### Training on the Serious Accidents Punishment Act

Approximately **200** partner companies 

#### Other training

Approximately **339** partner companies 

#### Consultation programs

Approximately **21** partner companies 

## Technology Support

LOTTE E&C supports the technology development of partner companies to secure mid- and long-term core competitiveness. In 2021, we supported 14 joint research and development projects, and joint development of 43 products which included design registration and application. In addition, we make a private contract with partner companies which requires the use of patent technology to ensure the company with excellent technology to make appropriate profits. As of 2021, a total of 41 new contracts worth KRW 34.3 billion were signed with partner companies who have patents or new technologies.

## Joint Technology Development and Escrow of Technical Data

LOTTE E&C provides various types of technology development, such as joint development of new technology and products, application and registration of joint patents. With systems that offer interest-free loans for technology development and protect technological data of partner companies, we try to take an initiative in implementing a protection policy for construction technology by protecting the core technologies of our partners.

### Technology support in 2021

(Unit: KRW thousand)

Type	Number of support cases	Size of support
Joint R&D	14	334,800
Joint product development	43	12,525
Technology Innovation Contest	10	98,000
<b>Total</b>	<b>98</b>	<b>445,325</b>

## Performance Sharing Program

Since 2021, Lotte E&C has conducted performance-sharing activities, such as setting a goal in advance, sharing excellent track records, and sharing ideas under the theme of reducing costs, which include changing construction methods and materials, improving process and quality, and shortening the construction period. We plan to further increase these cooperation activities with our partners.

## Supporting the Recruitment of Partner Companies

We encourage our partner companies to take part in a recruitment exhibition, helping excellent partners promote their companies so that they can hire people of talent. In addition, we operate a 'Shared Growth Fund for Green Jobs.' If any partner company who has made a shared growth loan hires a new employee, the company is given KRW 500,000 (points) and the newly-employed KRW 300,000. In 2021, a total of three partner companies were given KRW 4.6 million.

## Discovering Excellent Companies in Local Communities and Making Close Cooperation

As a growing number of construction projects are taking place in the countryside, LOTTE E&C strives to find excellent companies in local areas to come up with win-win measures for the local community. We have recently discovered 32 excellent companies in Incheon, Gwangju, and Daegu, and are now planning to operate shared growth programs for each region. To select excellent local companies, we collected recommendations from local governments and professional construction associations before we made a thorough evaluation. We will try to establish close cooperation with 167 small but strong companies, including 32 firms.

## Communicating with Partner Companies

### Regular Meeting With Partner Companies

In an effort to strengthen win-win cooperation based on mutual trust, LOTTE E&C holds regular meetings with partner companies in each construction area. In 2021, we had a total of 31 meetings with partners from seven major construction areas. We plan to further expand these opportunities so that we can listen to the voices of our partners and communicate with each other.

#### Regular meetings with partner companies

Areas	Companies participated
Rebar concrete (construction)	5
Mechanical fire extinguishing equipment	5
Earth work (construction)	5
General electric work	4
Landscape	4
Steel frame	4
Interior design	4
<b>Total</b>	<b>31 companies, 7 meetings</b>

### Listening to Partner Companies and Operating Cyber Ombudsman

We operate Cyber Ombudsman, which is a channel to listen to the voices of partner companies. The partner companies can suggest new ideas, apply for arbitration for disputes raised during the subcontracting process, and report non-compliance and violations of ethical management. When these are received, LOTTE E&C makes every effort to address the issues raised in a fair and timely manner. The anonymity of a reporter is kept secret to prevent the person from facing any disadvantages.

 Cyber Ombudsman of LOTTE E&C



## Fair Trade

### Contracting System for Win-Win Relations

LOTTE E&C operates a system for signing contracts with small and medium-sized companies (SMEs) in accordance with ‘desirable practices for signing contracts.’ The system prevents the company from abusing superior bargaining power in transactions with SMEs and provides SMEs with an environment where their interests can be properly reflected in the contract. In addition, we decide the types of contract depending on the counterpart of a transaction, and importance of a contract. We respect our partners’ right to self-determination. Furthermore, new partners can always suggest new transactions through a portal website of partner companies. We seek to maintain an open and inclusive culture for the supply chain, which includes new partner companies through the PRM<sup>1)</sup> system. We provide our partners with their own cyber space or support them to have regular meetings where they can share information and make cooperation.

 Contract Signing Practices for Win-Win Cooperation Among Large, Medium and Small Businesses

1) PRM Partner Relationship Management



#### System to prevent unfair practices

Type	Description
Notification for contract renewal before the contract is terminated	<ul style="list-style-type: none"> <li>① Notify the change of contract before the ERP system contract is terminated</li> <li>② Developed a program for written contract confirmation when additional work is done</li> </ul>
Establishment of the right to approval for written contract, and distribution and review of manuals	<ul style="list-style-type: none"> <li>① Establish the right to approval for written contract and distribute a written manual</li> <li>② Distribute a monthly self-checklist</li> <li>③ Inspect the status of distribution</li> </ul>

### Internal Deliberation Committee

LOTTE E&C tries to create and maintain a fair contract culture where we make a prior deliberation for fairness and appropriateness of a contract through an Internal Deliberation Committee. The Committee consists of the three or more executives and employees who are in charge of managing subcontracts (commissioners) in Outsourcing & Purchasing. When needed, the Committee can appoint a head of estimation team, a head of technology team and a head of a site. The committee holds a monthly meeting and occasional ones when needed. It also arbitrates the case when partner companies make an official request for a dispute during the subcontracting process. When necessary, the Committee can listen to the voices of contractors whose anonymity is protected.

 System to Prevent Unfair Practices for Subcontractors

### System to Prevent Unfair Practices for Subcontractors

LOTTE E&C informs subcontractors of the upcoming contract termination on LENCIS to minimize the possible unfair practices. Through this system, subcontractors cannot carry out construction work after the contract period is terminated, and we prevent any violations of not informing subcontractors of contract termination. In addition, we have computerized the process of informing when subcontractors are performing additional works to avoid any potential disputes.

### Dispute Resolution Council

In February 2021, LOTTE E&C established a Dispute Resolution Council under the Secretariat of Shared Growth to manage the risk of disputes with subcontractors. Through the Council, we listen to the voices of partner companies that we expect to have any conflicts with, and try to find reasonable solutions for mutual interests.

### Shared Growth Training and Internal Monitoring System

Every year, LOTTE E&C invites experts on laws on subcontracting from relevant organizations such as the Fair Trade Commission (FTC) to provide training for our employees and partner companies so as to create a culture for fair transactions. In addition, we have established an internal evaluation system where we incorporate the shared growth-related performance of a candidate for an executive position in Outsourcing and Purchasing to maintain a win-win relationship with our partner companies.

Win-Win Index

Good

Implementation of Fair Trade Agreement

Good

## FOR OUR CUSTOMERS

UN SDGs



# Customer Value

Customer satisfaction is closely related to brand power and more opportunities for winning contracts. LOTTE E&C introduced the very first branded apartment houses in Korea in March 1999, and has led the way in changing the living culture of Koreans. Believing that ‘the best living experience comes from houses with the best quality,’ we carry out quality management based on ISO 9001 through which we intend to provide differentiated quality and services from product planning, feasibility analysis, marketing, house application, construction to post-construction management. Through these efforts, we strive to innovate our business activities to offer a better experience to our customers.

### Contents

Quality Management 073

Rate of customer satisfaction through Happy Call survey

64.9 %



2021 National Service Awards  
Grand Prize in Premium apartment category for

4 consecutive years



2021 Korea Service Grand Prix  
Grand Prize in Apartment House Category for

20 consecutive years

Number of employees who participated in quality innovation training

883



# Quality Management

## Quality Management Promotion System

LOTTE E&C conducts quality inspections during the entire construction phase and provides our customers with professional management when they move into houses we built. We also operate an efficient response system through systematized in-person training. The C/S division under Residential Construction has a ‘process to inspect comprehensive quality and to manage customer satisfaction,’ putting the best quality and customer satisfaction as our top priority.

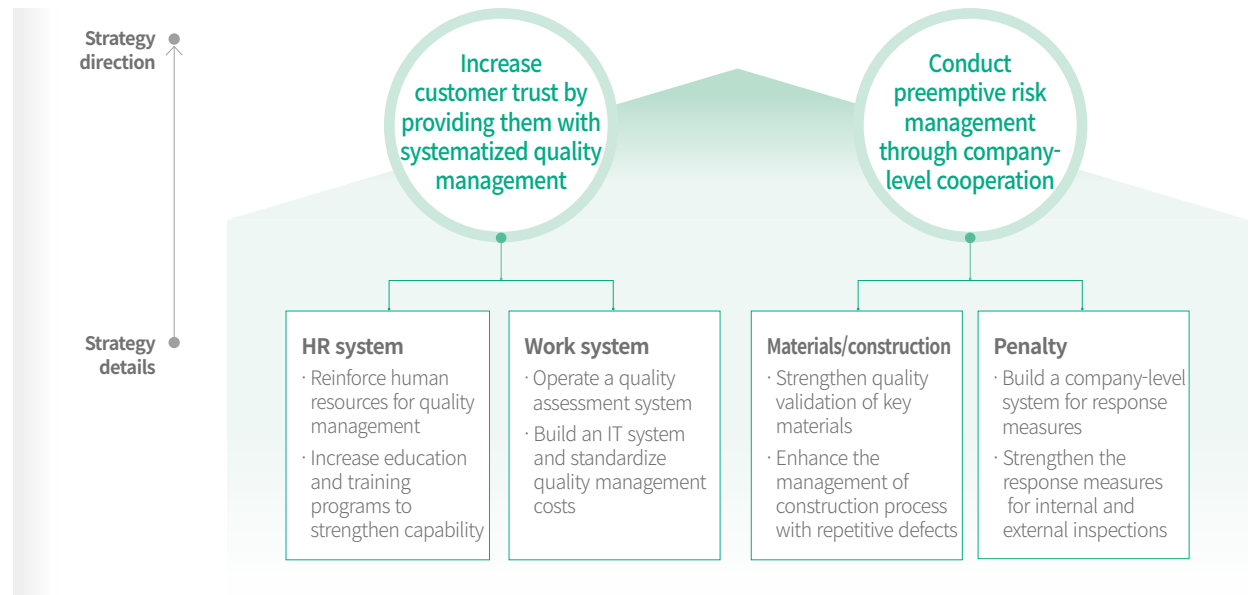
## Quality Management Organization

LOTTE E&C carries out company-level quality management with its Quality Management Team. In accordance with ISO 9001, we have standardized the quality management and work processes at sites. For this, we provide general guidance and conduct inspections, internal assessments, and evaluations. In collaboration with Technology R&D (conducting technical reviews for quality improvement), Budget Management Team (building on-site quality evaluation process and criteria), Management Support (sharing quality management status) and quality managers from each site, we provide needed support for quality management.

## Quality Inspection Process

In an effort to provide a quality inspection for each construction phase on sites and strengthen the inspection procedure for major defects, we have increased the number of inspections we conduct. To root out chronic and repetitive defects, we have created and applied fundamental measures for improvement.

Quality management



Quality inspection process of housing construction site





## Inspections After Completion of Construction

Even after the completion and opening of new residences, LOTTE E&C sends out teams of workers to inspect defects and provide maintenance service. For three months after completion, we operate an emergency maintenance team composed of multi-skilled workers who focus on maintenance to ensure prompt repair. In addition, we conduct special inspections of distributing boards, community facilities, common areas, dead trees and flowers, and supplementary planting.

### Inspection After Completion of Construction

Inspection of community facilities and common areas inside the complex	Inspection of dead trees and supplementary planting	Inspection of distributing panels
Once a year after 6 months of completion	Twice a year for two years after completion	Once a year for three years after completion
<ul style="list-style-type: none"> <li>· Testing of air conditioning and heating in community facilities and common areas</li> <li>· Inspection of switch operations</li> <li>· Checking normal operation of electric meters</li> <li>· Inspection of parts vulnerable to freezing (checking of normal operation of hot-wire power and snow melting)</li> </ul>	<ul style="list-style-type: none"> <li>· Inspection of dead trees and supplementary planting</li> <li>· Checking common areas</li> </ul>	<ul style="list-style-type: none"> <li>· Inspection of distribution panels, including extra-high voltage panels, transformers, low voltage panels, and MCCB panels</li> </ul>

## Improving the Process for Integrated Management of Design Documents and Standardization

We conduct a thorough inspection by using a checklist for each construction phase to improve on-site work quality. We have established a system for the integrated management and standardization of design documents to prevent defects and risks from occurring.

### Process improvement status in each stage

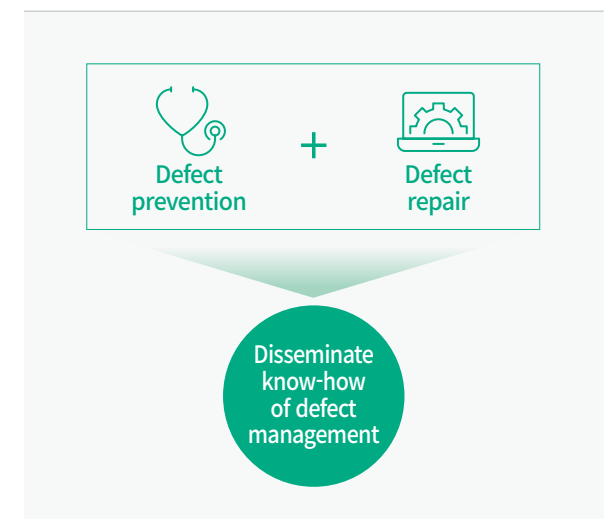
	Construction review documents	Business approval (change) documents	Commencement documents	Construction documents	Commencement documents
Design documents	Before construction review/approval	Before business approval (change)/construction approval	commencement/ before commencementapproval	60 days before construction/ commencement	completion/before completion
Improve-ments	Correction of errors in contract documents			Correction of errors in working design documents	Reflection of actual construction and removal of litigation items
Effects	Standardization of contract documents			Standardization of construction quality	Standardization of completion documents

## Quality Innovation Education

We run an education program for engineering employees called the 'Quality Innovation Academy.' In 2021, we conducted fifteen sessions of contact-free training and a total of 883 engineering employees from architecture, civil works, landscape, and machine and electricity. We intend to further strengthen the technical expertise of our employees in each area.

## Building System to Share Defects and Technology Information

We have built a system where defects and technology information for each construction type can be shared using our company-wide integrated document management system (ECM) to prevent the recurrence of defects. The system allows the company to share technology information and know-how about defects. As of the end of 2021, a total of 737 technology information are registered in the system to be applied to sites.



## Innovating customer experience

### Castle Plus Services

We provide the Castle Plus services as a free additional service to apartment residents. Castle Plus services include customer-oriented residential services like cleaning of kitchens, bathrooms, bedding, and external windows. In 2021, we introduced small-sized electric vehicles for cleaning as part of ESG management initiatives. The electric vehicles are used for cleaning roads and spraying water, which can also prevent fine dust. We will continue to expand residential services for our customers, and enhance our brand power.



EVs for Cleaning Apartment Complex

### Group Purchase of Home Appliances

In an effort to promote residential services in public-supported private rental housing, LOTTE E&C signed memorandums of understanding with LOTTE Rental and LOTTE Hi-Mart through which residents can make joint purchases and buy home appliances at discounted prices. We also provide a variety of online and offline life services, such as car sharing, breakfast, home care, housing services, home appliance rental. We will continue to expand our customer-oriented services by signing additional MOUs with LOTTE affiliates and other companies in different industries.

### Happy Call Service

We gather information on customer satisfaction and complaints and utilize them as useful database to improve our products and services.

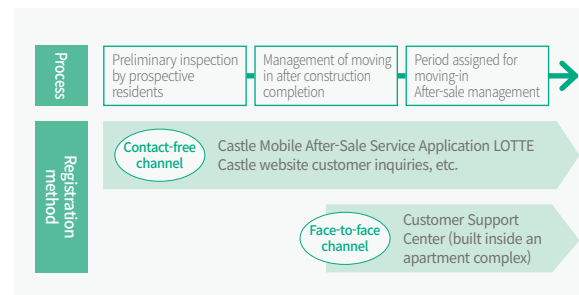


\*Customer satisfaction who used warranty program

### Complaint Registration Process

We receive customer complaints through various channels, including a contact-free way. One example is Castle Plus services, which provide free additional services to residents according to the number of years they have resided. By implementing these services, we make our utmost effort to address customers' complaints in a swift and accurate manner and to raise the level of satisfaction.

#### Complaint registration process



### Grand Prize in Apartment House Category for 20 Consecutive Years

LOTTE E&C was awarded the Grand Prize in the category of apartment house for 20 years in a row at Korea Service Grand Prix<sup>1)</sup> 2021 hosted by Korean Standards Association in July 2021. Launching the 'LOTTE CASTLE', Korea's very first branded apartment house in 1999, LOTTE E&C has led a high-class residential culture. More recently, we have introduced 'LOTTE CASTLE 3.0', which has a trendy exterior, landscape and community facilities, and 'AZIT 3.0', which has incorporated a new lifestyle by COVID-19 into the house floor plan.

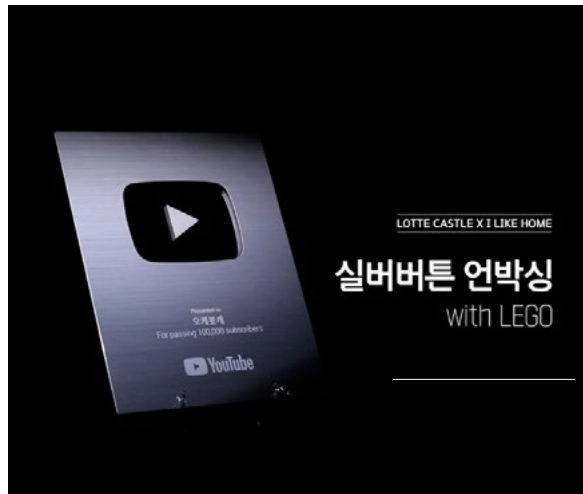
1) Korea Service Grand Prix An award given to an excellent company that has built a customer-oriented quality management system and has provided highly satisfactory services to customers to increase the quality of the domestic service industry

### Grand Prize in Premium Apartment Category for 4th Consecutive Year

LOTTE E&C won the Grand Prize for four years in a row at the 2021 National Service Awards hosted by the Institute for Industrial Policy Studies in July 2021. With the representative brand, "LOTTE CASTLE," we conduct our businesses in various ways, such as urban maintenance projects and development projects in apartment houses, residential and commercial complexes, and studio units. Responding to the changing paradigm in the housing market, we continue to provide a high-end and high-class culture of living with differentiated value.

### ‘OK Lotte Castle’, LOTTE E&C’s YouTube Channel

LOTTE E&C opened its official YouTube Channel ‘OK Lotte Castle’ in July 2021 to increase the chances of communicating with our customers. The priority of ‘OK Lotte Castle’ is to communicate with our customers based on MZ Generation. The name, ‘OK Lotte Castle’, was selected by the participation and voting of our customers through a contest event, and the channel contains not just videos for MZ generation but also various information-providing contents from the perspective of our customers. Thanks to the growing interests and love of our customers, the channel has now more than 100,000 subscribers in six months and obtained a Silver Play button.



LOTTE E&C’s official YouTube channel [OK Lotte Castle](#) - YouTube

### Visiting My House Day Event

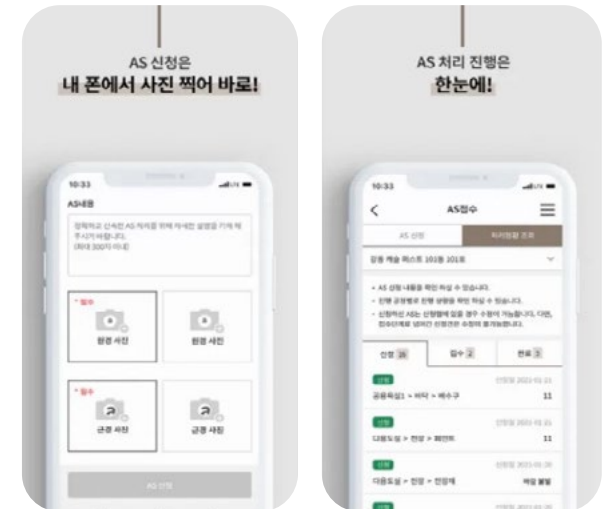
We host the Visiting My House Day event for prospective residents scheduled to move in. We gather opinions from customers through personal counseling and take quick action to address complaints through preliminary inspections focused on residents. Due to the prolonged COVID-19 pandemic, we strengthened preventive measures such as frequent disinfection, separate waiting rooms for each family, contact-free collecting of survey papers, and using drive-through method for the Visiting My House Day Event.

### Excellent Real Estate Service Provider Certified by the Ministry of Land, Infrastructure and Transport

LOTTE E&C is currently working on private rental housing projects of some 10,000 units in 15 different sites through public-supported private rental housing projects. We also make our utmost effort to provide new apartment complexes for the younger generation. Through these projects, LOTTE E&C was selected as an excellent real estate service provider, which is certified by the Ministry of Land, Infrastructure and Transport. We also obtained the ‘Excellent’ level in residential service certification by Korea Land and Housing Corporation.

### Contact-Free Castle Mobile After-Sale Services

We have developed a Castle Mobile After-Sale Services application where residents can make a contact-free request for after-sale services. By using the application, the residents can easily apply for defect repair, see the status of their requests, and check notifications. Previously, residents had to register for repairs through verbal or written descriptions. Now, they can attach photos and check the results to see whether their cases are decided as defects or not.



Castle Mobile After-Sale Service Application



**FOR OUR COMMUNITIES**

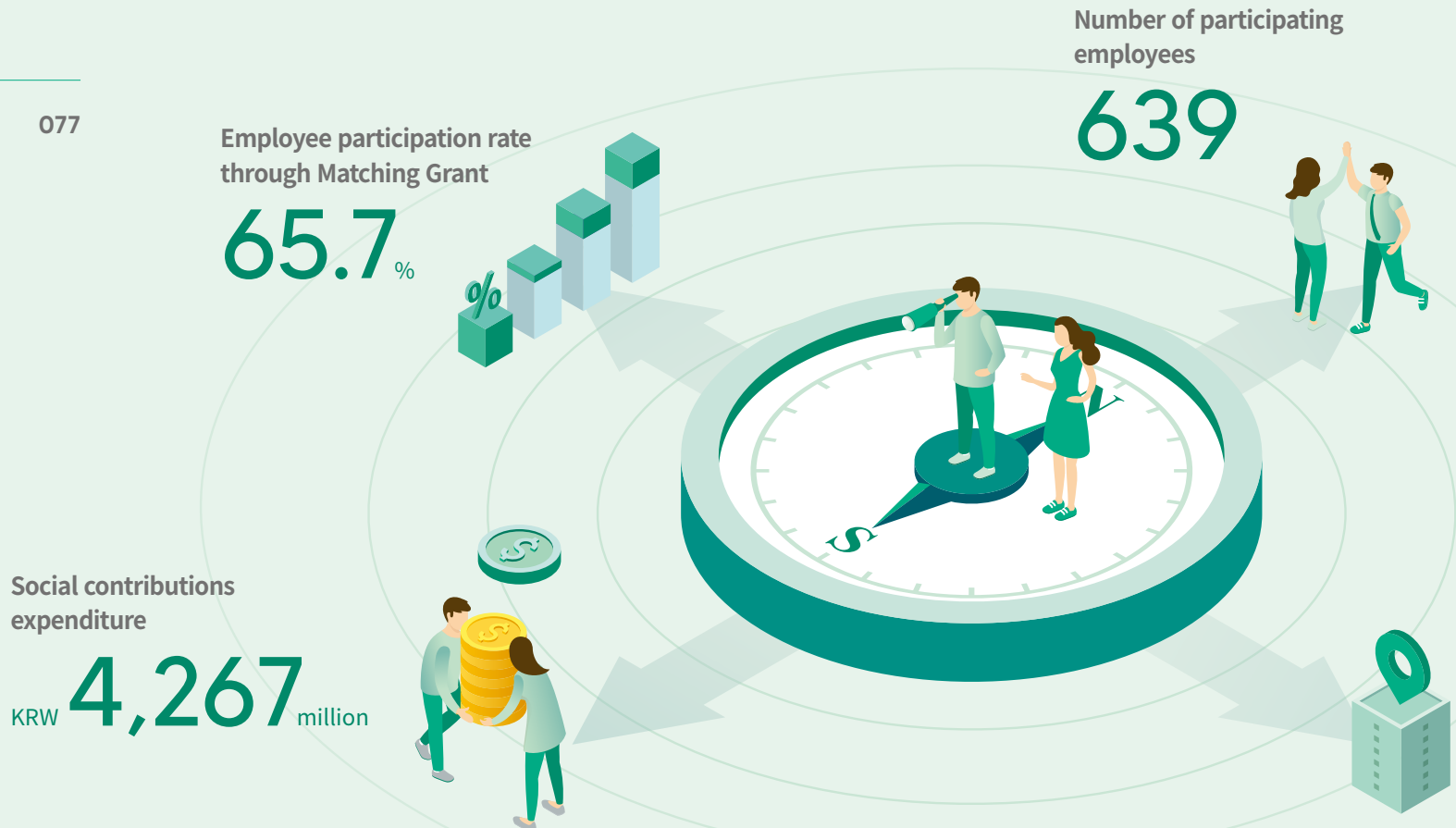


# For Our Communities Where Everybody Prospers

Companies are founded in society and generate profits from continuous interactions with stakeholders. As companies grow, they face various interests and have more social responsibilities to fulfill. Not only does LOTTE E&C take its economic responsibilities within a legal framework, but we also try to fulfill our ethical and philanthropic responsibilities as a corporate citizen. To this end, we make efforts to carry out various activities for social contribution that meet the needs of local communities by using our characteristics as a construction firm and the expertise of our executives and employees.

**Contents**

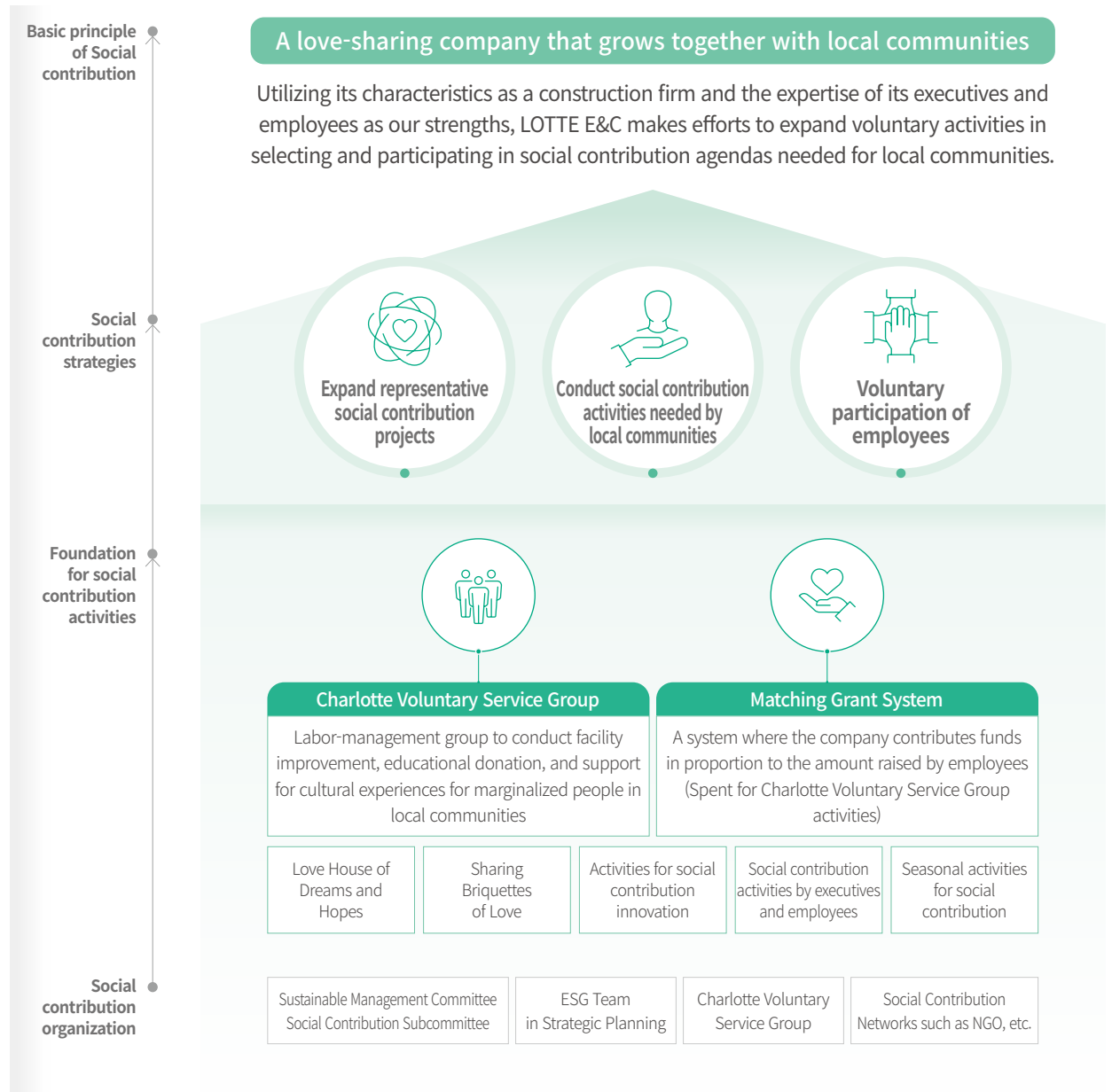
Community Engagement 077



# Community Engagement

## Social Contribution Promotion System

LOTTE E&C is involved in various social contribution activities by utilizing its characteristics as a construction firm and the expertise of its executives and employees to jointly grow and share its love with local communities. Based on a Social Contribution Subcommittee within the Sustainable Management Committee and Environment, Society and Governance (ESG) Team, we establish cooperation with social contribution networks such as NGOs, and provide necessary support to implement social contribution strategies. By running the 'Charlotte Voluntary Service Group' at the head office and domestic and overseas sites, we conduct various activities needed for different communities, such as facility improvement, educational donation, support for cultural experience, and more. Operating a matching grant system, LOTTE E&C raises social contribution funds, which is spent for social contribution and the Charlotte Voluntary Service Group.



## Key Social Contribution Activities

### Charlotte Voluntary Service Group

LOTTE E&C operates a Charlotte Volunteer Service Group as a volunteer service organization at the head office and domestic and overseas sites. Starting with 18 teams in 2011 to disseminate the pleasure of sharing throughout the organization, sixty-two groups (1,399 people) are actively participating in the initiatives. Major activities of the Group include: facility activities to improve the living environment of low-income households and the environment at welfare facilities; cultural experiences like exhibitions and performances for low-income households; meal service programs at welfare facilities; environmental clean-up and purification activities involving cleaning of rivers and parks. Taking into consideration the rapid spread of COVID-19, we are conducting contact-free voluntary activities such as contact-free delivery of foods and daily necessities from 2020. LOTTE E&C plans to continue and expand these activities in local communities in connection with ESG management practices.

Number of employees who participated in voluntary activities



Charlotte Voluntary Service Group in voluntary activities

### Love House of Dreams and Hopes

In 2012, we began activities of ‘Love House of Dreams and Hopes’ in which we carry out facility (house) repair activities at residential facilities for underprivileged groups and social welfare facilities, and provide needed home appliances, which allowed us to leverage our strengths as a construction business. Starting with one facility in Seoul and Busan respectively in 2021, we have completed the improvement of 71 facilities (32 in Seoul and 39 in Busan) as of the end of 2021. In 2021, we provided tablet PCs to children’s welfare facilities in Gwangjin-gu, Seoul to improve the educational environment of students who have difficulty commuting to schools due to COVID-19 pandemic. Moreover, we completed an improvement project of the kitchen environment for a free meal service station for underprivileged senior citizens in Geumcheon-gu, Seoul.

Amount of money supported by Love House in 2021



Commemorating Kitchen Improvement Project for Free Meal Service Station in Geumcheon-gu, Seoul

### Sharing Briquettes of Love

Since 2011, LOTTE E&C employees have been delivering briquettes to underprivileged households in Seoul and Busan every winter. In 2021, we donated 40,000 briquettes to residents in 104 village in Nowon-gu, Seoul and in Maechukji Village in Dong-gu, Busan, respectively, for a total of 80,000 briquettes and an accumulated total of 530,000. Although we only delivered donation money in 2021 due to COVID-19 restriction of social distancing, the donation quantity still increased compared to the previous year.

Accumulated number of briquettes donated



Donation ceremony of study supplies by Love House



### Business Agreement on Recycling Surplus Materials

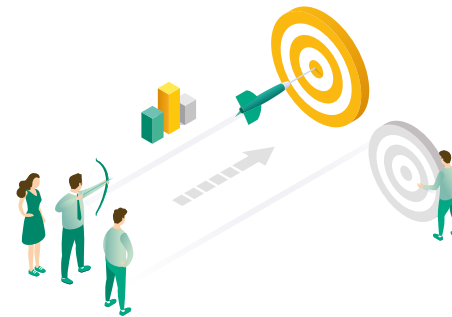
LOTTE E&C signed a business agreement with a venture company, Tobos, on ‘recycling surplus materials’ to resolve the disposal problem of surplus materials. When placing an order for construction materials at sites, companies order redundant volume to prepare for damage that might occur during transport, storage, construction, etc. Most of the unused surplus materials are discarded later. Furthermore, when a transaction of secondhand material is made between individuals, it is difficult to assure the quality of materials and provide transaction evidence, and this makes it difficult for companies to sell the surplus materials as well. Following extensive consultation with Tobos, we have come up with a resale system where Tobos purchases the entire quantity of construction waste materials and sells them again through Ingeo Market, a direct transaction platform of construction materials. This enables LOTTE E&C to bring down the cost of treating surplus waste materials, minimize resource waste, and secure more storage space. Moreover, it was a win-win cooperation because Tobos was able to obtain materials needed for their transactions as well. The proceeds from the resale of surplus waste will be saved as funds for social contribution and used for people in need.



Signing of Agreement between LOTTE E&C and Tobos

### Agreement for Nurturing Skilled Workers for Repairing Defects

In December 2021, LOTTE E&C signed an agreement with Gyeonggido Job Foundation to ‘nurture skilled construction workers and create more job opportunities’ to meet the demand for professional workers in repairing defects after apartments are sold. To this end, we plan to open education courses for multi-skilled workers to repair apartment houses so that they can have opportunities for on-site practice to be service-minded. In addition, we will create more job opportunities by hiring excellent trainees from the courses.



Signing Agreement with Gyeonggido Job Foundation

### Cafe of Barista with Disabilities

Joining the effort in stabilizing the employment of the disabled, LOTTE E&C signed an agreement on stimulating the employment of the disabled with the Korea Employment Agency for the Disabled at the Dunchon apartment site in Gangdong-gu, Seoul, marking the Day of People with Disability on April 20, 2021. We also signed an agreement with a social enterprise called Blessing & Resting to employ more people with severe disabilities. The agreement was intended to raise awareness regarding the disabled and provide them with a stable foundation to be more independent. Despite the difficulties in hiring people with disabilities due to the nature of the construction industry, LOTTE E&C jointly opened a cafe of baristas with disabilities at an apartment site with Blessing & Resting, the standard workplace for the disabled, in August 2020. By implementing the Legal System of Employment for Disabled Persons and providing continuous education in raising awareness of hiring more people with disabilities, LOTTE E&C endeavors to create an open-minded and unbiased culture throughout the company. We will continue to be a leading company in hiring the disabled by linking standard workplaces for the disabled to actual employment opportunities.



Barista with disabilities working in Dunchon apartment site

## Active Participation in Social Contribution Activities

### Providing Play Kits to Socially Disadvantaged Children

In collaboration with the ChildFund Korea, LOTTE E&C has made and distributed play kits to 100 socially disadvantaged children from single-parent families in Seoul. This campaign was aimed at filling the void left by the lack of outdoor activities for children due to the COVID-19 pandemic and improving the play environment for children. The play kits included school supplies, experiential learning tools, and play tools. Inside the kits were dream catchers made by 100 employees as a part of contact-free volunteering activities to support the dreams of children. In addition, the LOTTE Partners joined this campaign by donating the same volume of play kits to 100 children, showing its intention to achieve shared growth through social contribution activities.



Providing Play Kits to Children

#### ChildFund Korea

**We believe LOTTE E&C is a truly genuine partner who puts beneficiaries first.”**

Fundraising Team  
Chan Kyung Park Manager



#### Please tell us about the fund and the partnership with LOTTE E&C.

The ChildFund Korea aims to defend children's rights by providing support for children, education, etc. We are working closely together with LOTTE E&C by leveraging its strengths as a construction company and by understanding what kind of help children need the most.

#### What was the representative social contribution initiative that the Fund conducted with LOTTE E&C?

We did together the campaign called 'Play Kits to Socially Disadvantaged Children' in 2021, supported environmental education and provided eco-friendly desks to local children centers.

#### Would you elaborate more on 'Play Kits to Socially Disadvantaged Children' campaign?

As the COVID-19 pandemic is lasting longer, there were a lot of children left alone without caregivers which has become a serious social issue. They could not go to school and local children's centers were closed. Children from single-parent or double-income families were left alone. To empathize and resolve this issue in local communities, we decided to conduct 'Play Kits for Socially Disadvantaged Children' campaign. LOTTE GROUP has chosen women and children as the theme for sustainable development goals (SDGs). We took this into consideration, and decided to jointly carry out the campaign that gives out play kits to children in need.

#### What was the most important thing in conducting the social contribution initiative?

I think that listening to their voices was the most important thing. Before launching the campaign, we listened to them to find out what we should provide to practically help them. In doing so, I think this process made us think more about children and what they want, which helped raise their satisfaction level. It gave us a stronger sense of reward as well. We were touched when those kids wrote thank you letters with their little hands and sent them to LOTTE E&C.

#### What was the best part working with LOTTE E&C for social contribution activities?

I liked it because I was able to see the genuineness of LOTTE E&C. I believe the true social contribution is to provide needed help from the perspective of beneficiaries, not from the perspective of companies. From scheduling to preparing items for social contribution activities, LOTTE E&C puts beneficiaries first for the social contribution program. This may sound simple and trivial. But from my perspective, having worked together with LOTTE E&C, I was able to see and feel that the company is not just using this program to promote its image.

## Pink Box Campaign for Socially Disadvantaged Female Youths

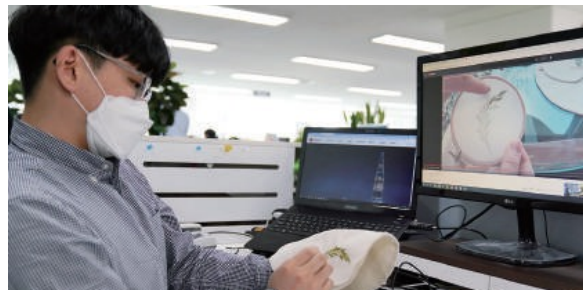
LOTTE E&C carries out a Pink Box campaign to help female youths in socially disadvantaged families grow into healthy adults. In collaboration with the Republic of Korea National Red Cross, LOTTE E&C donated pink boxes containing feminine hygiene products, as well as eco pouches and message cards made by 100 employees to 100 female adolescents, for the healthy growth of socially disadvantaged female adolescents.

Number of Pink Box beneficiaries

100



Donation of Pink Boxes to Female Youths



LOTTE E&C Employee Making Eco Pouch

## Walking Donation Campaign

Since 2020, LOTTE E&C has conducted a walking donation campaign using an application as a part of our contact-free social contribution activities by employees. The application keeps track of the total number of steps walked by all employees, and donations are sent to predetermined recipients once our employees reach the target number of steps. In 2021, 668 employees participated in the campaign. They exceeded the target of 100 million steps by 18%, and we donated the money to the ChildFund Korea. The donation was spent on preparing online education environment and supplying eco-friendly teaching materials for 51 children at five different child welfare centers.

Number of employees who received environmental training

668

Number of employees who received environmental training

51



Financial Donation made to Local Children's Centers for Improving the Education Environment

## Plogging Challenge

In celebration of the Environment Day and in connection with the Walking Donation Campaign, LOTTE E&C conducted the Plogging Challenge. The Plogging Challenge is a campaign in which employees wear green uniforms made of recycled plastic, pick up garbage while jogging, and upload selfies to social media to encourage the use of eco-friendly products. We encouraged our employees to participate in this campaign by giving away eco-friendly clothes made of sustainable materials.

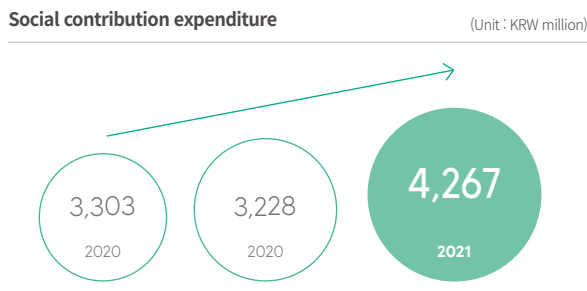
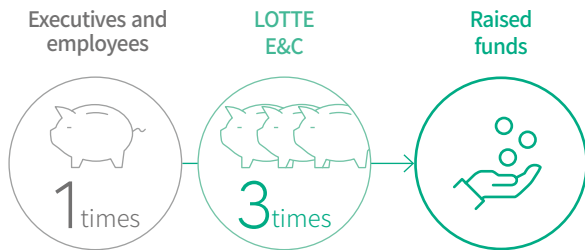


Plogging Challenge



### Matching Grant Fund

Since 2011, LOTTE E&C has introduced a matching grant system as a way of raising social contribution funds. The matching grant is a social contribution campaign fund in which the company donates money matching the amount that employees donate from their monthly wages. In 2021, LOTTE E&C expanded the share of funding by implementing a 1:3 matching grant system, in which the company donates three times the amount donated by the employees. As of December 2021, 65.7% of employees are registered for the campaign, and its annual funds are used for social contribution activities by the Charlotte Voluntary Service Group. All the information about raised funds and its expenditures is transparently disclosed to all employees on the company Intranet system.



### Sharing Goods and Commodities to COVID-19 Medical Staff

As the COVID-19 pandemic is rapidly spreading after the government switched to 'With Corona' policy, the workload in hospitals dedicated to COVID-19 and screening clinics has enormously increased. In order to express our appreciation of hard-working medical staff, LOTTE E&C shared goods and commodities through Community Chest of Korea. Daily necessities and snacks were provided to medical staff and voluntary workers in screening clinics in Metropolitan Seoul areas and three COVID-19 dedicated hospitals (Bukbu Hospital, Dongbu Hospital, and Seobuk Hospital in Seoul). We will continue the social contribution activities in local communities so that Koreans can find courage in times of adversity and overcome difficulties caused by the pandemic.



COVID-19 Support Fund Award Ceremony

COVID-19 funds for medical staff

KRW 22 million



# ESG Fundamentals

Governance	085
Ethics	087
Information Security	090
Risk Management	093
Compliance	094

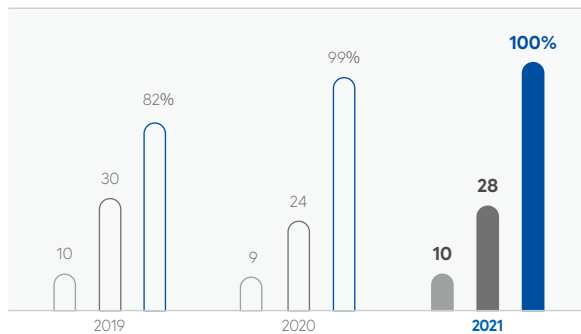
# Governance

## Board of Directors

### BOD Composition

The Board of Directors (BOD) is the top decision-making body of LOTTE E&C, which has the voting right to cooperate with management and overall business. The BOD consists of four inside directors, two outside directors, and one non-executive director. Once the BOD recommends the candidates for directors, the General Shareholders' Meeting selects the directors in accordance with the criteria stipulated in the Articles of Association. The directors can have a maximum of three-year tenure, which is decided by the General Shareholders' Meeting. Regular BOD meetings are held quarterly, and special BOD meetings are convened as needed. In 2021, a total of ten BOD meetings were held, and an average attendance rate of directors showed 100%.

### BOD operation



● Number of BOD held ● Number of BOD agendas ● Average attendance rate

### BOD composition

(As of Dec.31, 2021)

Type	Name	Gender	First appointed	Tenure	Transaction with LOTTE E&C	Major career
Inside directors	Suk Joo Ha	Male	March 2010	March 2023	None	CEO, Chairperson of BOD
	Hee Cheol Seok	Male	March 2013	March 2023	None	Head of Construction Management Division
	Bu Yong Lee	Male	March 2019	March 2023	None	Head of Housing Works Division
	Jae Hong Ahn	Male	March 2021	March 2023	None	Head of Management Support Division
Outside directors	Ho Won Kim	Male	March 2020	March 2022	None	Collaboration Professor at Seoul National University
	Seong Soo Ko	Male	March 2020	March 2022	None	Professor of Real Estate Studies at Konkuk University
Other NonStanding Director	Min Woo Kim	Male	March 2020	March 2022	None	Director in charge of LOTTE Group Chemical BU
Auditor	Ho Seok Jeong	Male	March 2020	March 2022	None	Manager of Busines Support Team, LOTTE Corporation

### Committees of BOD

Management Committee	Transparency Management Committee	Compensation Committee
Deliberating and deciding on general matters for operation, aiding the CEO	Deliberating and deciding on negotiated contracts of a certain scale or larger with affiliated persons and affiliates	Deliberating and deciding on individual remuneration and performance-based pay for registered executives and remuneration limits for non-registered executive
Suk Joo Ha, Inside director (Head of the Committee) Bu Yong Lee, Inside director Jae Hong Ahn, Inside director	Seong Soo Ko, Outside director (Head of the Committee) Ho Won Kim, Outside director Bu Yong Lee, Inside director	Ho Won Kim, Outside director (Head of Committee) Seong Soo Ko, Outside director Jae Hong Ahn, Inside director
Consists of three inside directors	Consists of two outside directors and one inside director	Consists of two outside directors and one inside director



### BOD's Expertise

LOTTE E&C appoints qualified directors with professional knowledge and sufficient expertise in architecture, laws, business strategies, human resources, and finance. A support organizations that provide needed assistance to outside directors keeps them posted with current status of businesses and agendas, and help them make informed decisions.

### Independent Auditor

While LOTTE E&C doesn't have a separate Audit Committee, we have one auditor who is appointed by the General Shareholders' Meeting and performs a detailed examination on financial records. Taking part in the BOD, the auditor independently examines the directors' work. The auditor may require a related organization to submit relevant financial records and documents.

#### Compensation of directors

Unit : Persons, KRW million)

Type	Number	Total Compensation	Per Person Average
Registered directors	5	2,272	600
Outside directors	3	162	72

### BOD Evaluation and Reward

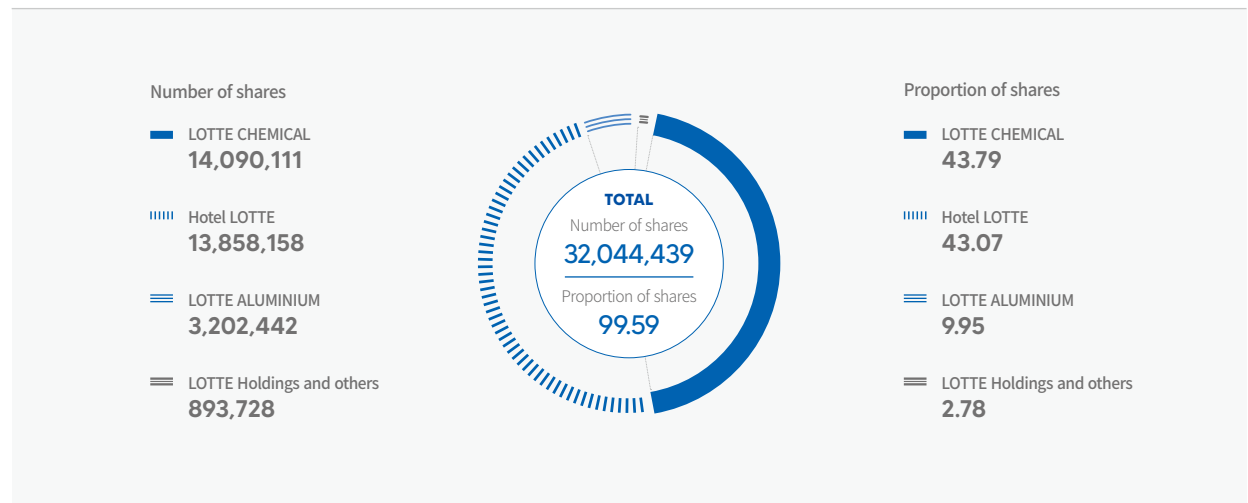
The compensation for directors is decided by the vote at the General Shareholders' Meeting and the retirement payment is determined in accordance with the Regulation for the Provision of Retirement Allowance for Executives and Employees approved by the General Shareholders' Meeting. The financial and non-financial performances of the management are evaluated, and annual salaries and incentives are determined within the limit approved at the General Shareholders' Meeting.

### Shareholders

LOTTE Chemical is the largest shareholder of LOTTE E&C, with a 43.79% stake as of December 31, 2021. Including affiliated persons, shareholders own 99.59% of all shares.

#### Total shares of largest shareholder and affiliated persons

(Share type : ordinary shares)

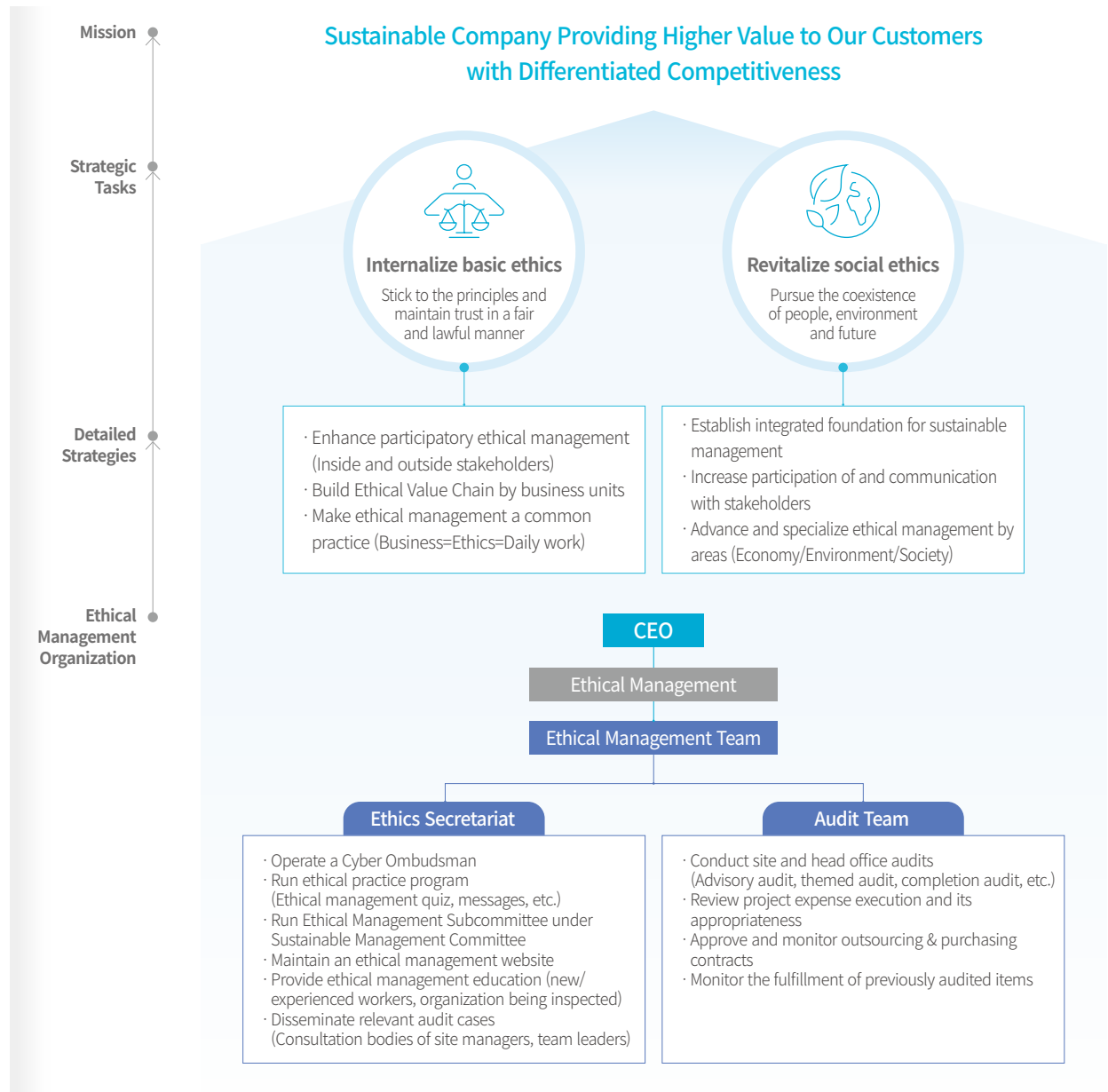


# Ethical Management

## Ethical Management Promotion System

LOTTE E&C promotes ethical management under the mission of becoming a sustainable company and providing higher value to our customers with differentiated competitiveness. We intend to present clear standards and ethical management practices for executives, employees, and outside stakeholders by providing ethical management guidelines. The Ethics Secretariat conducts various ethics programs, such as disseminating the messages of ethical management and carrying out related training, so that our employees can internalize the spirit of ethical management. By using LOTTE GROUP's prior management system, the ethical management performance is measured. The results of performance measures are reflected in the Code of Conduct and training to continue improvement activities.

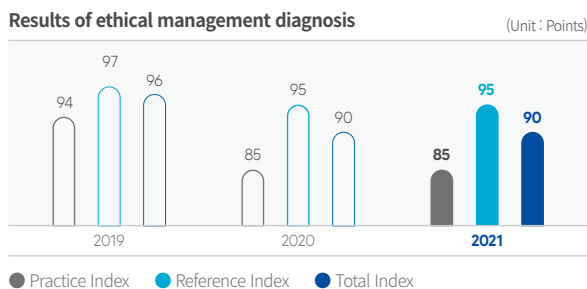
### Structure of ethical management documents



## Internalization of Ethical Culture

### Diagnosis of Ethical Management

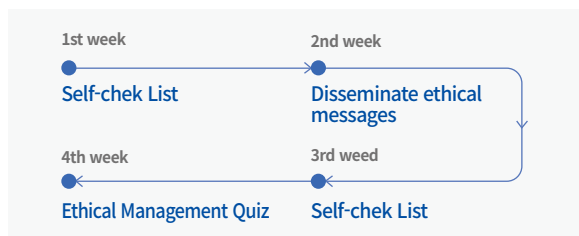
Every year, LOTTE E&C makes a diagnosis on ethical management status led by LOTTE GROUP. Based on the five themes of LOTTE’s Code of Conduct, the company assesses its ethical management level, makes needed modifications on the Code of Conduct, and develops new curriculum for ethical management training.



### Self-check on Ethical Management

LOTTE E&C runs a ‘self-check program for ethical management’ to enhance the awareness of ethical management for executives and employees, and encourage them to actively practice the Code of Conduct. Our employees can learn about possible risks encountered in workplaces and be encouraged to practice ethical management initiatives by going through self-check list, watching videos with ethical messages and solving ethical management quiz online.

#### Ethical management practice program



### Ethical Education Program

In connection with LOTTE E&C’s Code of Conduct and behavioral standards, the company is conducting cyber education specified for the construction industry for all executives and employees. Employees hired overseas are given ethical education by overseas corporations and branch managers. In the future, we plan to develop and provide more specific ethical management programs for each position and job.

#### Completion rate of ethical training

100%



### Reward for Best Practice in Ethical Management

To disseminate the ethical culture, LOTTE E&C collects cases of good practice by partner companies, customers, executives and employees. Based on the cases and self-check results, the best employee and the best team in terms of ethical management are chosen and rewarded. During the kick-off meeting for the year in January and ceremony of foundation day in September 2021, the company shared best practice cases and presented plaques to awardees.

### Campaign to Return Holiday Gifts

LOTTE E&C carries out the campaign to return holiday gifts to root out inappropriate gift exchanges during the Lunar New Year and Chuseok holidays. The principle is not to accept inappropriate gifts at all. If inevitably accepted the gift, the receiver is expected to return the gift to the sender or to the Ethics Secretariat. If those gifts cannot be returned, the company puts them up for auction and the proceeds from the auction is spent on helping neighbors in need.



Campaign Poster to Return Holiday Gifts



### Enhanced Audit Activities

LOTTE E&C inspects the fairness and ethics in overall business by conducting different audit activities such as regular, advisory, site completion, themed, special audits and more. In addition, we conduct a preventive audit activity of monitoring the use of corporate cards to raise ethical awareness and to encourage the correct use of corporate cards.

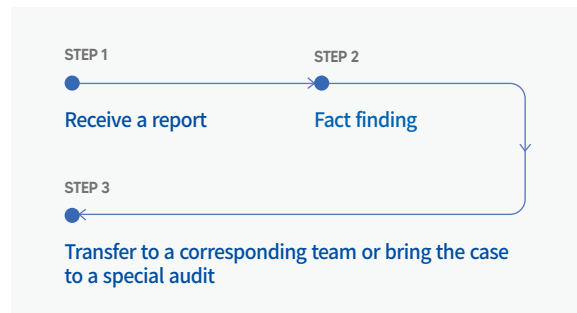
**Ethical management performance** (Unit : Case, Point)

Data	2019	2020	2021
Cases of ethical management violation punished	8	9	5
Number of cases reported in Cyber Ombudsman	870	214	197
Number of improved or instructed cases after audit	116	113	205
Ethical score	96	90	90
Number of violation against Code of Conduct	3	8	5

### Cyber Ombudsman

We operate the Cyber Ombudsman to take inquiries regarding ethical management, and to manage and supervise violations of ethical management. We collect information about unethical practices not just from executives and employees but also from outside stakeholders such as partner companies and residents of LOTTE CASTLE. We guarantee the whistleblower’s anonymity and conduct fair investigations to prevent malicious reports. The Cyber Ombudsman runs 24 hours a day and in principle, all reports received will be responded to within ten days.

#### Reporting Process



## Strengthening Ethical Management of Supply Chain

### Ethical Management Evaluation of Partner Companies

We include ethical management indicators in our regular evaluation system for partner companies to disseminate the culture of ethical management throughout the entire supply chain. If any unethical behavior of a partner company is identified during the transaction with LOTTE E&C, we take restrictive actions based on pre-announced deliberation criteria and subtract certain points during regular evaluation. In doing so, we can objectively manage the supply chain based on quantified measurement.

### Ethics Pledge of Partner Companies

We request our partners to sign a written pledge for ethical management when awarding contracts. In doing so, LOTTE E&C intends to prevent unethical behavior and contribute to the creation of a healthy corporate ecosystem.

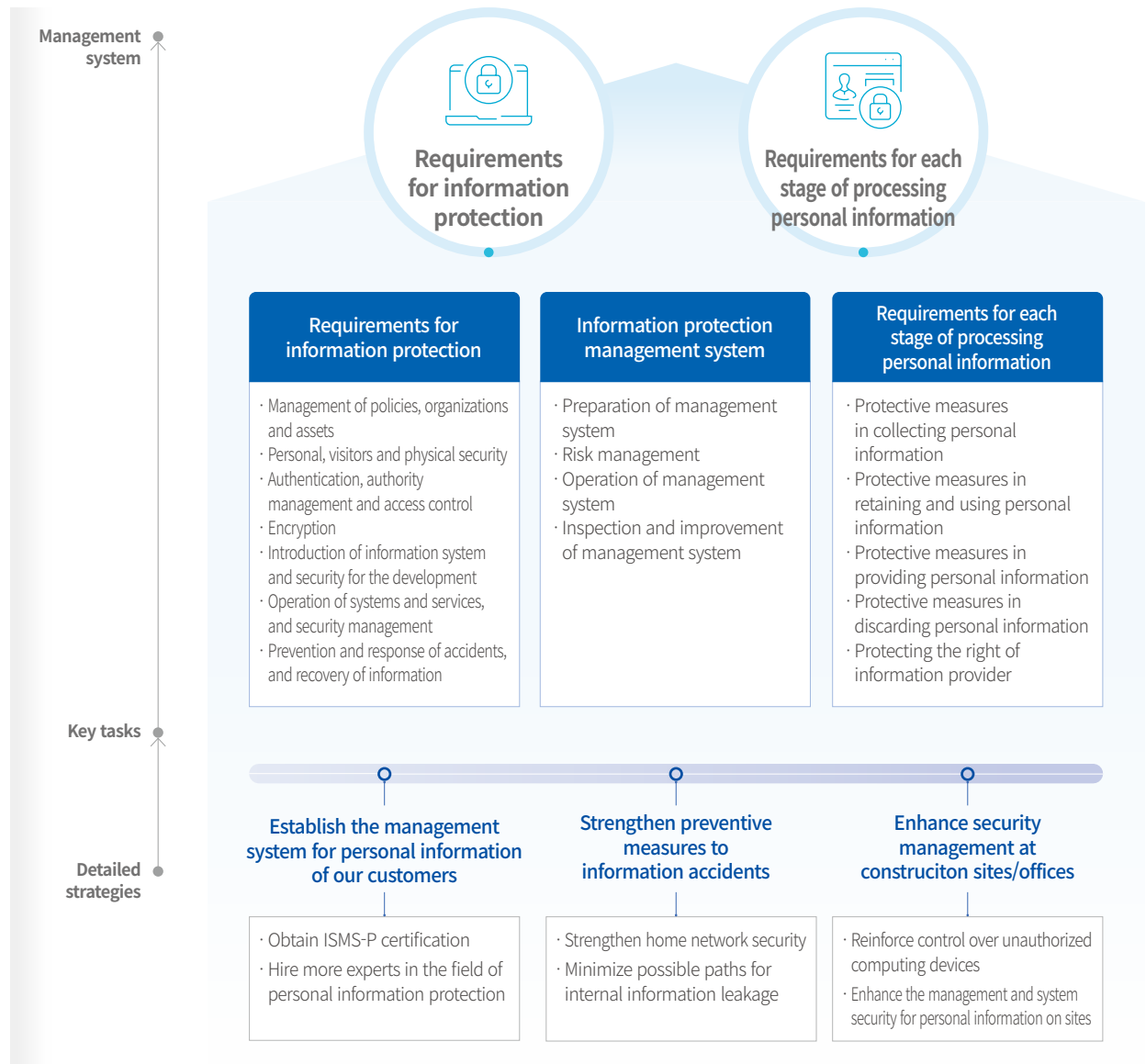
# Information Security

## Information Security Management System

Since 2017, LOTTE E&C has been certified for an Information Security Management System (ISMS<sup>1)</sup>) to safeguard business and personal information in a safe and trustworthy way. And we expanded the scope of this certification to include our customer information for apartment sales contracts and Elyes, an asset management platform for apartment sales and private rental houses. We plan to go beyond the ISMS certification to acquire Personal Information & Information Security Management System (ISMS-P) to further advance information management systems in 2022. We have an Information Protection Team, an organization reporting directly to the CEO that is dedicated to protecting information, which is responsible for planning and revising information protection policies, conducting security inspections, providing relevant education, and making needed investment.

1) ISMS A certification system by the Korea Internet Promotion Agency (KISA) that proves a set of measures and activities for information protection meet the certification standards

Information Security Management System



## Encouraging Information Protection Practices

### Mandatory training of information protection for employees

LOTTE E&C conducts an annual education program for all workers to raise awareness of information protection and strengthen internal security measures. In 2021, we carried out online training due to the COVID-19 pandemic and tried to increase the course completion rate. The subjects of training included key issues regarding information protection and actual cases, and were intended to increase the effectiveness of the training by providing small gifts when they participate in information protection quizzes. We plan to run an online education website on a regular basis to require new employees to complete the relevant training. We will also supplement the education program in a way that those who have not completed the required programs on the website should submit other forms of evidence of having completed relevant training.

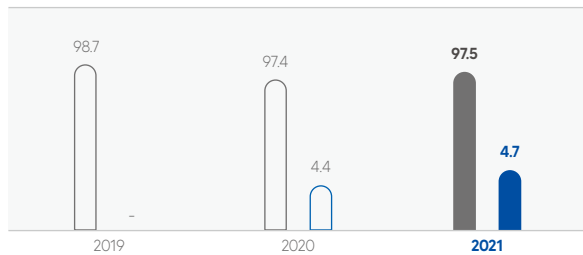
Completion rate of information protection training in 2021

97.5%



Information Protection Education

(Unit : %, Points)



● Completion rate ● General satisfaction

### Required training for employees who handle personal information

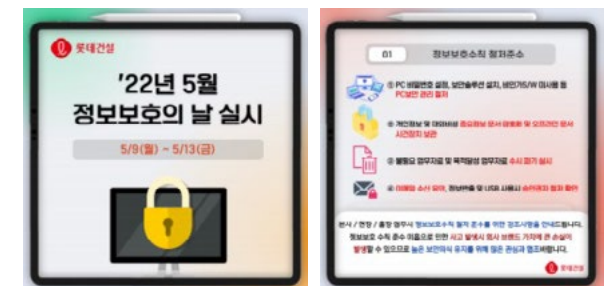
In accordance with Article 28 of Personal Information Protection Act, LOTTE E&C conducts mandatory education more than once every year for all workers who handle personal information. In 2021, we invited an external specialist who completed education on the status and cases of personal information leakage and the Personal Information Protection Act. Following a large-scale campaign on information protection, the participation rate for the education has gone up to 209% compared to the previous one. LOTTE E&C will expand annual education hour for those who are required to complete the education, and the education records will be linked to the KPI index of information protection activities by department. We provide extra financial benefits to executives and employees who have obtained professional qualifications in personal information protection. We also provide allowance to employees who acquired professional licenses for protecting personal information. Currently, some 100 employees have obtained the licenses.

Education for workers handling personal information in 2022 (Unit : Persons)

Category	Required workers	Participated workers	Remark
1st	84	208	Participation rate 209%
2nd	79	134	
<b>Total</b>	<b>163</b>	<b>342</b>	

### Information Protection Day

We operate our monthly Information Protection Day to boost the security awareness of employees and hold voluntary inspections of each department. By inspecting PCs, documents, and office environment, we prevent important business and customer information from being leaked and make information protection activities daily work practices. In addition, the company makes news cards to notify our employees of important security matters. As the number of security-related accidents is on the rise through work email accounts, we conduct 'simulated training for virus' led by LOTTE GROUP's Information Protection Committee to strengthen the awareness of information security. We continue to promote information protection practices by providing employees who report suspected emails with chances to win lucky draw gifts during the training.



News Cards on Information Protection Day



### Simulated Training for Information Security Accidents

In an effort to prevent and respond to information security accidents, LOTTE E&C has adopted a response procedure for uninterrupted business according to the security guidelines of its internal information system. We conduct comprehensive training for information recovery on a quarterly basis. In 2021, the company took part in a simulation training for responding to cyber crises led by the Korea Internet Promotion Agency (KISA) to inspect the response system for security violations. In addition, we carried out simulated hacking attacks on wallpads<sup>1)</sup> and the server system to strengthen the security system for the home network, took measures for any weaknesses found. LOTTE E&C intends to further enhance the protection of information not just for protecting technologies but also for protecting the personal information and private lives of residents living in apartments built by LOTTE E&C.

1) Wallpad A wall-mounted device in a kitchen or a living room to control the house for access, lighting, home appliances, fire detection, etc.

### Reporting Center for Security Violations

When LOTTE E&C employees receive emails with viruses or suspected emails, they report the case to a dedicated email account according to the company procedure. If they discover any suspicious activity, such as internal information leakage, they report it through LOTTE E&C Cyber Ombudsman and take proper actions.

### Strengthened Security for Customer Websites

LOTTE E&C made security diagnoses and carried out simulated hacking attacks on the websites for customer information process system, LOTTE CASTLE, Elyse and a website for applying to apartment built by Lotte E&C. Based on the results from these activities, we strengthen stability of websites and the safety of our customers' personal information. We will continue to provide stable services that our customers can use in the future.

**Number of complaints raised by regulatory agencies regarding violations of regulations and standards to protect customers' personal information** (Unit: case)

2018	2019	2020	2021
1	0	0	0

### Personal Information Protection Policy

When LOTTE E&C needs to collect customers' information, we request the minimum information for the purpose. A personal information protection policy is disclosed on the websites of LOTTE CASTLE and Elyse. For provision and entrusting of personal information to third parties, we clearly notify them and obtain their consent. When an information provider requests to delete or revise the information provided, we faithfully comply with the request. Furthermore, we carry out a monthly inspection on the management system of the team that handles personal information for the entire cycle of apartment sales, from customer application, sales, defect repair, and maintenance to customer inquiries. Every year, compliance with protection policies is assessed by LOTTE GROUP information security inspection and ISMS-P certification evaluation.



# Risk Management

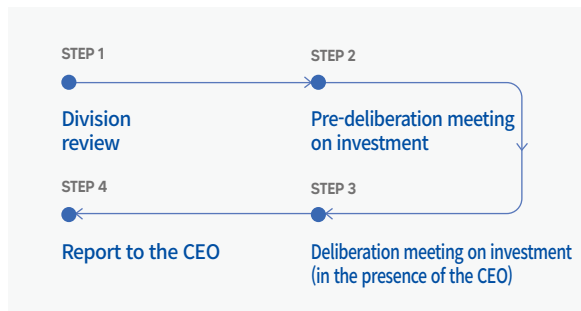
## Risk Management System

When making an investment and implementing a project, we can face various risks such as delays in schedule, design risks, and etc. It can not only damage profit and reputation, but also have direct and indirect impacts on the company. To manage these risks, we try to identify potential risks and make decisions after careful deliberation process.

## Risk Management in Project Investment

In order to identify and minimize financial risks that may incur throughout the entire project processes, LOTTE E&C makes thorough deliberation before we make an investment in projects. Each business division identifies and deliberates the potential risks for a project that have high financial impacts on the project according to predetermined criteria. In addition, a thorough review and deliberation are conducted based on a strict risk management process before we make a decision and report to the CEO.

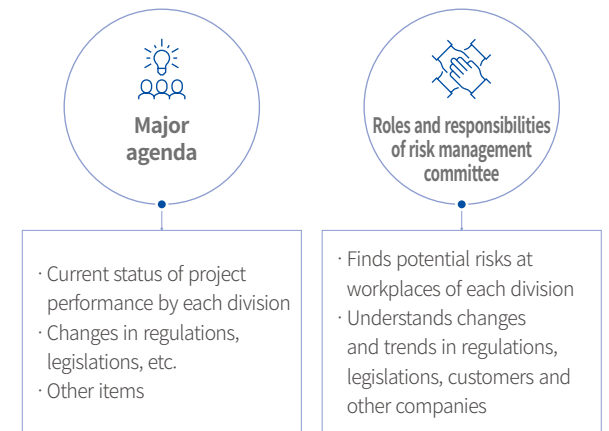
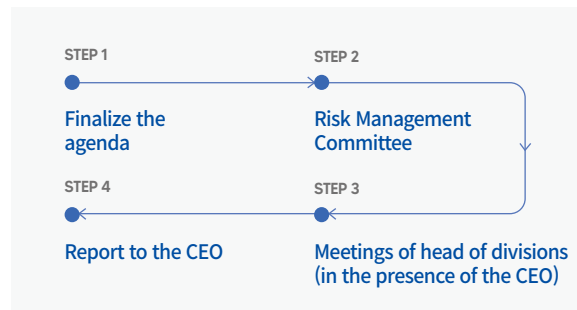
### Management process for project investment risk



## Risk Management in Implementing a Project

LOTTE E&C has recently established a Risk Management Committee to strengthen the management activities in implementing projects. Each division prepares alternative resolutions by identifying potential risks that may occur while performing a project and monitors the compliance of regulations, laws, and trends in the industry and other companies that might have an impact on the businesses at the company level. The Risk Management Committee meets on a monthly basis. When any urgent items are raised, however, the Committee immediately addresses the matter. Identified items on the agenda are managed at the C-Level as they are deliberated by heads of divisions and reported to the CEO.

### Risk management process in implementing a project



## Management of Non-Financial Risks

Each working-level organization of LOTTE E&C performs needed activities to minimize possible risks, and agenda of non-financial risks is reported to the CEO through the Sustainable Management Committee. The Safety and Health Department conducts safety and health activities to minimize potential risks while implementing a project. The Outsourcing & Purchasing Division has recently introduced an Evaluation System for ESG and Safety Capability for partner companies for more advanced management of risks of partner companies. In addition, we offer additional incentives to excellent partner companies to encourage them to participate in ESG management activities and secure sustainable management. Ethical Management and Compliance Teams conduct needed activities to resolve possible risks in complying with regulations on anti-corruption and subcontracting. The ESG Team collects and manages non-financial performance results, finding areas for improvements and further tasks.

# Compliance

## Strengthening Compliance System

In an effort to increase the value of our businesses in the future through fair and transparent management and ultimately lay the foundation for sustainable management, LOTTE E&C operates a compliance system. Starting from building a compliance system for subcontracting and internal trade in 2019, we formed a subcontract TFT and improved the computer system for subcontracting in 2020. In addition, the company appointed managers in charge of autonomous compliance and compliance officers for each organization to prepare an internal supervision system for practical operation. To strengthen the compliance program, we made a 'Fair Trade Compliance Handbook' and distributed it to the entire employees in 2021. We also improved work process such as bidding process. In addition to the previous compliance program, we have expanded the program scope to include HR, labor affairs, and anti-corruption to reinforce our compliance activities. Furthermore, we assess the effectiveness of compliance programs and conduct improvement activities accordingly to advance the compliance system.

### Eight key factors of compliance program

01	CDeveloping and implementing CP standards and procedures
02	Willingness of and support by the CEO
03	Appointing compliance managers and officers
04	Producing and making use of voluntary compliance handbook
05	Continuous and systematic training on voluntary compliance
06	Building internal supervision system
07	Imposing restrictions on executives and employees who violated fair trade-related regulations
08	Assessing the effectiveness and taking measures for improvements

## 'CP Times' Raising and Spreading Compliance Awareness

LOTTE E&C publishes CP Times that contain compliance training and quiz materials to train and reward employees every month. In addition, we intend to raise the compliance awareness of employees by having them sign the Compliance Charter. We designated the foundation day of our company as CP Day.



CP Times

## Compliance Ombudsman

Through the Secretariat of Compliance that is devoted to compliance management, LOTTE E&C operates a compliance ombudsman. Anyone who witnessed noncompliance involving executives and employees, partner companies and stakeholders, or who suspects noncompliance can report to an ombudsman via mails, emails and website. The personal information of those who reported noncompliance is kept secret, and the informants are protected from any possible disadvantages.

[Compliance Ombudsman](#)

## Strengthening Anti-Corruption Policies

LOTTE E&C has recently formulated anti-corruption policies for our employees to strengthen social responsibilities and compliance management. The new policies include anti-corruption related principles regarding accepting bribery, money laundering, asking for express charge and managing third parties. Through these activities, we intend to further enhance our anti-corruption and ethical management policies.

### Anti-corruption policies<sup>1)</sup>

01	Refrain from any corrupt activities such as accepting bribery, money laundering, providing entertainment, charging express fees, etc.
02	Comply with domestic and overseas regulations, internal policies regarding corruption and bribery
03	Build and maintain an anti-corruption management system
04	Appoint an independent anti-corruption officer
05	Report immediately when noncompliance of anti-corruption laws and regulations is found, Protect anonymity of informant

1) The above is an excerpt of the Anti-Corruption Policies which consist of eight clauses.



# Appendix

ESG Data Book	096
GRI Standards Index	109
SASB Index	114
Independent Assurance Statement	116
Safety and Health Management System Certifications	118
Code of Conduct for LOTTE Employees	119
Memberships in Associations and Awards	120

# ESG DATA BOOK

## Economic Performance

### Consolidated Financial Statement

Category	Unit	2019	2020	2021
Revenue	KRW Million	5,314,794	5,097,914	5,701,112
Operating income	KRW Million	305,559	357,019	493,695
Profit from continuing operations	KRW Million	327,469	291,167	323,217
Net income (Net loss)	KRW Million	222,838	193,798	219,998
Earnings Per Share	KRW won	6,926	6,023	6,828
Current assets	KRW Million	3,769,783	3,639,026	3,854,462
Non-current assets	KRW Million	1,180,880	1,528,359	1,629,669
<b>Total assets</b>	KRW Million	<b>4,950,663</b>	<b>5,167,385</b>	<b>5,484,131</b>
Current liabilities	KRW Million	1,777,689	2,155,621	2,167,882
Non-current liabilities	KRW Million	947,441	614,261	702,755
<b>Total liabilities</b>	KRW Million	<b>2,725,130</b>	<b>2,769,882</b>	<b>2,870,637</b>
Capital	KRW Million	215,588	215,588	215,588
Capital surplus	KRW Million	1,122,618	1,122,618	1,122,618
Retained earnings, etc.	KRW Million	862,639	998,783	1,163,627
<b>Total capital</b>	KRW Million	<b>2,225,533</b>	<b>2,397,503</b>	<b>2,613,494</b>
<b>Total liabilities and capital</b>	KRW Million	<b>4,950,663</b>	<b>5,167,385</b>	<b>5,484,131</b>

### Separate Financial Statements

Category	Unit	2019	2020	2021
Revenue	KRW Million	5,306,828	5,093,292	5,690,160
Operating income	KRW Million	306,625	359,494	497,239
Profit from continuing operations	KRW Million	321,655	290,741	323,217
Net income (Net loss)	KRW Million	222,876	193,817	219,713
Earnings Per Share	KRW won	6,926	6,023	6,828
Current assets	KRW Million	3,723,910	3,414,571	3,548,386
Non-current assets	KRW Million	1,203,057	1,686,349	1,831,831
<b>Total assets</b>	KRW Million	<b>4,926,967</b>	<b>5,103,920</b>	<b>5,380,217</b>
Current liabilities	KRW Million	1,761,203	2,148,464	2,127,304
Non-current liabilities	KRW Million	947,441	603,762	690,626
<b>Total liabilities</b>	KRW Million	<b>2,708,644</b>	<b>2,752,226</b>	<b>2,817,930</b>
Capital	KRW Million	215,588	215,588	215,588
Capital surplus	KRW Million	1,122,618	1,122,618	1,122,618
Retained earnings, etc.	KRW Million	863,425	999,566	1,164,090
<b>Total capital</b>	KRW Million	<b>2,218,323</b>	<b>2,351,694</b>	<b>2,562,287</b>
<b>Total liabilities and capital</b>	KRW Million	<b>4,926,967</b>	<b>5,103,920</b>	<b>5,380,217</b>

## Distribution of Economic Values

Category	Unit	2019	2020	2021
Outsourcing partners (Outsourcing expenses)	KRW Million	2,978,600	2,454,557	3,029,704
Employees (Salaries and benefits)	KRW Million	303,990	326,113	362,125
Shareholders (Dividends)	KRW Million	54,702	41,831	42,957
Government (Corporate tax)	KRW Million	98,778	96,924	103,503
Local communities (Donations, charity expenses, investment)	KRW Million	3,303	3,228	4,267
Material suppliers (Material costs)	KRW Million	950,700	1,325,908	1,006,772
Creditors (Interest)	KRW Million	39,521	32,930	27,765
<b>Total Amount of Economic Performance Distributed</b>	KRW Million	<b>4,429,594</b>	<b>4,281,491</b>	<b>4,577,093</b>
<b>Portion of Economic Values Held</b>	KRW Million	<b>877,234</b>	<b>811,801</b>	<b>1,113,067</b>

## Research and Development

Category	Unit	2019	2020	2021
Number of patent registrations <sup>1)</sup>	Case	1	3	2
<b>Total R&amp;D investment(Technology development service expenses + Exclusive technology development expenses)</b>	KRW Million	<b>24,938</b>	<b>25,724</b>	<b>23,877</b>
Technology development service expenses	KRW Million	19,620	20,549	16,290
Exclusive technology development expenses	KRW Million	5,318	5,175	7,587
Green R&D investment <sup>2)</sup>	KRW Million	55	130	188

1) As of the date when patents and green certifications are registered. Patents and green certifications: 2019 (air distribution system with an indoor air purifier), 2020 (wastewater treatment system, biogas production system with IoT platform, dust removal system), 2021 (organic waste treatment equipment and treatment methods using this equipment, Truss Insulation Frame Unit System (TIFUS))

2) Research expense for eco-friendly projects (Technology R&D)

## R&amp;D Investment Goals

Category	Unit	2022	2023	2024
Green R&D investment goals <sup>3)</sup>	KRW Million	600	800	900

3) Calculation criteria: Net R&D cost + R&D labor cost



## Environmental Performance

### Energy Consumption<sup>1)</sup>

Category	Unit	2019	2020	2021
Total energy consumption	TJ	843.30	794.97	856.12
Energy consumption intensity <sup>2)</sup>	TJ/KRW billion	0.16	0.16	0.15
Non-renewable energy	TJ	843.30	794.97	856.12
Renewable energy	TJ	0	0	0
Ratio of renewable energy	%	0	0	0
<b>Energy consumption by fuel type (Non-renewable energy)</b>				
LNG	TJ	23.13	33.33	24.59
Brown coal <sup>3)</sup>	TJ	42.38	0	0
Kerosene	TJ	37.74	89.83	61
Diesel	TJ	12.07	16.46	13.45
Gasoline	TJ	6.91	12.66	4.07
LPG (Vehicle)	TJ	0.36	0.69	0.39
LPG (Liquefied Petroleum Gas)	TJ	0.07	0.13	0.16
Total : Direct energy consumption <sup>4)</sup>	TJ	122.66	153.1	103.66
Electric power	TJ	718.55	641.16	750.38
Steam	TJ	2.07	6.25	2.1
Total : Indirect energy consumption <sup>5)</sup>	TJ	720.62	647.41	752.48
Ratio of worksites disclosing energy consumption data	%	100	100	100
Total energy cost	KRW 100 million	118.25	117.87	133.59

1) Data from domestic worksites.

2) Total energy consumption (TJ)/ Sales (KRW billion)

3) By using kerosene instead of brown coal, the consumption of brown coal was greatly reduced.

4) Direct energy consumption: LNG + brown coal + kerosene + diesel + gasoline + LPG (vehicles, liquefied petroleum gas)

5) Indirect energy consumption Electricity consumption + steam consumption

### GHG Emissions<sup>1)</sup>

Category	Unit	2019	2020	2021
Scope 1	tCO <sub>2</sub> eq	9,371	9,791	6,577
Scope 2	tCO <sub>2</sub> eq	35,041	31,360	35,983
GHG emissions (Scope 1+2)	tCO <sub>2</sub> eq	44,412	41,151	42,560
GHG emissions (Scope 1+2) Intensity <sup>2)</sup>	tCO <sub>2</sub> eq/KRW billion	8.36	8.07	7.47
Ratio of worksites disclosing GHG emission data (Domestic)	%	100	100	100
Direct reduction of GHG emissions from GHG reduction activities	tCO <sub>2</sub> eq	4,959	3,789	4,432

1) Data from domestic worksites. Based on Jan.1 to Dec.31, 2021

Electricity : GHG emission/absorption factors of approved countries in 2018 (Ministry of Environment)

Steam : Emission factor of GHG from heat (steam) in 2021 (Korea District Heating Corporation)

Fuel : GHG inventory guidelines of IPCC countries

2) GHG emissions(tCO<sub>2</sub>eq)/Sales KRW billion

Waste Generation<sup>1)</sup>

Category	Unit	2019	2020	2021
<b>Total waste generation</b>	ton	<b>479,700</b>	<b>466,371</b>	<b>589,348</b>
<b>Amount of waste</b>				
Waste concrete	ton	256,598	249,303	146,616
Mixed construction waste	ton	116,474	138,565	214,598
Construction waste soil	ton	67,542	49,390	24,639
Waste asphalt concrete	ton	18,502	6,171	12,560
Wood wastes	ton	8,804	10,392	12,587
Waste synthetic resins	ton	6,469	5,629	6,189
Construction sludge	ton	2,889	5,142	169,250
Waste boards	ton	2,370	1,415	2,823
Tile / Ceramic waste	ton	11	13	163
Other wastes	ton	18	351	1
Textile wastes	ton	23	0	3
Intensity-based waste generate	ton/ KRW billion	<b>90.27</b>	<b>91.5</b>	<b>103.38</b>
Amount of waste recycled (General waste)	ton	463,791	453,242	586,529
Waste Recycling Rate	%	96.68	97.18	99.52
Total amount of construction waste treated	ton	15,910	13,129	2,819
Incineration	ton	1,748	1,154	904
Landfill	ton	14,162	11,975	1,915
Ratio of worksites disclosing waste generation data (domestic)	%	100	100	100

1) Data from domestic worksites.

Material Consumption<sup>1)</sup>

Category	Unit	2019	2020	2021
<b>Non-renewable raw materials</b>				
Ready-mixed concrete	m <sup>3</sup>	2,905,589	2,633,760	2,891,091
Cement	ton	41,630	36,876	476,804
Aggregate	m <sup>3</sup>	70,873	93,942	266,364
Asphalt concrete	ton	200,942	93,766	57,187
Sand	m <sup>3</sup>	16,136	7,542	12,051
Rebar	ton	375,279	416,620	481,369
Plaster board	Sheet	3,282,054	1,181,965	3,337,733
Recycled aggregate	m <sup>3</sup>	6,358	3,601	1,630
Ratio of recycled materials as input <sup>2)</sup>	%	8.2	3.7	0.6

1) Includes activities in overseas sites

2) Based on aggregate consumption. Formula: Recycled aggregate/(recycled aggregate + aggregate)\*100

Water Consumption<sup>1)</sup>

Category	Unit	2019	2020	2021
Water consumption	Million Ton	1,148,257	668,973	<b>695,165</b>
Urban water withdrawal	Million Ton	997,232	482,224	592,354
Surface water withdrawal	Million Ton	0	0	0
Underground water withdrawal	Million Ton	151,025	186,749	102,811
Amount of water discharged back to intake station as similar quality with raw water	Million Ton	0	0	0
Ratio of worksites disclosing water consumption data	%	100	100	100
Water Reuse Rate	Million Ton	0	0	0
Intensity based water withdrawal	Million ton/ KRW billion	216.08	131.25	<b>121.94</b>
Water Recycling Rate	%	0	0	0

1) Data from domestic worksites

## Green Procurement

Category	Unit	2019	2020	2021
Products certified for Eco Mark	KRW Million	12,972	17,599	26,756
Products certified for good recycled (GR Mark)	KRW Million	3,042	4,041	2,209
Products with healthy building material (HB Mark)	KRW Million	13,035	13,690	1,966
High-efficiency Energy Equipment	KRW Million	2,853	2,845	5,401
Energy Efficiency Rating 1, 2	KRW Million	20,716	25,851	18,946
Energy conservation	KRW Million	-	46	130
<b>Total</b>	<b>KRW Million</b>	<b>52,618</b>	<b>64,072</b>	<b>55,409</b>

## Compliance with environmental regulations

Category	Unit	2019	2020	2021
Number of violation against environment-related permission, standards and regulations <sup>1)</sup>	Cases	1	0	0

1) Number of cases imposed with penalty (Not counted for cases of negligence fine or lower)

## Environmental Management System

Category	Unit	2019	2020	2021
Ratio of worksites certified for EMS (Domestic)	%	100	100	100

## Social Performance

### Current Status of Employees<sup>1)</sup>

Category	Unit	2019	2020	2021
<b>Total number of employees</b>	Persons	<b>3,360</b>	<b>3,323</b>	<b>3,568</b>
Number of male employees	Persons	3,079	3,032	3,226
Number of female employees	Persons	281	291	342
Number of employees below 30 years old	Persons	372	315	331
Number of employees between 30 and 50 years old	Persons	2,461	2,434	2,543
Number of employees over 50 years old	Persons	527	574	694
Number of regular employees (All)	Persons	2,506	2,501	2,595
Ratio of regular employees (All)	%	74.6	75.3	72.7
Number of regular employees (Female)	Persons	199	212	244
Ratio of regular employees (Female)	%	5.9	6.4	6.8
Number of regular employees (Male)	Persons	2,307	2,289	2,351
Ratio of regular employees (Male)	%	68.7	68.9	65.9
Number of contractual employees (All)	Persons	854	822	973
Ratio of contractual employees (All)	%	25.4	24.7	27.3
Number of contractual employees (Female)	Persons	82	79	98
Ratio of contractual employees (Female)	%	2.4	2.4	2.7
Number of contractual employees (Male)	Persons	772	743	875
Ratio of contractual employees (Male)	%	23	22.4	24.5

1) As of Dec. 31. Excluding executives, advisors, registered executive, etc.

### Current Status of Employees

Category	Unit	2019	2020	2021
Number of employees by region				
South Korea	Persons	2,377	2,383	2,477
Indonesia	Persons	32	37	37
Vietnam	Persons	42	50	56
Japan	Persons	1	1	1
China	Persons	27	13	10
Pakistan	Persons	5	2	2
Russia	Persons	7	1	1
Malaysia	Persons	5	4	5
Cambodia	Persons	9	9	2
Singapore	Persons	1	1	4
Number of contractual employees by region <sup>1)</sup>				
South Korea	Persons	845	816	970
Indonesia	Persons	4	4	0
Vietnam	Persons	1	1	2
Japan	Persons	0	0	0
China	Persons	0	0	0
Pakistan	Persons	0	0	0
Russia	Persons	0	0	0
Malaysia	Persons	1	0	0
Cambodia	Persons	2	0	0
Singapore	Persons	1	1	1

1) Number of employees in the region



Number of Employee Turnover<sup>1)</sup>

Category	Unit	2019	2020	2021
Total employee turnover	Persons	59	58	69
Female employee turnover	Persons	4	9	9
Male employee turnover	Persons	55	49	60
Number of turnover (Below 30 years old)	Persons	6	2	17
Number of turnover (Between 30 and 50 years old)	Persons	41	34	48
Number of turnover (Over 50 years old)	Persons	12	22	4
Ratio of turnover (South Korea)	%	100	100	100

1) As of 2021. Includes voluntary turnover only. Nonvoluntary turnover such as retirement is not included.

## Diversity of Employees

Category	Unit	2019	2020	2021
Ratio of female employees	%	8.4	8.8	9.6
Ratio of female executives	%	1.4	1.6	1.7
Number of female executives	Persons	48	52	62
Number of employees with disabilities	Persons	87	137	147

## New Employees

Category	Unit	2019	2020	2021
Total number of new employees	Persons	167	74	196
Number of new employees (Below 30 years old)	Persons	47	42	80
Ratio of new employees (Below 30 years old)	%	28.1	56.8	40.8
Number of new employees (Between 30 and 50 years old)	Persons	118	31	115
Ratio of new employees (Between 30 and 50 years old)	%	70.7	41.9	58.7
Number of new employees (Over 50 years old)	Persons	2	1	1
Ratio of new employees (Over 50 years old)	%	1.2	1.3	0.5
Number of new employees (Female)	Persons	29	21	41
Ratio of new employees (Female)	%	17.4	28.4	20.9
Number of new employees (Male)	Persons	138	53	155
Ratio of new employees (Male)	%	82.6	71.6	79.1
Number of new employees in South Korea	Persons	167	74	196
Ratio of new employees in South Korea	%	100	100	100

## Parental Leave and Welfare Benefits

Category	Unit	2019	2020	2021
Total number of employees entitled to parental leave (Female)	Persons	40	48	53
Total number of employees entitled to parental leave (Male)	Persons	1,074	1,047	998
Total number of employees taking parental leave (Female)	Persons	28	34	36
Total number of employees taking parental leave (Male)	Persons	253	283	313
Total number of female employees returning to work after parental leave	Persons	17	16	18
Total number of male employees returning to work after parental leave	Persons	84	94	81
Number of female employees still on the payroll 12 months after returning from parental leave	Persons	13	9	16
Number of male employees still on the payroll 12 months after returning from parental leave	Persons	80	86	78
Ratio of employees who return from parental leave	%	96.2	98.2	100.0
Ratio of employees still on the payroll after returning from parental leave	%	88.6	84.8	94.9
Welfare benefits	KRW won	84,630	75,023	69,713
Number of employees taking maternity leave	Persons	6	9	8

## Education and Training

Category	Unit	2019	2020	2021
<b>Total training expenses for employees</b>	KRW Million	<b>3,610</b>	<b>2,480</b>	<b>3,042</b>
Training expenses per individual	KRW Won	1,074,400	746,300	852,687
Total number of trainees for the year	Persons	3,360	3,323	3,568
Training hours per individual employee	Hours	115	117	121
Training hours per individual employee (Female)	Hours	111	113	116
Training hours per individual employee (Male)	Hours	115	117	120
Ratio of employees received a regular performance and career development review	%	100	100	100

## Retirement Pension

Category	Unit	2019	2020	2021
Amount of organization's defined benefit plan obligations	KRW 100 million	2,214	2,372	2,653
Number of subscribers (DB)	Persons	2,582	2,607	2815
Number of subscribers (DC)	Persons	48	73	83
Number of subscribers <sup>1)</sup> (DB+DC)	Persons	2,630	2,680	2,898

1) New employees who joined the company for less than a year were not included. They are included on the first January 1st after the date of joining the company for one year.

## Safety and Health Management

Category	Unit	2019	2020	2021
<b>On-site safety inspections</b>				
Total number of inspections	Case	1,158	1,028	597
Number of on-site inspections	Case	8	8	5
<b>Safety training</b>				
Number of safety training courses	Courses	12	7	13
Number of employees completed safety training courses <sup>1)</sup>	Persons	3,338	1,234	1,091
Securing of safety managers (Regular employees)	%	36.4	33.3	30.3
Ratio of employees applied to safety health system	%	100	100	100

1) Employees of Partner Companies included

## Occupational Deaths and Injuries

Category	Unit	2019	2020	2021
<b>Executives and employees</b>				
Number of deaths from occupational injuries	Cases	0	0	0
Mortality rate from occupational injuries	%	0	0	0
<b>Number of workers under organizational control (Employees excluded)</b>				
Number of deaths from occupational injuries (Number of critical accidents)	Cases	4	1	2
Number of deaths from occupational injuries (Male)	%	4	1	2
Number of deaths from occupational injuries (Female)	Cases	0	0	0
Mortality rate from occupational injuries (Per 10,000 workers) <sup>1)</sup>	‰	1.39	0.41	0.69(Presumptive)
Number of critical occupational injuries except for death	Cases	114	126	135
Number of critical occupational injuries except for death (Male)	Cases	111	122	132
Number of critical occupational injuries except for death (Female)	Cases	3	4	3
Number of injuries which is required to be recorded and retained (Mortality number included)	Cases	118	127	137
Rate of injuries which is required to be recorded and retained <sup>2)</sup>	%	1.79	2.17	1.98
Industrial accident rate <sup>3)</sup>	%	0.0021	0.002417	0.002389
Lost Time Incident Rate (LTIR)	200,000 hours	0.52	0.59	0.60
Total work hours (Workers under organizational control except for employees excluded)	Hour	44,958,14	42,028,408	45,881,568
Total number of workers <sup>4)</sup>	Persons	5,619,768	5,253,551	5,735,196

1) Mortality rate per 10,000 workers : number of full-time workers × 10,000

2) Number of work injuries (death included)/ total work hours × 1,000,000 hours

3) Number of industrial injuries / the number of workers \* 100

4) Number of workers printed on work log



**Human Rights of Executives and Employees**

Category	Unit	2019	2020	2021
Number of discrimination and bullying cases <sup>1)</sup>	Case	0	0	0

1) Managed through grievance handling program. No cases reported. The number of cases reported through grievance handling program: 23 cases in 2019, 19 cases in 2020, 19 cases in 2021 which were related to personal matters or work environment.

**Social Contribution Performance**

Category	Unit	2019	2020	2021
Total expenses for social contribution activities <sup>1)</sup>	KRW Million	3,303	3,228	4,267
Number of participating employees <sup>2)</sup>	Persons	1,480	988	639
Number of volunteering teams <sup>3)</sup>	Teams	225	238	248
Proportion of participating employees in volunteering teams <sup>4)</sup>	%	80.8	54	31
Employee participation rate through matching grant	%	75.1	73.2	65.7

1) Correction made on 2020 records, Expenses = Contribution (DART(Electronic Disclosure System)) + Matching Grant (Contribution by employees)

2) Charlotte Voluntary Service Group : 439 people, Play Kits DIY(Contact-free): 100, Pink Box Campaign (Contact-free) : 100

3) Ongoing teams : 62, Teams whose activities have been completed: 186 (as construction completed)

4) Participating employees in the volunteering teams/Total number in volunteering teams

**Supply Chain Data**

Category	Unit	2019	2020	2021
Total number of partner companies <sup>1)</sup>	Companies	2,550	2,182	2,185
Number of excellent partners <sup>2)</sup>	Companies	53	51	51
Records of financial support to partner companies	KRW Million	32,220	32,130	38,896

1) Domestic partner companies who have transaction history in a corresponding year

2) Excellent partner companies are selected from partner companies who worked with LOTTE E&C in a previous year

## Governance

### Composition of Board of Directors

Category	Unit	2019	2020	2021
Total number of directors	Persons	7	7	7
Inside directors	Persons	4	3	4
Outside directors	Persons	3	3	2
Non-executive director	Persons	0	1	1
Gender ration in BOD (Male)	%	100	100	100
Gender ration in BOD (Female)	%	0	0	0
Directors by age (Below 30 years old)	%	0	0	0
Directors by age (Between 30 and 50 years old)	%	0	14.3	14.3
Directors by age (Over 50 years old)	%	100	85.7	85.7
Female executive who is not the largest shareholder and specially related person	Persons	0	0	0
Ratio of outside directors	%	42.9	42.9	28.6
Number of outside directors whose attendance rate is below 75%	Persons	0	0	0

### BOD Operation

Category	Unit	2019	2020	2021
Number of BOD meetings held	Times	10	9	10
Average attendance rate	%	82	99	100
Attendance rate of outside directors	%	93	100	100
Number of BOD agendas	Cases	30	24	28

### Remuneration Ratio

Category	Unit	Data
CEO remuneration (A) <sup>1)</sup>	KRW won	932,666,426
Average remuneration of executives and employees (B) <sup>2)</sup>	KRW won	91,247,375
Median value of remuneration of executives and employees (C) <sup>3)</sup>	KRW won	77,739,080
CEO remuneration against average remuneration of executives and employees (A/B)	Times	10.2
CEO remuneration against median value of remuneration of executives and employees (A/C)	Times	12.0

1) Based on data in 2021 Business Report

2) Average and median value of remuneration of executives and employees do not include those of CEO remuneration.

3) The median value of remuneration of executives and employees is calculated from full-time employees (registered executives and site workers excluded) who did a year-end tax settlement and an interim settlement in 2021.

### Ethical Management

Category	Unit	2019	2020	2021
Number of cases of unethical management practice	Cases	8	9	5
Number of cases reported through people (ombudsman)	Cases	870	214	197
Number of improvements and guidance provided after audits	Cases	116	113	205
Assessment of ethical levels	Points	96	90	90
Number of violations against Code of Conduct	Cases	3	8	5

**Anti-Corruption Policies**

Category	Unit	2019	2020	2021
Number of executives and employees who were informed of the anti-corruption policies	Persons	3,360	3,323	3,568
Ratio of executives and employees who were informed of the anti-corruption policies <sup>1)</sup>	%	100	100	100
Number of partner companies who were informed of the anti-corruption policies	Companies	2,550	2,182	2,185
Ratio of partner companies who were informed of the anti-corruption policies	%	100	100	100

1) For all executives and employees before signing the Compliance Charter (100%)

**Corruption Risks Management**

Category	Unit	2019	2020	2021
Number of workplaces that conducted evaluations on corruption risks <sup>1)</sup>	Workplaces	260	266	262
Ratio of workplaces that conducted evaluations on corruption risks	%	100	100	100

1) Same criteria for calculating the number of workplaces emitting GHGs was applied.

**Corruption Cases and Unfair Trade Acts Identified, and Legal Actions Taken**

Category	Unit	2019	2020	2021
Number of corruption cases	Cases	3	8	4
Number of corruption cases resulted in dismissal or disciplinary actions	Cases	2	8	4
Number of corruption cases in which contracts of partner companies were terminated or not renewed	Cases	1	0	0
Number of legal actions taken for unfair trade acts	Cases	0	0	0

**Training on Anti-Corruption**

Category	Unit	2019	2020	2021
Number of directors in BOD who was trained	Persons	7	7	7
Ratio of directors in BOD who was trained	%	100	100	100
Number of executives and employees who was trained	Persons	3,360	3,323	3,568
Number of executives and employees who was trained (Regular employees)	Persons	2,506	2,501	2,595
Number of executives and employees who was trained (Contractual employees)	Persons	854	822	973
Ratio of executives and employees who was trained (Regular employees)	%	100	100	100
Ratio of executives and employees who was trained (Contractual employees)	%	100	100	100
Number of executives and employees who was trained by Country <sup>1)</sup>				
South Korea	Persons	3,222	3,199	3,447
Indonesia	Persons	36	41	37
Vietnam	Persons	43	51	58
Japan	Persons	1	1	1
China	Persons	27	13	10
Pakistan	Persons	5	2	2
Russia	Persons	7	1	1
Malaysia	Persons	6	4	5
Cambodia	Persons	11	9	2
Singapore	Persons	2	2	5

1) Number of employees working in the region

# GRI STANDARDS INDEX

## GRI 102: General Disclosures 2016

Topic	Index	Page	
Organizational Profile	102-1	Name of the organization	6
	102-2	Activities, brands, products, and services	6~25
	102-3	Location of headquarters	6
	102-4	Location of operations	6, 9
	102-5	Ownership and legal form	6, 86
	102-6	Markets served	9~25
	102-7	Scale of the organization	6, 101
	102-8	Information on employees and other workers	6, 101
	102-9	Supply chain	67, 106
	102-10	Significant changes to the organization and its supply chain	Not applicable
	102-11	Precautionary Principle or approach	27, 93
	102-12	External initiatives	Ministry of Environment- Voluntary agreement to respond to high-concentration fine dust from a construction company
	102-13	Membership of associations	120
Strategy	102-14	Statement from senior decision-maker	4
Ethics & Integrity	102-16	Values, principles, standards, and norms of behavior	7, 119
	102-17	Mechanisms for advice and concerns about ethics	89, 94
Governance	102-18	Governance structure	27, 85
	102-19	Delegating authority	27
	102-20	Executive-level responsibility for economic, environmental, and social topics	27
	102-22	Consulting stakeholders on economic, environmental, and social topics	85
	102-23	Chair of the highest governance body	Go to the Business Report p.245 <a href="#">☞ Lotte E&amp;C/Business Report/2022.03.31 (fss.or.kr)</a>



Topic	Index	Page	
Stakeholder Engagement	102-38	Annual total compensation ratio	107
	102-40	List of stakeholder groups	32
	102-41	Collective bargaining agreements	No labor union Consultations are made through the labor-management committee
	102-42	Identifying and selecting stakeholders	30
	102-43	Approach to stakeholder engagement	30
	102-44	Key topics and concerns raised	30
Reporting Practice	102-45	Entities included in the consolidated financial statements	Go to the Business Report p.49 <a href="#">Lotte E&amp;C/Business Report/2022.03.31 (fss.or.kr)</a>
	102-46	Defining report contents and topic Boundaries	30
	102-47	List of material topics	30
	102-48	Restatements of information	106 (Modification on social contribution data)
	102-49	Changes in reporting	30
	102-50	Reporting period	2
	102-51	Date of most recent report	2
	102-52	Reporting cycle	2
	102-53	Contact point for questions regarding the report	2
	102-54	Claims of reporting in accordance with the GRI Standards	2
	102-55	GRI Content Index	109~113
102-56	External assurance	116~117	

## Topic Specific Disclosures

Topic	Index	Page	
<b>Material topic 1: Safety and Health</b>			
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries	
	103-2	The management approach and its components	31
	103-3	Evaluation of the management approach	
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	47, 118
	403-2	Hazard identification, risk assessment, and incident investigation	49~50
	403-3	Occupational health services	55
	403-4	Worker participation, consultation, and communication on occupational health and safety	50
	403-5	Worker training on occupational health and safety	53
	403-6	Promotion of worker health	55
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	49
	403-8	Workers covered by an occupational health and safety management system	104, 118
	403-9	Work-related injuries	105
<b>Material topic 2: Waste</b>			
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries	
	103-2	The management approach and its components	31
	103-3	Evaluation of the management approach	
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	31, 39
	306-2	Management of significant waste-related impacts	31, 39
	306-3	Waste generated	99
	306-4	Waste diverted from disposal	99
	306-5	Waste directed to disposal	99

Topic	Index	Page
<b>Material topic 3: Customer Satisfaction</b>		
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries
	103-2	The management approach and its components
	103-3	Evaluation of the management approach
-	-	Customer satisfaction <sup>1)</sup>
<b>Material topic 4: Climate Change</b>		
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries
	103-2	The management approach and its components
	103-3	Evaluation of the management approach
GRI 302: Energy 2016	302-1	Energy consumption within the organization
	302-4	Reduction of energy consumption
	302-5	Reductions in energy requirements of products and services
GRI 305: Emissions 2016	305-1	Direct GHG emissions (Scope 1)
	305-2	Energy indirect GHG emissions (Scope 2)
	305-4	GHG emissions intensity
	305-5	Reduction of GHG emissions
<b>Material topic 5: HR management</b>		
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries
	103-2	The management approach and its components
	103-3	Evaluation of the management approach
GRI 401: Employment 2016	401-1	New employee hires and employee turnover
	401-3	Parental leave
	404-1	Average hours of training per year per employee

1) No GRI index that can be used to relate

Topic	Index		Page
GRI 404: Training and Education 2016	404-2	Programs for upgrading employee skills and transition assistance programs	57
GRI 406 : Non-Discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	64, 106
<b>Material topic 6: Green Technology</b>			
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries	31
	103-2	The management approach and its components	
	103-3	Evaluation of the management approach	
-	-	Development of eco-friendly technology	41~45
<b>Material topic 7: Air Quality and Noise</b>			
GRI 103: Management Approach 2016	103-1	Explanation of the material topics and its boundaries	31
	103-2	The management approach and its components	
	103-3	Evaluation of the management approach	
-	-	Management of scattering dust <sup>1)</sup>	39
1) No GRI index that can be used to relate			
<b>Non-material topics</b>			
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	97
	201-3	Defined benefit plan obligations and other retirement plans	104
GRI 205: Anti-Corruption 2016	205-1	Operations assessed for risks related to corruption	108
	205-2	Communication and training about anti-corruption policies and procedures	108
	205-3	Confirmed incidents of corruption and actions taken	108
GRI 206: Anti-competitive Behavior 2016	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	108
GRI 303 : Water and Effluents	303-3	Water withdrawal	100
GRI 307 : Environmental Compliance 2016	307-1	Non-compliance with environmental laws and regulations	100



# SASB INDEX

## Sustainability Disclosure Topics & Accounting Metrics

Topic	Code	Data	LOTTE E&C Data
Environmental Impacts of Project Development	IF-EN-160a.1	Number of incidents of non-compliance with environmental permits, standards, and regulations	No material violations which impose penalty (Violations which impose negligence fine or lower level were not counted. Will be counted from 2022)
	IF-EN-160a.2	Discussion of processes to assess and manage environmental risks associated with project design, siting, and construction	An environmental impact assessment is conducted beforehand to understand the environmental impacts that may be caused by a project based on the type and scope of the project. In doing so, we try to better understand the possible environmental impacts and take required actions whose levels are higher than the level required by laws and regulations. And construction is performed after proper authorization is obtained from the authorities. In designing a project, we refer to the Green Standard for Energy and Environmental Design to manage environmental impacts throughout the entire project cycle. We also carry out an annual comprehensive assessment of violations of environmental regulations at work sites and frequent self-inspection on environmental risks to keep track of violation cases against environmental regulations.
Structural Integrity & Safety	IF-EN-250a.1	Amount of defect- and safety-related rework costs	Warranty expenses incurred in 2021 was KRW 3,833 million, which is transparently disclosed in our Business Report.
	IF-EN-250a.2	Total amount of monetary losses as a result of legal proceedings associated with defect- and safety-related incidents	Monetary losses as a result of legal proceedings in 2021 <ul style="list-style-type: none"> <li>· Defect : KRW 2,405 million (Housing, interest not included)</li> <li>· Safety : KRW 17 million</li> </ul>
Workforce Health & Safety	IF-EN-320a.1	Total recordable incident rate (TRIR) and fatality rate for direct employees and contract employees	Refer to 105 page to find workforce health & safety related indicators of LOTTE E&C.
Lifecycle Impacts of Buildings & Infrastructure	IF-EN-410a.1	Number of commissioned projects certified to a third-party multi-attribute sustainability standard and active projects seeking such certification	Number of G-SEED certifications : 11 cases (4 cases from Architecture, 7 cases from Housing). Find more details in Page 37. Project registered with UNFCCC CDM : One project, Gulpur hydroelectric project in Pakistan (registered in Nov. 2021) The Green and Gracious Builder Scheme, which must be obtained to take part in the construction project in Singapore, is renewed every year.
	IF-EN-410a.2	Discussion of process to incorporate operational-phase energy and water efficiency considerations into project planning and design	In compliance with the Green Standard for Energy and Environmental Design, the company reviews 'water circulation management' and 'energy efficiency' from the design stage. We plan to establish an overall work process from designing to completing the construction to prepare for G-SEED. Through our Technology R&D, we are securing proprietary technologies for zero-energy construction, green remodeling, waste resources and water management.

Topic	Code	Data	LOTTE E&C Data
Climate Impacts of Business Mix	IF-EN-410b.1	Amount of backlog for hydrocarbon related projects and renewable energy projects	As of May 2022, the amount of backlog for hydrocarbon projects stood at KRW 635.4 billion, all of which are LNG-basis generation projects. The total amount of backlog for renewable energy is KRW 870.7 billion, consisting of a various mix of hydropower, biomass, and secondary battery electrolytes.
	IF-EN-410b.2	Amount of backlog cancellations associated with hydrocarbon-related projects	No cancellations as of May 2022
	IF-EN-410b.3	Amount of backlog for non-energy projects associated with climate change mitigation	As of May 2022, the amount of backlog for non-energy projects associated with climate change mitigation is KRW 31 billion, which are resource recirculation projects.
Business Ethics	IF-EN-510a.1	Number of active projects and backlog in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	No active projects from the 20 lowest ranking in Transparency International's Corruption Perception Index as of May 2022
	IF-EN-510a.2	Total amount of monetary losses as a result of legal proceedings associated with charges of bribery or corruption and anticompetitive practices	No monetary losses as a result of legal proceedings associated with charges of bribery or corruption and anticompetitive practices in 2021.
	IF-EN-510a.3	Description of policies and practices for prevention of bribery and corruption, and anti-competitive behavior in the project bidding processes	<ul style="list-style-type: none"> <li>· Code of Ethics</li> <li>· Behavioral standards</li> <li>· Code of Conduct</li> <li>· Fair Trade Compliance Declaration Manual</li> </ul>
Activity Metric	IF-EN-000.A	Number of ongoing projects	As of the end of April 2022, 118 domestic projects and 8 overseas projects are underway.
	IF-EN-000.B	Number of certified projects	In 2021, 36 domestic sites and 2 overseas sites were completed. (Based on subcontracts)
	IF-EN-000.C	Total backlog	As of the end of 2021, the total backlog stood at KRW 42.6236 trillion out of which domestic projects account for KRW 37.1042 trillion and overseas ones for KRW 5.5194 trillion.

# Independent Assurance Statement



## To: The Stakeholders of Lotte E&C

### Introduction and objectives of work

BSI Group Korea (hereinafter "the Assurer") was asked to verify Lotte E&C's '2022 Sustainability Report' (hereinafter "the Report"). This assurance statement applies only to the relevant information contained in the scope of the assurance.

Lotte E&C is solely responsible for all information and assertion contained in the report. The responsibility of the assurer is to provide independent assurance statement with expert opinions to Lotte E&C's executives by applying the verification methodology and to provide this information to all stakeholders of Lotte E&C.

### Assurance Standards and Levels

This assurance was based on the AA1000AS v3 (2020) Assurance Standard and confirmed that the report is prepared in accordance with the Core Option of GRI Standards. The assurance level was based on the Type 1 that confirmed compliance with the four principles of AA1000 AP (2018) in accordance with the AA1000 AS and the Type 2 assurance that verified the quality and reliability of the information disclosed in the report. The Type 2 assurance was applied to the following disclosure of the GRI Specific Topic Standards related to material topics:

- GRI 300(Environmental): 302-1, 302-4~5, 306-1~5
- GRI 400(Social): 401-1, 404-1~2, 403-1~9, 406-1

### Scope of Assurance

The scope of assurance applied to this report is as follow

- Based on the period from January 1st to December 31st, 2021 included in the report
- Appropriateness and consistency of processes and systems for data collection, analysis and review
- Major assertion included in the report such as sustainability management policies, strategies, objectives, business and performance

- Information related to material issues determined as a result of materiality assessment
  - Financial information, SASB Index included in the report appendix
  - Other related additional information such as the website presented in the report

### Methodology

As part of its independent assurance, the assurer has used the methodology developed to collect relevant evidence to comply with the verification criteria and to reduce errors in the reporting, and has performed the following activities;

- To determine verification priorities, review of materiality issue analysis process and verification of the results;
- System review for sustainability strategy process and implementation;
- Review the evidence to support the material issues through interviews with senior managers with responsibility for them;
- Verification of data generation, collection and reporting for each performance index

### Assurance Opinion

On the basis of our methodology and the activities described above, it is our opinion that

- The information and data included in Lotte E&C's Sustainability Report are accurate and reliable and the assurer cannot point out any substantial aspects of material with mistake or misstatement.

- The report was prepared according to the Core option of the GRI Standards

The assurance opinion on the four principles presented by the AA1000 AP (2018) is as follows.

## AA1000 AP (2018)

### Inclusivity : Stakeholder Engagement and Opinion

Lotte E&C divided stakeholders into customers, shareholders/investors, suppliers, employees, local communities and government/media/academia, and has communication channels and processes to implement stakeholder engagement program. They have communication channels for each group and collect opinions. Also, 19 issues were derived by analyzing international standards/norms, analyzing media, and surveying to identify stakeholder issues, and it was confirmed that derived material issues are reflected in decision-making on sustainability management.

### Materiality : Identification and reporting of material sustainability topics

Lotte E&C identified materiality for issues by analyzing stakeholder interest and business impact on the 19 issues derived. As a result, the material issues of 7 topics were selected.

### Responsiveness: Responding to material sustainability topics and related impacts

Lotte E&C establishes and implements a response plan for each issue to appropriately respond to the derived core issues that reflects the expectations of stakeholders, and discloses detailed response activities and performance for them through the report.

### Impact : Impact of an organization's activities and material sustainability topics on the organization and stakeholders

Lotte E&C strives to establish processes to monitor, measure, assess and manage the impact of organizational activities for more effective decision making and management. Identified impact should be integrated into stakeholder engagement and periodic importance assessment processes to inform organizational governance, strategy, goal setting and operations, thereby increasing informed decision making and responsiveness. In addition, the impact determined by each key issue from a sustainability topics are disclosed in the report.

### Key areas for ongoing development

The assurer is an independent professional services company that specializes in Quality, Health, Safety, Social and Environmental management with almost 120 years history in providing independent assurance services. No member of the assurance team has a business relationship with Lotte E&C. We have conducted this verification

independently, and there has been no conflict of interest. All assurers who participated in the assurance have qualifications as AA1000AS assurer, have a lot of assurance experience, and understand the BSI Group's assurance standard methodology.

### Statement of independence and competence

The assurer is an independent professional services company that specializes in Quality, Health, Safety, Social and Environmental management with almost 120 years history in providing independent assurance services. No member of the assurance team has a business relationship with Lotte E&C. We have conducted this verification independently, and there has been no conflict of interest. All assurers who participated in the assurance have qualifications as AA1000AS assurer, have a lot of assurance experience, and understand the BSI Group's assurance standard methodology.

### Evaluation against GRI 'In Accordance' Criteria

The assurer confirmed that this report was prepared in accordance with the GRI Standards Core Option and the disclosures related to the following Universal Standards and Topic-specific Standards Indicators based on the data provided by Lotte E&C.

#### [Universal Standards]

Organizational Profile 102-1~13, Strategy 102-14, Ethics and Integrity 102-16~17, Governance 102-18~20, 102-22/23/38, Stakeholder Engagement 102-40~44, Reporting practice 102-45~56, Management Approach 103-1~3

#### [Topic-specific Standards]

- Economic: 201-1/3, 205-1, 205-2, 205-3, 206-1
- Environmental: 302-1, 302-4~5, 303-3, 305-1/2/4/5, 306-1~5, 307-1
- Social: 401-1~2, 403-1~9, 404-1~2, 406-1



01 August 2022

BSI Group Korea, Managing Director **S. H. Lim**



# Occupational Health and Safety Management System Certifications

Bureau Veritas Certification



**LOTTE ENGINEERING & CONSTRUCTION CO., LTD.**

29, JAMWON-RO 14-GIL, SEOCHO-GU, SEOUL, KOREA, 06515

*Bureau Veritas Certification Holding SAS - UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below*

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**ISO 45001:2018**

*Scope of certification*

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**MANAGEMENT, DESIGN/ENGINEERING, PROCUREMENT WITH PRODUCTION INSTALLATION AND SERVICING FOR CIVIL, ARCHITECTURAL & ELECTRICAL WORKS INCLUDING MECHANICAL AND PLANT ACTIVITY LANDSCAPING WORKS, INDUSTRIAL FACILITIES WORKS, COMMUNICATION WORKS, FIRE-FIGHTING WORKS, GAS FACILITIES WORKS, ENVIRONMENTAL POLLUTION PREVENTION WORKS**

Original cycle start date:	08-07-2019
Expiry date of previous cycle:	28-05-2021
Certification / Recertification Audit date:	23-04-2021
Certification / Recertification cycle start date:	28-05-2021
Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:	28-05-2024

Certificate No.: **KR003033**    Version: 1    Issue Date: 28-05-2021

  
 Signed on behalf of BVCH SAS UK Branch

  
 0008


Certification Body Address: 5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom  
 Local Office: #1102 Keungil Tower, 223 Teheran-ro, Gangnam-gu, Seoul, Republic of Korea, 06142

Further clarifications regarding the scope and validity of this certificate, and the applicability of the management system requirements, please call: +82 2 555 8910



산업재해예방

안전보건공단



인증번호 제 436호

## 안전보건경영시스템 인 증 서

인증기준 KOSHA-MS

인증사업장명 : 롯데건설(주)  
- 구분 : 종합건설업체

소재지 : 서울특별시 서초구 잠원로14길 29 (잠원동)


유효기간 : 2021. 10. 19. ~ 2023. 7. 1

한국산업안전보건공단은 위 사업장의 안전보건경영  
시스템이 KOSHA-MS 인증기준에 적합함을  
인증합니다.

2021년 10월 19일

한국산업안전보건공단

이사장



# Code of Conduct for LOTTE Employees

THEME 1 The Trust of our Customers	01 01. Provide products and services of the highest quality	Be the number one brand for our customers.
	02 Honest marketing	The easiest way to gain customer trust is through honesty.
	03 Customer information protection	Customer information is extremely important to us.
	04. Brand protection	You are the brand that represents LOTTE to our customers.
THEME 2 The Trust of LOTTE Employees	01. Fair opportunities and fair treatment	We make a strict distinction between public and private affairs and provide fair opportunities.
	02. Mutual respect among members	Everyone is a cherished member of our family.
	03. Gender equality	LOTTE creates happy homes and fair jobs.
	04. Safe working environment	Everything begins with safety.
	05. Asset protection	The company's assets belong to all LOTTE employees.
	06. Protection of intellectual property	We need to protect our valuable intellectual property.
	07. Prevention of information leakage	Negligence can lead to information leakage.
THEME 3 The Trust of Our Partners	01. Compliance with the Fair Trade Act	Fairness and trust allow us to work as one team with our partners.
	02. Respect for business partners	Partnerships grow stronger when they are rooted in mutual trust.
	03. Fair competition	Fair competition makes us stronger.
	04. Legal information collection	Information must be gathered in a legal manner.
	05. Anti-corruption	Every favor comes with a price.
THEME 4 The Trust of Our Shareholders	01. Shareholder value	We pursue long-term shareholder value.
	02. Prevention of conflicts of interest	We consider the benefits of stakeholders as a group.
	03. Transparency in accounting	Honest reporting highlights our efforts and passion.
	04. No insider trading	We do not allow unfair gains made with internal information.
THEME 5 The Trust of Society	01. Environmental protection	We are only borrowing the environment from future generations.
	02. Social value creation and social contributions	It is our utmost pleasure to share our profits with the society from which we earned them.
	03. Respect for human rights	Love and respect for all people is an important value of LOTTE.
	04. Respect for cultural diversity	Only when we respect others can we win their respect in turn.
	05. Legal compliance in all countries	We respect the laws of each country and strive to reduce crime.
	06. Separation of politics and the economy	Only when we separate politics from the economy can each fulfill its role to the fullest.

## Memberships in Associations and Awards

Date	Description	Awarding Organization
April 8, 2021	Grand Prize at 2021 10th Chosun Ilbo Social Contribution Grand Prize in Social Welfare Sector (4 consecutive years)	Digital Chosun Ilbo
June 3, 2021	Bronze Tower of Order of Industrial Service Merit at the 19th Construction New Technology Day	President
June 24, 2021	Prize on the "2021 Construction Day"	Prime Minister
February 7, 2021	Grand Prize at the 2021 National Service Awards for the apartment category (20 consecutive years)	Korean Standards Association
November 9, 2021	Prize at the 59th Firefighting Day	Mayor of Seoul
November 16, 2021	Prize at BIM Award 2021	Smart Building Association

Construction Safety Manager Committee	Construction Association of Korea	Architectural Institute of Korea
Korea Mech. Const. Contractors' Association	Korea Chamber of Commerce & industry	Korean Society of Water & Wastewater
The Society of Air-conditioning and Refrigerating Engineers of Korea	The Korean Institute of Electrical Engineers	Korean Society of Civil Engineers
Maekyung Safety & Environment Institute	Korea Electrical Contractors' Association	Korea Information & Communication Contractors' Association
Korea Construction Transport New - Technology Association	The Korea Institute of Building Construction	Korea Federation of Construction Contractors
Korea Road Association	Korean Society on Water Environment	Korea Fire Facility Association
Korean Institute of Illuminating and Electrical Installation Engineers	Korea Housing Association	Korea Railway Construction Engineering Association
Korea Railway Association	Korea Concrete Institute	International Contractors' Association of Korea

# Acknowledgment

The participation of stakeholders in preparing and publishing a Sustainability Report is one of the most important factors to understand and internalize sustainable management (ESG management) initiatives. LOTTE E&C will continue to encourage our internal and external stakeholders to participate in the process of publishing the Sustainability Report and internalize its practices to achieve the goals.

Area	Organization	Name			
Introduction	About LOTTE E&C	Strategic Planning Division	Tae Sung Han Min Seok Choi		
		Housing Division	Seung Woo Seo		
	Architecture Division	Do Kyeong Bak			
	Civil Works Division	Shoi Don Park			
	Plants Division	Man Jae Lee Hyoung Rae Kim			
		Overseas Business Division	Hee Suk Jung Youn Soo Lee		
	ESG Management System	ESG Strategy	Strategic Planning Division	Tae Sung Han	
For Our Planet	Environmental management	Strategic Planning Division	Hyun Jae Jang		
		Research & Development Institute	Se Hyung Kwon Hyoung Young Ye		
For Our Employees	Safety and health management	Safety and Health Management Office	Tae Gi Kim Eun Young Nam Seong Min Kim Chung Hwan Han		
			Human Capital Development	HR Department	Min Jae Lee Min Jee Kim
			Welfare Benefits	HR Department	Seong Bong Kim
	Organizational Culture	Strategic Planning Division	Sang Jin Lee		
		Public Relations Department	Su Keun Kang		

Area	Organization	Name	
For Our Partners	Shared Growth	Sourcing and Procurement Division	Ki Beom Nam
For Our Customers	Quality Management	Research & Development Institute	Young Joon Yoo
	Customer Satisfaction	Customer Satisfaction Department	Kyung Hwan Kim
		Marketing Department	June Sang Song
For Our Communities	Social Contribution	Strategic Planning Division	Tae Sung Han
ESG Fundamentals	Governance	HR Department	Ji Chul Park
	Ethical Management	Ethical Management Division	Yoo Jin Park
	Information Security	Information Security Division	Min Sung Kim
	Compliance Management	Legal & Compliance Division	Jae Woo Han
Translation Review		Overseas Business Division	Ben Kwon
General supervision			Jong Soo Hong
		Strategic Planning Division	Eun Chul Yang Tae Sung Han
Interviews with external stakeholders		Korea ESG Research Institute	Jae Wook Baek
		DOOSONG Construction	Myeong Geun Song
		ChildFund Korea	Chan Kyung Park



