

2023 LOTTE E&C SUSTAINABILITY REPORT



ABOUT THIS REPORT

This report is a reflection of our sustainability management strategy, encompassing activities and accomplishments aligned with the United Nations' Sustainable Development Goals (SDGs). Our key stakeholders are comprised of the environment, employees, partner companies, customers, and local communities, and we are committed to coexisting harmoniously with local communities as responsible corporate citizens.



2023 Cover Story

LOTTE E&C is dedicated to enhancing customer value and evolving into a sustainable enterprise. Our commitment to sustainable management is demonstrated through our steadfast prioritization of safety in all business endeavors. Furthermore, we are resolute in our pursuit of carbon neutrality, achieved through the development and implementation of eco-friendly technologies.

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Reporting Standards

This report has been prepared in accordance with GRI (Global Reporting Initiative) Standards 2021, a standard global sustainability management guideline. To disclose material activities relevant to the characteristics of the construction business, we have applied SASB (Sustainability Accounting Standards Board) Standard and partly applied the recommendations from TCFD (Task Force on Climate-Related Financial Disclosures).

Reporting Period

The reporting period for this report encompasses the period from January 1, 2022, to December 31, 2022, and includes some activities and achievements up to the first half of 2023.

Scope of Reporting

In measuring financial performance, this report is based on K-GAAP until 2021, and K-IFRS (Korean International Financial Reporting Standards) from 2022. This report includes financial information from both domestic and overseas business sites, and for some data, separate standards are applied and the scope of the data is specified in footnotes or additional explanations. Non-financial performance is limited to LOTTE E&C's domestic operations, and only some of the activities and results of overseas operations are included.

Reporting Cycle

Every year (the latest one was published in August 2022)

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.

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CEO Message



We promise to take the lead in ESG practices by establishing sustainable management strategies based on communication and consensus building with our stakeholders.



Dear valued stakeholders,

Deteriorating macroeconomic conditions marked by prolonged inflation and high interest rates are taking a heavy toll on industries across the board. In these trying times, LOTTE E&C remains steadfast in its commitment to the group's mission of 'enriching people's lives by providing superior products and services that its customers love and trust,' practicing sustainable management based on communication with all stakeholders. For our stakeholders, LOTTE E&C's 2023 Sustainability Report showcases its endeavors and accomplishments in fulfilling the vision of becoming a 'Lifetime Value Creator' and creating sustainable value even in these challenging times, as a member of the LOTTE GROUP.

Promoting LOTTE GROUP's 2040 Carbon Neutrality Roadmap

Globally, climate change is posing greater impact on corporate value. In response, LOTTE GROUP has announced its '2040 Carbon Neutrality Goal,' endeavouring to set specific carbon reduction goals and strategies. As a member of LOTTE GROUP, LOTTE E&C has built '2040 Carbon Neutrality Roadmap,' aimed at achieving carbon neutrality. Accordingly, LOTTE E&C has established Eco Energy TFT, a team dedicated to reducing carbon emissions and developing renewable energy solutions, to secure various technologies necessary for realizing zero energy buildings. Additionally, we are continuously working to expand eco-friendly investments.

Comprehensive Safety and Health Management to Prevent Safety Accidents

Upholding the principle of 'respect for life,' LOTTE E&C prioritizes safety and health management in all its business activities. In an effort to provide a working environment free from any loss of life, in 2022, LOTTE E&C expanded the safety and health management workforce from 18 to 29 workers, and reorganized it to promote effectiveness of its safety and health management, thereby allowing organic operation of all safety functions such as training. In particular, LOTTE E&C is actively carrying out measures to prevent serious accidents

by developing SMART safety and health technologies utilizing ABCI¹⁾, launching safety culture certification system for industry-academic cooperation, training experts in construction equipment safety management. Additionally, 'Safety On,' a safety operating center has been operating as part of our commitment to safety promotion. Under the goal of achieving shared-growth, LOTTE E&C also strives to enhance partner companies' safety management capabilities by introducing ESG safety and health capability assessment system for partners, intended to proactively identify and manage risk factors.

1) ABCI : Ai, Big Data, Cloud, IoT

Creating a Transparent and Healthy Management Environment

LOTTE E&C is fully committed to establishing sustainable management environment. As part of its effort, in 2022, LOTTE E&C successfully obtained ISO 37001 certification for its Anti-Corruption Management System, and trained corruption risk assessors and internal auditors to conduct corruption risk assessments across all teams within the headquarter. In addition, in September of the same year, LOTTE E&C became the first company in the construction industry to obtain ISMS-P certification, ensuring safety and reliability of its information protection and privacy protection.

We are deeply grateful for the unwavering trust and support that all our stakeholders placed in LOTTE E&C. Your belief in us has shaped us into the company we are today. We request for your continued support and interest in our ongoing endeavors to promote sustainable growth.

Thank you.

August 2023

President and CEO **Hyun Chul Park**

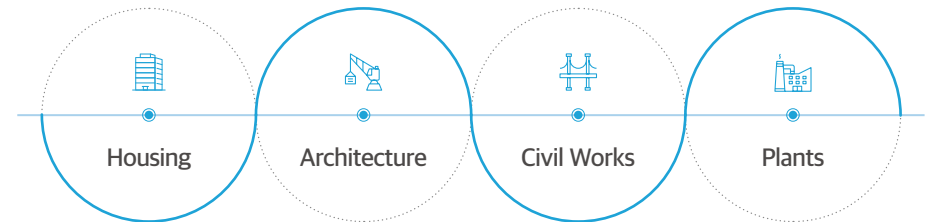
Business Overview

Company Overview

Since 1978, when LOTTE E&C became a member of LOTTE GROUP, it has steadfastly aligned itself with the group's mission: 'We enrich people's lives by providing superior products and services that our customers love and trust,' alongside the vision of being a 'Lifetime Value Creator.' As a comprehensive construction company, we offer a range of construction services by thorough planning, management, and adjustment. Ranging from apartments, hotels, department stores for living and daily lives to roads, bridges and plants for industrial and social infrastructure, we are receiving construction orders across the entire construction industry. In particular, we have provided convenient and aesthetic residential environment to our customers, as demonstrated by our apartment housing brands such as LOTTE Castle, and LE_EL. Our notable achievements also include the successful completion of the iconic LOTTE World Tower, a symbol of architectural excellence in Korea. In 2022, LOTTE E&C ranked 8th in construction capability evaluation done by the Ministry of Land, Infrastructure, and Transport.

Company name	LOTTE Engineering & Construction Co., Ltd.
Date of Establishment	February 3, 1959 (Acquired by LOTTE GROUP in 1978)
CEO	Hyun Chul Park (Inaugurated in December 2022)
Head Office	29, Jamwon-ro 14-gil, Seocho-gu, Seoul, Korea
Key Businesses	Housing, Architecture, Civil Works, Plants, Overseas businesses
Major Shareholders	LOTTE Chemical Corporation (Stake: 14,819,985 shares / 44.00%)
No. of Employees	3,932 employees
Branches / Subsidiaries	<ul style="list-style-type: none"> • Domestic: 1 subsidiary / 1 branch • Overseas: 7 subsidiaries / 9 branches / 3 offices
Orders	KRW 15,5073 trillion
Revenue	KRW 5,9313 trillion
Operating Income	KRW 365.8 billion
Credit Rating	AA+(N) Korea Investors Service Corporate Bond (December 20, 2022)

Key Business Areas



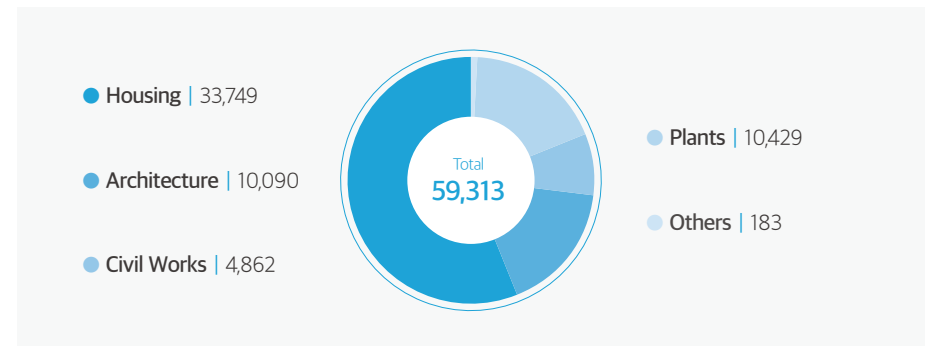
Key Financial Performance

(Unit: KRW 100 million)



Revenue by Business in 2022

(Unit: KRW 100 million)

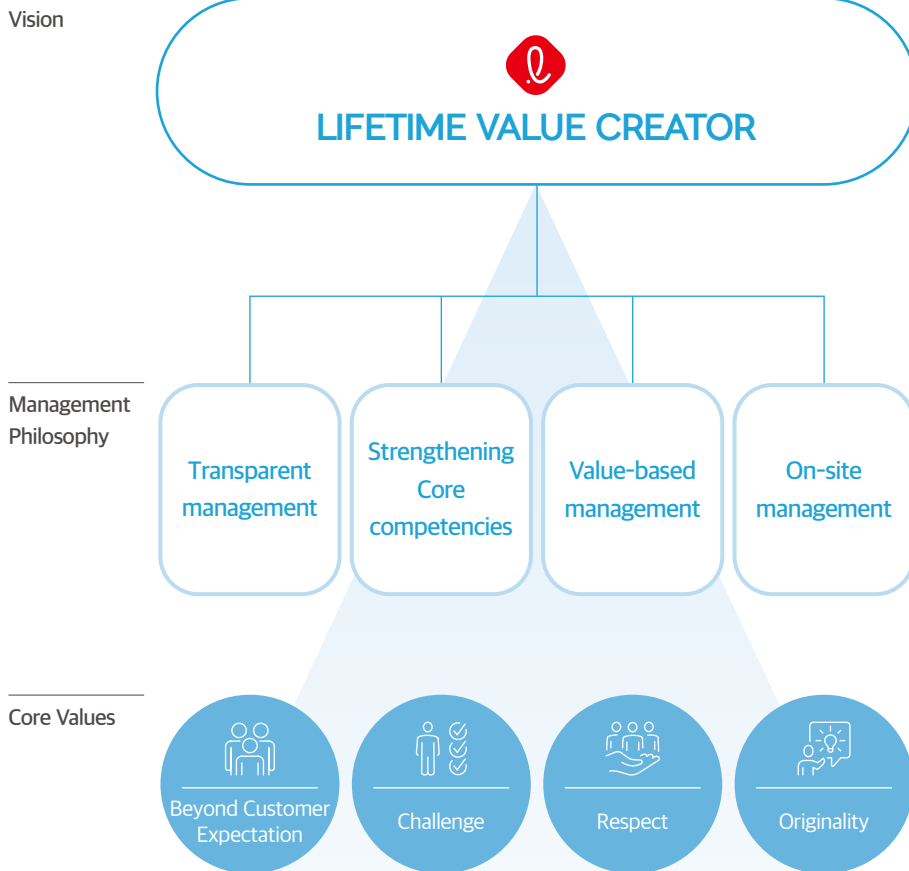


Business Overview

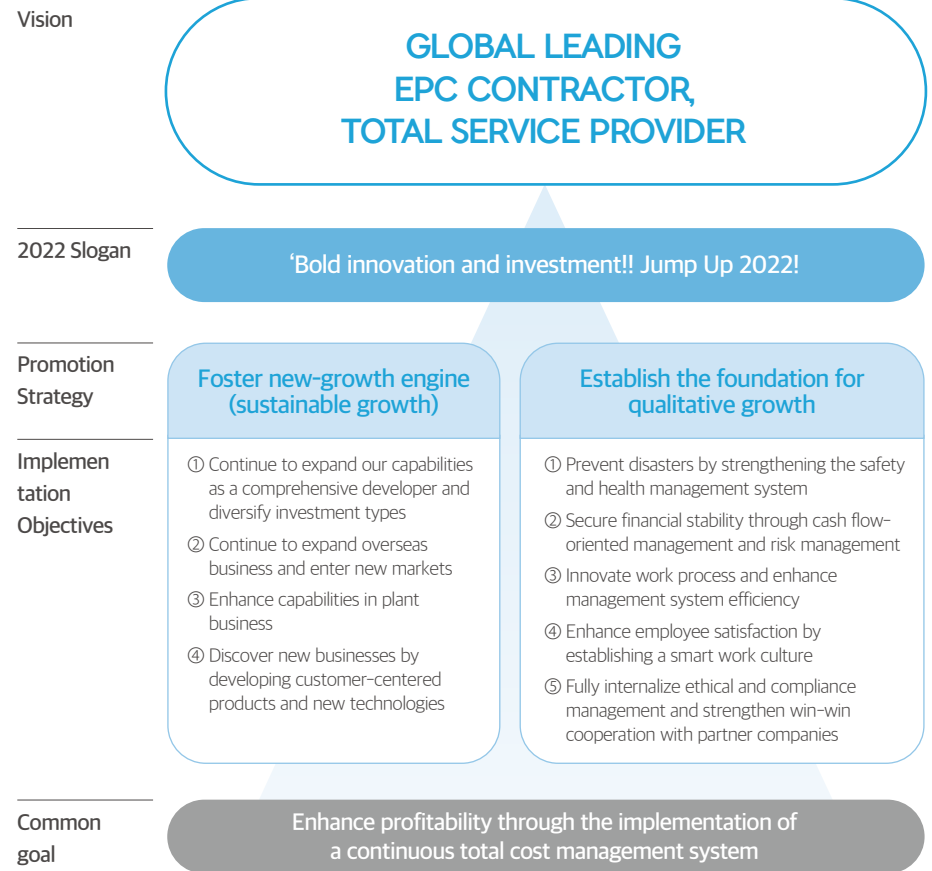
LOTTE E&C Philosophy

Under LOTTE GROUP's Vision of becoming a 'Lifetime Value Creator' for the entire life cycle, LOTTE E&C selects a new slogan every year and accordingly pushes forward with key tasks. In 2022, we have set a new slogan of 'Bold innovation and investment! Jump Up 2022!' aimed at fostering new growth engine for sustainable growth. Additionally, we have actively engaged in activities to establish the foundation for qualitative growth, to make a huge leap forward in 2023 by discovering areas of new business and improving fundamentals.

LOTTE GROUP Vision and Management Philosophy



LOTTE E&C Vision 2030



Business Overview

Global Network

LOTTE E&C is advancing into global market, forging global network across 14 countries. Currently, there are 1 branch and 1 subsidiary domestically, along with 7 subsidiaries in 5 countries, 9 branches in 9 countries and 3 offices in 3 countries. Utilizing our long-established know-how, we are taking part in high-quality projects and continuing to secure increased project orders with multifaceted business activities, from neighboring countries in Southeast Asia.



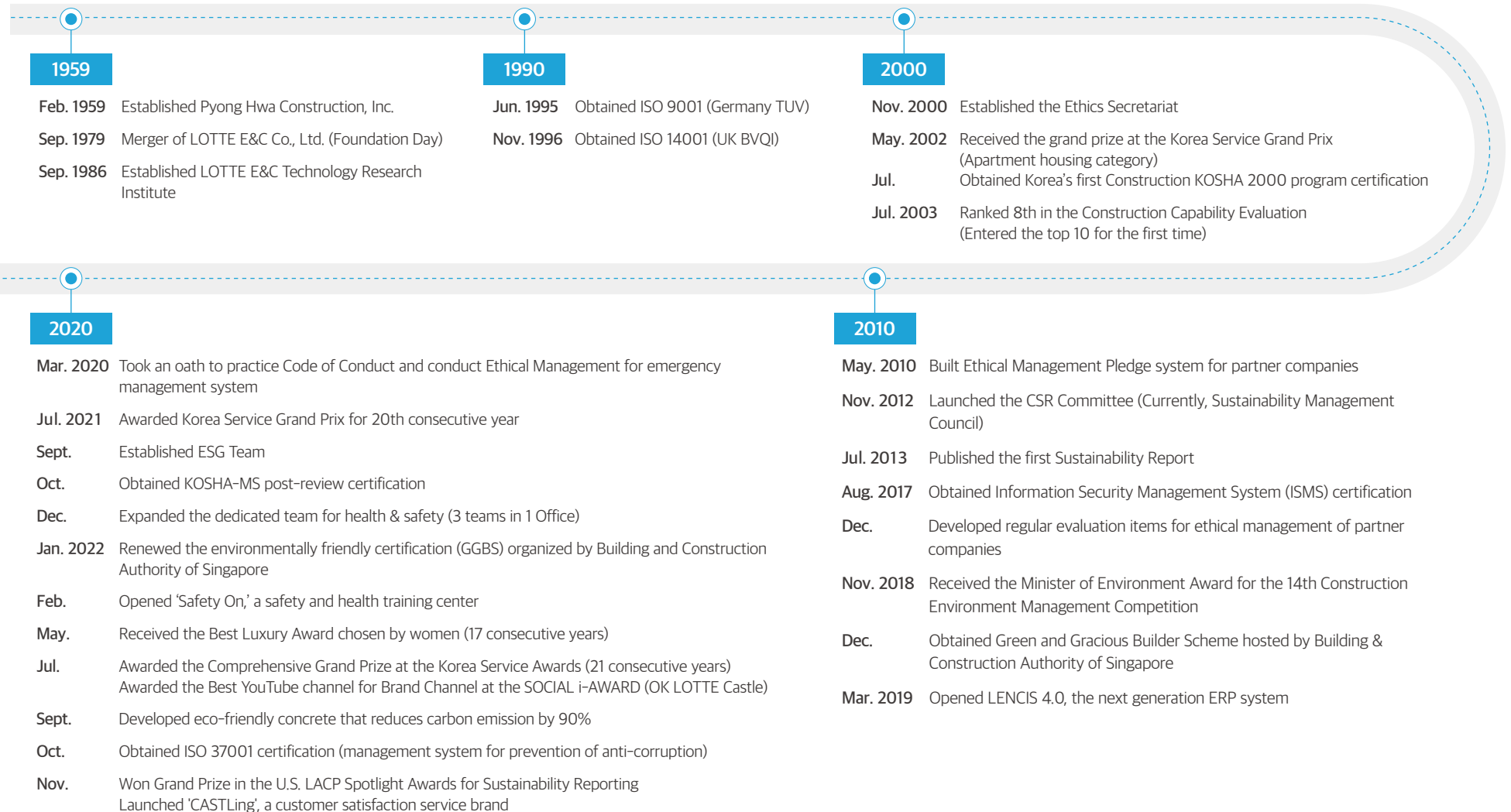
(As of 2022.12.31)

Type	Branch	Subsidiary	Office
Domestic	1 (Yeongnam branch)	1	-
Overseas	<p>9 branches in 9 countries</p> <p>Malaysia / Indonesia / Pakistan / Moscow / Australia / Japan / Singapore / Hungary / Philippines</p>	<p>5 subsidiaries in 7 countries</p> <p>Beijing Co., Ltd / Shenyang Co., Ltd / Vietnam Co., Ltd / LOTTE Land, Vietnam / LOTTE Land, Indonesia / Malaysia Co., Ltd / India Co., Ltd</p>	<p>3 offices in 3 countries</p> <p>Representative Office in Vietnam / Project Office in Cambodia / Project Office in Qatar</p>

Sustainable Management History

Sustainable Management History

LOTTE E&C was founded in 1959 and became one of the members 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.



BUSINESS MANAGEMENT


HOUSING	010
ARCHITECTURE	012
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Housing

LOTTE E&C is dedicated to leading the residential culture of Korea, building on its brand identity of creating “Prestige of Life.” Such endeavors are demonstrated by our housing brand “LOTTE Castle” where we conduct 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) and many others. We have been constantly pushing ahead with enhancing the quality of residential service and increasing customer satisfaction with integrated services, by introducing various housing brands. Starting with the launch of high-end housing brand LE_EL in 2019, an urban housing brand LUMINI with a concept of setting an “Urban Standard” was introduced, followed by the launch of CASTLing, a CS service brand in 2022. In particular, LOTTE E&C has been demonstrating a new life style for our customers, placing emphasis on cleanliness and safety, since the outbreak of the pandemic. LOTTE E&C took a step further to create a new concept of space, ushering in the era of endemic. By introducing 4.0 MUZE, we offered a new space containing a story of living, going beyond merely providing a space for taking rest. LOTTE E&C remains committed to reinforcing the brand power and commercial power of our housing and providing unmatched quality and service to our customers, in keeping with the changes in lifestyle.

PERFORMANCE



Korea Service Grand Prix Awards
For the 22th consecutive year (2023.07)



Buam-dong APT (Lotte Castle Gold Central, Baekyangsan)



Ulsan Gangdong Resort Development Project

- Construction period: 2022.09~2027.06
- Construction size: 5 stories below ground and 43 stories above, 5 buildings 974 rooms



Siheung Eunhang district Section 2 Development project of apartment houses

- Construction period: 2023.06~2027.06
- Construction size: 3 stories below ground and 49 stories above, 14 buildings 2,133 units



Gangneung Gyodong 7 Park Apartment Development Project

- Construction period: 2021.07~2024.10
- Construction size: 3 stories below ground and 29 stories above, 11 buildings 1,305 units



Goyang Wondang District 4 Housing Redevelopment Project

- Construction period: 2021.03~2024.08
- Construction size: 6 stories below ground and 36 stories above, 11 buildings 1,236 units

ESG Approach in Housing

Utilization of renewable energy and expansion of green construction

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 action in accordance with their respective capabilities
- 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities



In pursuit of the 2050 carbon-neutral society goal, the government has enacted the Framework Act on Carbon Neutrality and Green Growth, raising the GHG reduction target to 40% by 2030. It has also established fundamental plans for the systematic implementation of carbon neutrality at national and local levels. LOTTE E&C is actively participating in the national carbon neutrality program by reducing fossil fuel usage, thereby contributing to an eco-friendly building ecosystem. We are expediting the transition to renewable energy sources, including solar power generation systems, building-integrated photovoltaic system, and geothermal heat pump systems. Moreover, regarding cement and concrete, we are creating sustainable value for the housing industry by curbing greenhouse gas emissions during cement production and enhancing energy efficiency through eco-friendly technology development. We are committed to maintaining our leadership in the green building market through increased eco-friendly investments, development of carbon reduction technologies, and their proactive application to construction sites.



Cheongnyangni District 4 LOTTE Castle SKY-L65 Building-Integrated Photovoltaic system

- Construction period: 2018.07~2023.07
- Construction size: 7 stories below ground and 65 stories above, 4 buildings, 1,425 units

Application of eco-friendly construction technology by LOTTE E&C

Technology	Detail	Project	Effect
Low carbon hydration heat reducing concrete	Low-carbon, high-sulfate cement application technology	<ul style="list-style-type: none"> • Suji-gu Office Sta. LOTTE Castle Hivel • LOTTE Castle Infiel, etc. 	approximately 90% carbon reduction possible compared to conventional concrete
Solar power system	A system that generates power by photoelectric effect using sunlight	<ul style="list-style-type: none"> • Gangneung LOTTE Castle Signature (135kw) • Sokcho LOTTE Castle In the Sky (61kw) 	Saving energy in buildings through the replacement of fossil fuels
Building-integrated photovoltaic system	Photovoltaic module and a system in which exterior materials are integrated into the building	<ul style="list-style-type: none"> • Galwol LUMINI (30kw) • Cheongnyangni Station Lotte Castle Sky-L65 (156kw) 	
Fuel Cell Systems	A system that generates power based on chemical reaction of hydrogen and oxygen	<ul style="list-style-type: none"> • Suji-gu Office Sta. LOTTE Castle Hive L in (61kw) • Wonhyo LUMINI (30kw) • Nowon LOTTE Castle Signature (5kw) 	
Geothermal heat pump systems	Heating and cooling system using constant geothermal heat throughout the year	<ul style="list-style-type: none"> • Dobong LOTTE Castle Golden Park (439kw) • Banpo LE-EL (105kw), etc. 	



Architecture

With the construction of the iconic LOTTE WORLD TOWER, South Korea's first super-tall skyscraper, LOTTE E&C has consistently pushed the boundaries of construction with advanced technological capabilities, paving the way for innovative possibilities in the construction industry. Despite enduring challenges like rising interest rates and escalating raw material prices, we remain committed to expanding our project portfolio by focusing on income-generating assets, including knowledge industry centers and office spaces. This strategic diversification enables us to overcome the prolonged stagnation in the construction market. In response to the rapidly evolving 4th Industrial Revolution, we actively promote and commercialize emerging technologies and services like Building Information Modeling (BIM) and environmentally-friendly concrete methods. Moreover, we are dedicated to the continuous development of novel construction materials and techniques, bolstering our competitive advantage in project acquisition while refining our construction strategies. To optimize costs, we systematically apply standardized ITEM and VE. Significantly, our proactive approach to risk management begins with the introduction of Pre-Construction Services (PCS), enabling us to identify and mitigate potential risks from the pre-design assessment phase. This ensures that we meet our client's requirements, minimize project-related risks, and uphold the safety standards of our projects. As we look ahead to the second half of 2023, we are committed to carrying forward LOTTE E&C's legacy of pioneering super-tall buildings in South Korea. Leveraging our extensive expertise, skilled workforce, and robust on-site management capabilities, we are poised to make history once again with the construction of Busan LOTTE Tower.



PERFORMANCE

2022 2 PCS Service Construction Sites for the Group
(Multipurpose development projects in Busan LOTTE Town and Incheon Terminal, 3 sites to be added in 2023)

Orders



Revenue



LOTTE WORLD TOWER



Gwangmyeong Medical Complex Cluster Construction Project

- Construction period: 2018.07~2022.04
- Construction size: 7 stories below ground and 17 stories above / 4 stories below ground and 15 stories above, site area of 3,150 pyeong / gross floor area of 29,802 pyeong



Mapo Pungnong Complex Tower Construction

- Construction period: 2019.04~2022.12
- Construction size: 5 stories below ground and 24 stories above, site area of 488 pyeong / gross floor area of 4,704 pyeong



Nonhyeon-dong 2nd Complex Facility Construction (Penthill Cascade)

- Construction period: 2020.06~2023.02
- Construction size: 7 stories below ground and 18 stories above, site area of 802 pyeong / gross floor area of 7,506 pyeong



Establishment of Gayang Knowledge Industry Center

- Construction period: 2019.02~2021.07
- Construction size: 4 stories below ground and 17 stories above, site area of 1,691 pyeong / gross floor area of 13,667 pyeong

ESG Approach in Architecture

Contribution to greenhouse gas reduction through expansion of green building certification

UN SDGs

- 7.3 By 2030, double the global rate of improvement in energy efficiency
- 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities



LOTTE E&C is actively mitigating the environmental footprint associated with building construction by introducing renewable energy facilities and energy reduction facilities. We are also expanding green building certification and eco-friendly construction by applying construction technologies certified for green technology to our designs. The green building certification system grants eco-friendly building certifications to buildings that save energy and contribute to reducing environmental pollution throughout the entire construction process, including design, construction, maintenance, and management. LOTTE E&C identifies possible risks even before the project is carried out and apply eco-friendly construction materials and eco-friendly construction methods to minimize risks. In addition to the eco-friendly effects of the construction process, these buildings are also energy-efficient in terms of building management, thus reducing operating costs. G-Square, which we completed in February 2021, is a green building that was designed to save energy by analyzing the expected energy usage before construction and applied eco-friendly, low-carbon building materials. In particular, it was constructed to enhance building performance and create an ecological environment in harmony with nature through a nature-adaptive layout that considers the surrounding climate and the installation of renewable energy and high-efficiency equipment. LOTTE E&C has developed LOCAS, a system for quantitatively evaluating carbon emissions, which we effectively employ in our projects, underscoring our role as a leader in the era of green building and contributing significantly to the realization of carbon neutrality.



G-Square

- Construction period: 2017.12~2021.02
- Construction size: B5F ~ 41F, site area of 5,775 pyeong / gross floor area of 52,325 pyeong

G-Square Eco-friendly Construction Design

Type	Detail
PASSIVE DESIGN	<ul style="list-style-type: none"> • Southward orientation that conforms with surrounding climate and environment • Enhanced building performance for low energy consumption • Optimization of area of the envelop and window to wall ratio (below 40%)
ACTIVE DESIGN	<ul style="list-style-type: none"> • Acquisition of 1+ building energy efficiency rating • Application of high-efficiency equipment for heat source facilities • Application of energy-saving control methods
RENEWABLE DESIGN	<ul style="list-style-type: none"> • Application of renewable energy (BIPV, fuel cell, geothermal heat pump) • Installation of renewable energy facilities by 17%
ECO DESIGN	<ul style="list-style-type: none"> • Acquisition of the highest green building rating • Creation of an ecological environment in harmony with the natural environment (biotopes) • Use of eco-friendly and low-carbon building materials (textures, paint, flooring)

Civil Works

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) domestically and internationally. We are strengthening 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 global competencies in the area of longspan 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.

PERFORMANCE

Geumgang Pedestrian Bridge

2Won Gold Award for 2022 Civil Structure of the Year
(Korean Society of Civil Engineers)

Received order for Philippine Southern Railway Section 7

Orders



Revenue



Administrative City Geumgang Pedestrian Bridge



State-owned Yeosu public wastewater treatment facility expansion project Phase 4

- Construction period: 2021.04~2023.10
- Construction size: Expansion of wastewater treatment facility 30,000 tons/day



Construction of connecting bridge (Phase 1) of Busan Port (North port) redevelopment project

- Construction period: 2018.11~2022.10
- Construction size: Driveway bridges (2 locations / 76.5m, 100.32m), pedestrian bridges (4 locations / 63.5m, 57m, 106.8m, 80m)



Buan-gun local waterworks modernization project

- Construction period: 2019.07~2022.08
- Construction size: Construction of 14.2km supply/drainage pipe, replacement of 45.9km supply/drainage pipe, 663 leak detection and restoration, 1 maintenance system



2017 Busan Metropolitan City Jeonpo, Beomcheon, and Munhyeon District

- Construction period: 2018.04~2021.04
- Construction size: 98.073km sewage pipe, 9,477 drainage facilities, 1 maintenance system

ESG Approach in Civil Works

Contribution to water environment conservation and achievement of NDC

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
- 7.3 By 2030, double the global rate of improvement in energy efficiency



Starting from 2020, LOTTE E&C began construction of a food waste-to-bioenergy facility in Changwon City, which was completed in October 2022. This facility has the capacity to process 200m³ of food waste daily. It has been designed to promote a pleasant living environment for citizens and ensure stable operation of sewage treatment plants. High-concentration organic food waste generated at the food resource recovery facility is linked to sewage treatment plants for processing. This facility utilizes 200m³ of food waste daily to produce 12,701Nm³ of biogas, which is then used in gas generators to generate 1,016kW of electricity. The generated electricity is primarily consumed for self-use, where any surplus electricity being sold. Through this project, LOTTE E&C has achieved an annual energy cost reduction of 700 million won and has reduced 5,200 tons of greenhouse gas emissions (CO₂). Additionally, by producing and utilizing biogas, fossil fuels are replaced, and water quality is improved, contributing to the preservation of the nation's water environment. LOTTE E&C is not only involved in water environmental facilities but also continuously acquiring the necessary technological capabilities for national infrastructure expansion, including transportation, logistics facilities, and repair facilities. These efforts are aimed at addressing environmental issues and actively participating in the transition towards carbon neutrality.



Changwon Food Wastewater Bioenergy Facility

- Construction period: 2020.06~2022.10
- 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

Project Introduction

Type	Capacity
Wastewater Treatment	200m ³ /day
Biogas Production	12,701Nm ³ /day

Project Performance

Type	Anticipated result	
Reduction of Greenhouse gas Emission	5,200tCO ₂ /year	
Reduction of Energy use	Use biogas	1,041,200ton/year for LNG (=4,636,000Nm ³ /year for biogas)
	Power generation	1,016kW
Improvement in water quality	BOD	80,000mg/L → 1,883mg/L
	CODMn	130,000mg/L → 1,450mg/L
	SS	60,000mg/L → 400mg/L
	T-N	4,000mg/L → 654mg/L
	T-P	800mg/L → 29.7mg/L

Plants

Lotte E&C is expanding its participation in new eco-friendly businesses such as petrochemical industry plants, hydrogen infrastructure, electric vehicle battery materials, and bio business as global projects that were suspended due to COVID-19 are back on track. In addition, in order to diversify our business, we are advancing into eco-friendly business fields such as renewable energy and nuclear power, based on our capabilities in carrying out LNG power generation projects. We also provide One-Stop Service covering entire process from project planning to design, construction, and operation of facilities after completion. In particular, as a comprehensive developer, we are steadily strengthening our overall competitiveness in EPC performance in the chemical plant field, while seeking new business opportunities and business diversification in the eco-friendly business field. To this end, we are aimed at reinforcing our competitiveness in winning EPC orders by linking FEED (Basic Design) to eco-friendly new businesses such as hydrogen infrastructure, electric vehicle battery materials, new renewable energy (wind power, solar power, biomass, etc.), recycling and biodegradable plastics, in addition to the existing petrochemical plant field, and contributing to building sustainable infrastructure.

PERFORMANCE

Petrochemical plants

Continue to win FEED-linked EPC orders and expand participation in new eco-friendly projects

Power plants

Expansion of project orders by strategically collaborating with nuclear component manufacturers

Orders



Revenue



Indonesia LINE Project



HYUNDAI Chemical HPC Project

- Construction period: 2019.09~2021.08
- Construction size: 250,000 tons/year of HDPE, 250,000tons/year of PP, Offsite Tank 16



LOTTE GS Chemical G1 Project

- Construction period: 2020.07~2022.03
- Construction size: 130,000 tons/year of BD, 20,000 tons/year of MTBE, 60,000 tons/year of BNI, 100,000 tons/year of TBA



Naepo New Town Collective Energy DH/CHP Construction Project

- Construction period: 2016.08~2023.05
- Construction size: 1 DH Heat only boiler 68.8 Gcal/h, 1 thermal storage 20,000m³, CHP 495MW (1 GT 329.5MW, 1 ST 165.5MW, 1 HRSG)



Indonesia Riau GFPP Project

- Construction period: 2018.11~2022.05
- Construction size: Combined cycle power plant 275MW (2 GT, 2 HRSG, 1 STG), Substation

ESG Approach in Plants

Building sustainable infrastructure by expanding green plant projects

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 action in accordance with their respective capabilities
- 13.2 Integrate climate change measures into national policies, strategies and planning



LOTTE E&C, in collaboration with LOTTE Chemical through the 'ES Project,' is currently undertaking the construction of production facilities for high-purity electrolyte organic solvents, EC¹⁾, DMC²⁾, EMC³⁾, and DEC⁴⁾, near the Daesan Plant. These solvents serve as essential components for electric vehicle (EV) batteries. Upon completion, these facilities are poised to annually churn out substantial quantities of these electrolyte organic solvents, including EC (38,000 tons) and EMC (64,000 tons). The global secondary battery output is projected to experience rapid growth, with an average annual growth rate of 32%, increasing from 221GWh in 2020 to 3,670GWh by 2030. Notably, the proportion of EV batteries is expected to expand from 65% in 2020 to 89% in 2030. Therefore, LOTTE E&C is anticipated to take a leading role in the secondary battery market. Through the ES Project, we aim to leverage our acquired technological capabilities and construction expertise to promote the continuous growth of the electric vehicle battery material sector. Additionally, we strive to contribute to the smooth supply of materials required for secondary battery production. Furthermore, we are expanding our business into various eco-friendly plant sectors, including renewable energy like rooftop solar power generation facilities in Jincheon, hydrogen infrastructure, recycling and biodegradable plastics (CR Project), carbon capture and emission reduction (CCP FEED Project, D-LNC Project), to support a sustainable future.

- 1) EC (Ethylene Carbonate) 2) DMC (Di Methyl Carbonate) 3) EMC (Ethyl Methyl Carbonate) 4) DEC (Di Ethyl Carbonate)



LOTTE Chemical ES Project

- Construction period: 2022.04~2024.03
- Construction size: Establishment of EMC/DEC (electrolyte organic solvents for secondary batteries) and EOA (concrete strength enhancer) factory infrastructure

LOTTE E&C's Eco-friendly Plants Performance

(Base year: 2015~current)

Type	No. of Projects	Revenue (KRW 100 million)
Electric Vehicle Battery Materials	2	357
Biomass	4	3,306
Carbon Reduction	3	655
Photovoltaics	1	38
Recycled and Biodegradable Plastics	1	164
Carbon dioxide capture	1	10
Total	12	4,530



Overseas

As the domestic construction market matures, competition is intensifying and there is a long-term prediction of reduced real estate demand due to aging demographics and declining birth rates. To address these challenges, expanding into global markets became crucial. However, overseas projects come with significant risks compared to domestic projects. Moreover, in simple construction projects, profitability is declining due to heightened competition. To respond to these challenges, LOTTE E&C is collaborating with its group affiliates to undertake large-scale multipurpose development projects. Leveraging our accumulated technical expertise and experience, LOTTE E&C is venturing into new fields. In the future, LOTTE E&C plans to actively pursue management projects that offer stable revenue streams. Additionally, in terms of eco-friendly business, we will continuously monitor and incorporate national environmental certifications and policies, such as GGBS, LEED, and EDGE, into our offerings to enhance our competitiveness.

PERFORMANCE

Creating synergy effect
in Group businesses

Renewal of Singapore
Green and Gracious
Builder Scheme (GGBS)

Orders



Revenue



Thủ Thiêm Eco Smart City in Vietnam



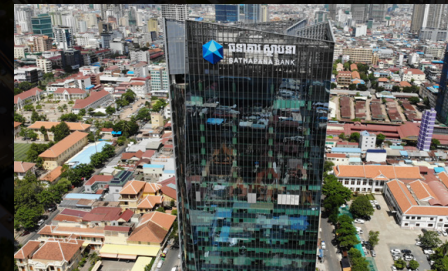
Development projects for housing sites of Indonesia Depok, Sawangan

- Construction period: 2022.08~2025.11
- Construction size: 551 units (Single houses: 456 units, Shop houses : 95units)



Kota Kasablanka 2

- Construction period: 2015.10~2019.06
- Construction size: 5 stories below ground and 43 stories above, gross floor area of 365,251m², Apartments: 1,197 units, Office



Sathapana Bank

- Construction period: 2018.05~2021.01
- Construction size: 4 stories below ground and 19 stories above, gross floor area of 135,131m²



LOTTE Mall Hanoi

- Construction period: 2018.11~2023.06
- Construction size: 2 stories below ground and 23 stories above, gross floor area of 386,347m², 264-Room hotel, SR 192, office, aquarium

ESG Approach in Overseas

Contribution to the Expansion of Renewable Energy and Active Pursuit of Greenhouse Gas Reduction Projects

UN SDGs

- 9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States
- 13.2 Integrate climate change measures into national policies, strategies and planning



The Gulpur Hydropower Project in Pakistan is a 102MW hydropower plant operating under a BOT (Build, Operate, Transfer) framework. In this arrangement, the operator oversees plant operations for a specified duration after completion, and eventually transferring ownership to the government. Lotte E&C holds a 6% stake in the SPC and actively participates as the EPC. After completion in March 2020, the plant will be operated for 30 years until 2050, contributing to the transformation of energy consumption in developing countries that are highly dependent on fossil fuel energy to renewable energy. The plant is expected to ultimately reduce greenhouse gas emissions by 257,022tCO₂eq per year, and is being continuously monitored in connection with the Clean Development Mechanism (CDM)¹⁾ project. Through the first monitoring (September 2021 - February 2022, 6 months), 42,792 tons of Certified Emission Reductions (CERs)²⁾ were secured, and we are currently conducting the second monitoring (March 2022 - February 23, 1 year), which is expected to secure approximately 130,000 tons of CERs. In particular, as the world enters the implementation phase of the Paris Agreement under the new climate regime, the Gulpur Hydropower Project will be converted to and managed as a Sustainable Development Mechanism (SDM)³⁾ project. In line with global ESG trends, LOTTE E&C will actively identify eco-friendly projects such as the Lower Spat Gah Hydropower Project (BOT, 470 MW) in Pakistan, which is scheduled to commence construction in the latter half of 2024. By integrating various greenhouse gas reduction initiatives, we aim to take an active role in addressing climate change and fostering sustainability.

- 1) CDM (Clean Development Mechanism):** 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.
- 2) CER (Certified Emission Reduction):** Certified performance by reducing greenhouse gases through CDM projects.
- 3) SDM (Sustainable Development Mechanism):** A system based on an offset approach with a governance system similar to the Clean Development Mechanism (CDM) of the Kyoto Mechanism, but unlike the CDM, it has the advantage that it allows projects in all countries, including developed countries.



Gulpur Hydropower Project in Pakistan

- Construction period: 2015.11 ~ 2020.03
- Construction size: 102MW

Issuance of carbon credits

Type	Monitoring period	Power generation (GWh)	Emission reduction (CERs)	Remarks
1	2021.09~2022.02	85.7	42,792	6 months
2	2022.03~2023.02	260.4	130,000 (Expected)	12 months

LOTTE E&C's Global Green Certification Efforts (GGBS Certificate Update)



LOTTE E&C is actively advancing global green certifications that assess the energy efficiency and eco-friendly design of our buildings. This initiative aims to mitigate carbon dioxide emissions and minimize environmental impacts throughout the entire lifecycle of our structures. In addition to domestic green certifications, such as G-SEED, we conduct comprehensive evaluations of internationally recognized green building certification systems like LEED, EDGE, GREENMARK, and LOTUS. This allows us to facilitate certifications tailored to the regions in which we operate. Notably, we have recently renewed our Green and Gracious Builder Scheme (GGBS) certification.

ESG MANAGEMENT

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ESG Governance

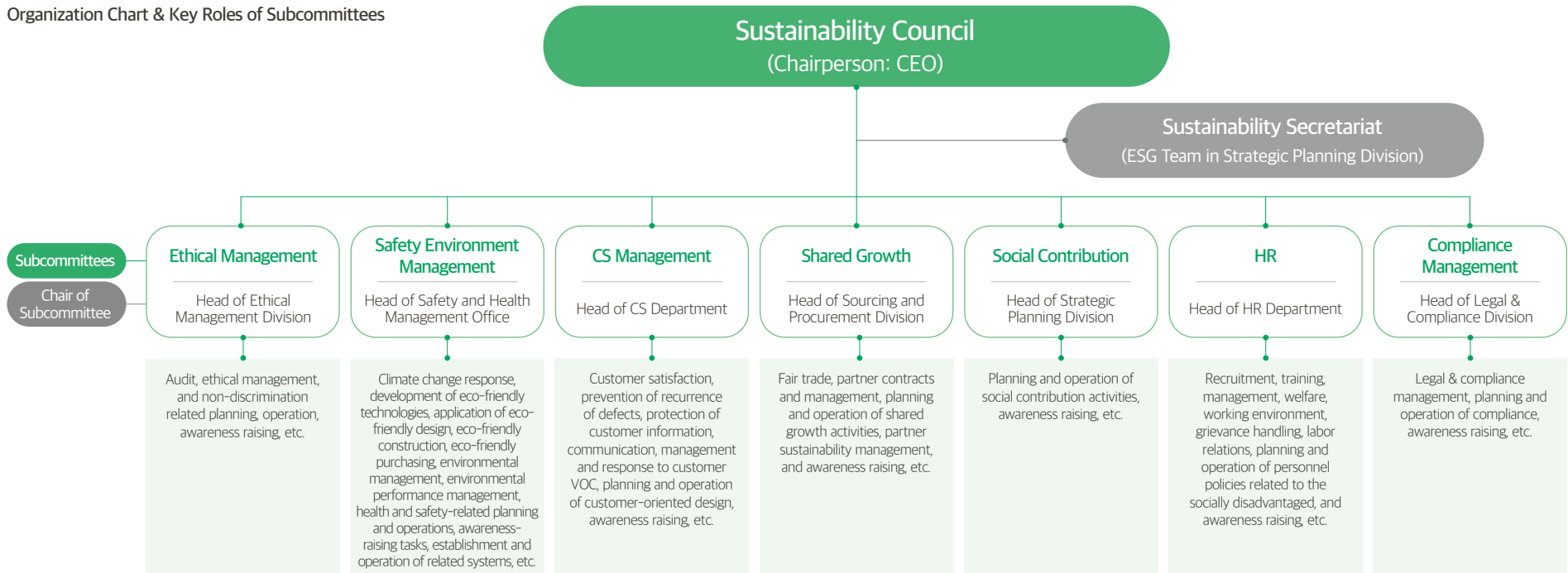
Sustainability Council

LOTTE E&C operates a Sustainability Council under the CEO's leadership to enhance the understanding of sustainable management among all employees and systematically promote it. The Sustainability Council is the highest decision-making body for matters related to economic, environmental, and social aspects of sustainable management, composed of the CEO and the Chairs of each Subcommittee. Currently, there are 7 subcommittees in total: Ethics Management, Safety and Environmental Management, Customer Satisfaction Management, Shared Growth, Social Contribution, Human Resources, and Compliance Management. These subcommittees report on a semi-annual basis, and major issues are reported on a quarterly basis in principle. According to the regulations of the Sustainability Council, a meeting can be convened with the presence of the Chairperson and a majority of the members, and with the attendance of a majority of the Secretaries. In case there is no agenda to discuss, a meeting can be skipped. Furthermore, each department consistently shares activity results and improvements with their respective subcommittees regarding significant company issues. The Chairs of the Subcommittees must report the selected matters to the Committee through the Secretariat. Meeting minutes are openly disclosed within the company, and specific content can be disclosed to external stakeholders.

Sustainability Secretariat

Sustainability Secretariat, an operational organization to execute sustainable management under the Sustainability Council, is in charge of adjusting and implementing mid-to-long term strategies and specific targets for each subcommittee.

Organization Chart & Key Roles of Subcommittees





ESG Strategy

LOTTE E&C is operating ESG Team in Strategic Planning to establish the groundwork for advancing sustainable management practices and facilitate systemic execution of related initiatives through subcommittees. Each operational departments are implementing specific activities aligned with the strategies outlined by their respective subcommittees, and Sustainability Council is constantly checking the company-wide strategies and implementation system.

Vision	Type	Area	Strategic Goal	Strategic Direction	LOTTE E&C's Major Activities of 2022	Material Topics
Corporate citizen creating sustainable value	Environmental	Environmental Management	Conserve the global environment and secure new growth engine	<ul style="list-style-type: none"> Introduce the concept of ESG management Obtain more eco-friendly certifications Zero environmental accidents Prepare for new businesses in the future market Develop green technologies 	<ul style="list-style-type: none"> Established TCFD-based climate change response system and 2040 Carbon Neutrality Roadmap Promoted purchasing of eco-friendly certified products Expanded orders for eco-friendly projects (12 in total, including carbon emission reduction projects and solar power projects) Acquired 16 green building certifications (G-SEED) Expanded recycling of construction waste Developed eco-friendly concrete that reduces carbon emissions by 90% 	Response to Climate Change
	Social	Safety Management	Comply with safety and health obligations to provide a safe work environment without the loss of life	<ul style="list-style-type: none"> Improve the management system for safety and health Increase investment budget for safety (Execute 100%) Apply and expand SMART safety and health technologies 	<ul style="list-style-type: none"> Reinforced safety and health governance to effectively prevent safety accidents and respond to the Serious Accident Punishment Act Operated the Employees' Council for Safety and Health (12 meetings held, 24 agenda resolved and approved) Conducted 9 Safety Communication Days to check the status of safety and health implementation and take improvement measures Expanded the safety and health budget Enhanced safety and health management by developing an AI-based risk assessment program Strengthened smart safety management capabilities by applying smart safety and health technology (DT, Digital Twin) 	Safety and Health of Employees
		Shared Growth	The leading company in shared growth based on fair trade and mutual interactions	<ul style="list-style-type: none"> Build the relationship for fair trade Enhance the support system for partner companies Build trust with partner companies 	<ul style="list-style-type: none"> Strengthened partner company selection criteria and expanded performance evaluation Expanded selection of excellent partner companies (73 excellent partner companies were selected and rewarded) Established Code of Conduct for LOTTE E&C's partner companies considering the characteristics of the construction industry Developed and distributed safety and health education for partner companies 	Shared Growth with Partner Companies
		Social Contribution	A love-sharing company that grows with the local communities	<ul style="list-style-type: none"> Expand representative CSR initiatives Develop beneficiary-centered social contributions Establish a culture where employees are encouraged to participate in voluntary works 	<ul style="list-style-type: none"> Expanded social contribution activities leveraging the characteristics of the construction industry (Charlotte Voluntary Service Group, Sharing Briquettes of Love) Participated in social contribution activities customized for beneficiaries (Love House of Dreams and Hopes) Promoted voluntary social contribution activities (family volunteer service at Seoul National Cemetery, eco-friendly step donation campaign) 	Local Community
		Customer Satisfaction (CS)	Impress our customers and provide them with higher value	<ul style="list-style-type: none"> Enhancing customer trust by systematizing quality management Proactive risk management by establishing a company-wide collaboration system 	<ul style="list-style-type: none"> Initiated research on developing a zero-energy integrated design model and established a plan to expand its application Launched CASTLing, a customer satisfaction (CS) service brand Strengthened quality checks for each stage of the process at construction sites Developed and operated non-face-to-face mobile after-sales service, CASTLing 	-
		HR and Welfare	Nurture creative talents and ensure richness and stability of life	<ul style="list-style-type: none"> Build a global talent management ecosystem Create an optional benefits program 	<ul style="list-style-type: none"> Established human rights Management Charter to respect diversity and comply with required labor conditions Diagnosed value-creating culture and implemented enhancements Implemented flexible work hours and compensation leave system 	HR Management Human Rights Management
	Governance	Ethical Management	Management system to make the company loved by all stakeholders	<ul style="list-style-type: none"> Internalize basic ethics Revitalize social ethics 	<ul style="list-style-type: none"> Conducted ethical management training specialized for the construction industry Completed actions on points raised by on-site audits 	Ethics and anti-corruption
		Local & Compliance Management	Build a global-level compliance system	<ul style="list-style-type: none"> Advance compliance system for subcontracting and internal trade 	<ul style="list-style-type: none"> Acquired ISO 37001 (Anti-Corruption Management System) certification Established a new corruption risk assessment system 	

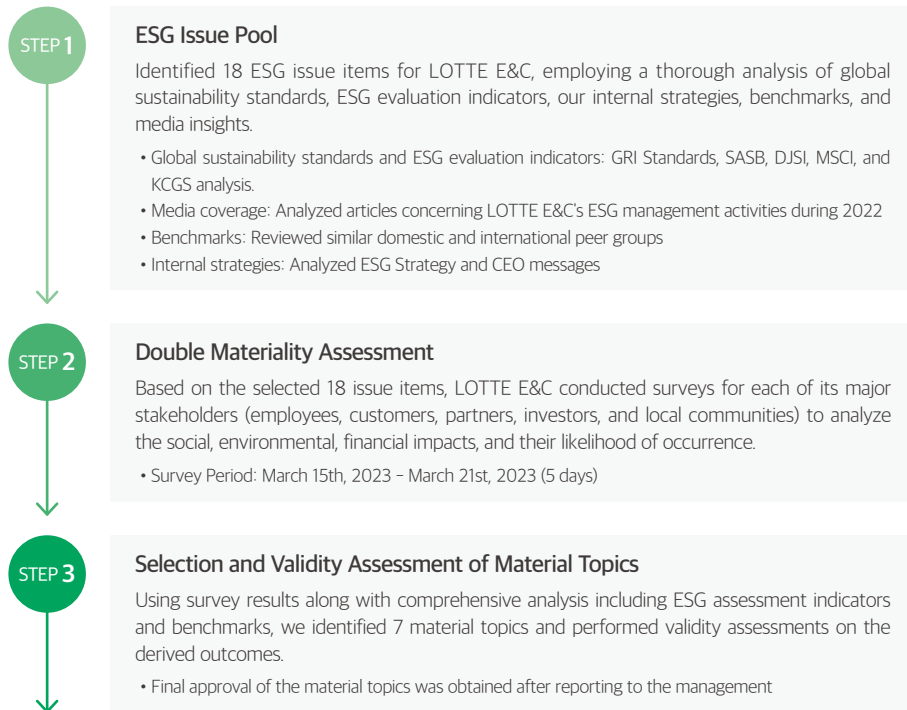


Double Materiality Assessment

Introduction of Double Materiality Assessment

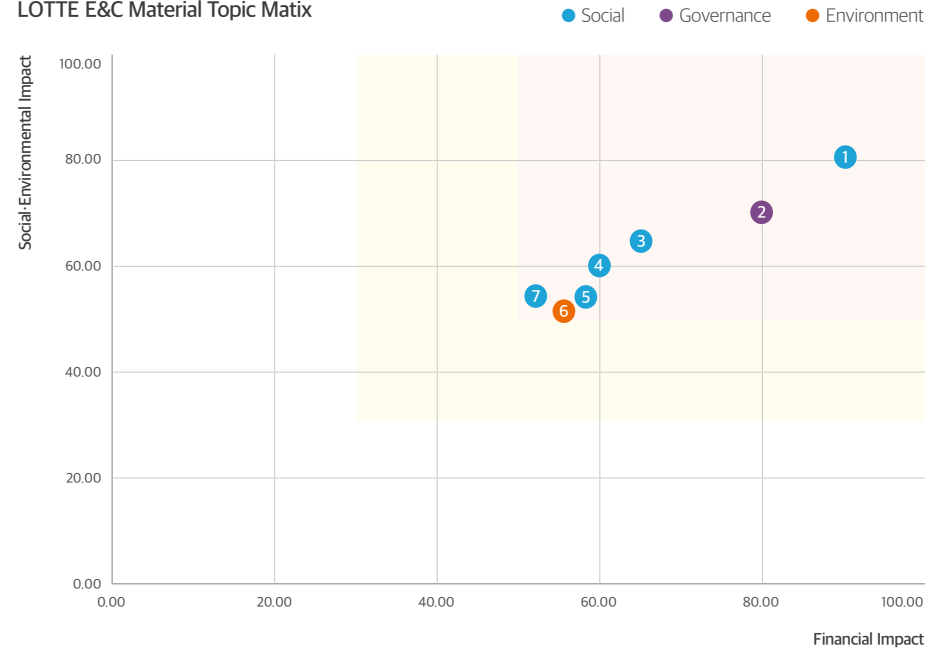
LOTTE E&C conducted a double materiality assessment based on the global sustainability management standard guidelines, named the GRI Standards, to comprehend the positive and negative impacts of sustainability-related issues. This assessment aims to select material topics concerning the company's sustainability, considering not only the social and environmental aspects but also their substantial financial implications on the company. Informed by such double materiality assessment, LOTTE E&C transparently shares the activities and achievements related to the derived material topics. This disclosure fosters enhanced communication with stakeholders and ensures their understanding. Additionally, we actively integrate these findings into our operational activities, further advancing the practice of sustainable management within our business operations.

Double Materiality Assessment Process



Double Materiality Assessment Result















LOTTE E&C Material Topic Matix



Ranking	Area	2022 Material ESG Topic	Social-Environmental Impact	Financial Impact
1	Social	Safety and Health of Employees (-)	●	●
2	Governance	Ethics and anti-corruption (▲8)	●	●
3	Social	Shared Growth with Partner Companies (NEW)	●	●
4	Social	HR Management (▲1)	●	●
5	Social	Human Rights Management (▲9)	●	●
6	Environmental	Response to Climate Change (▼2)	●	●
7	Social	Local Community (▲5)	●	●

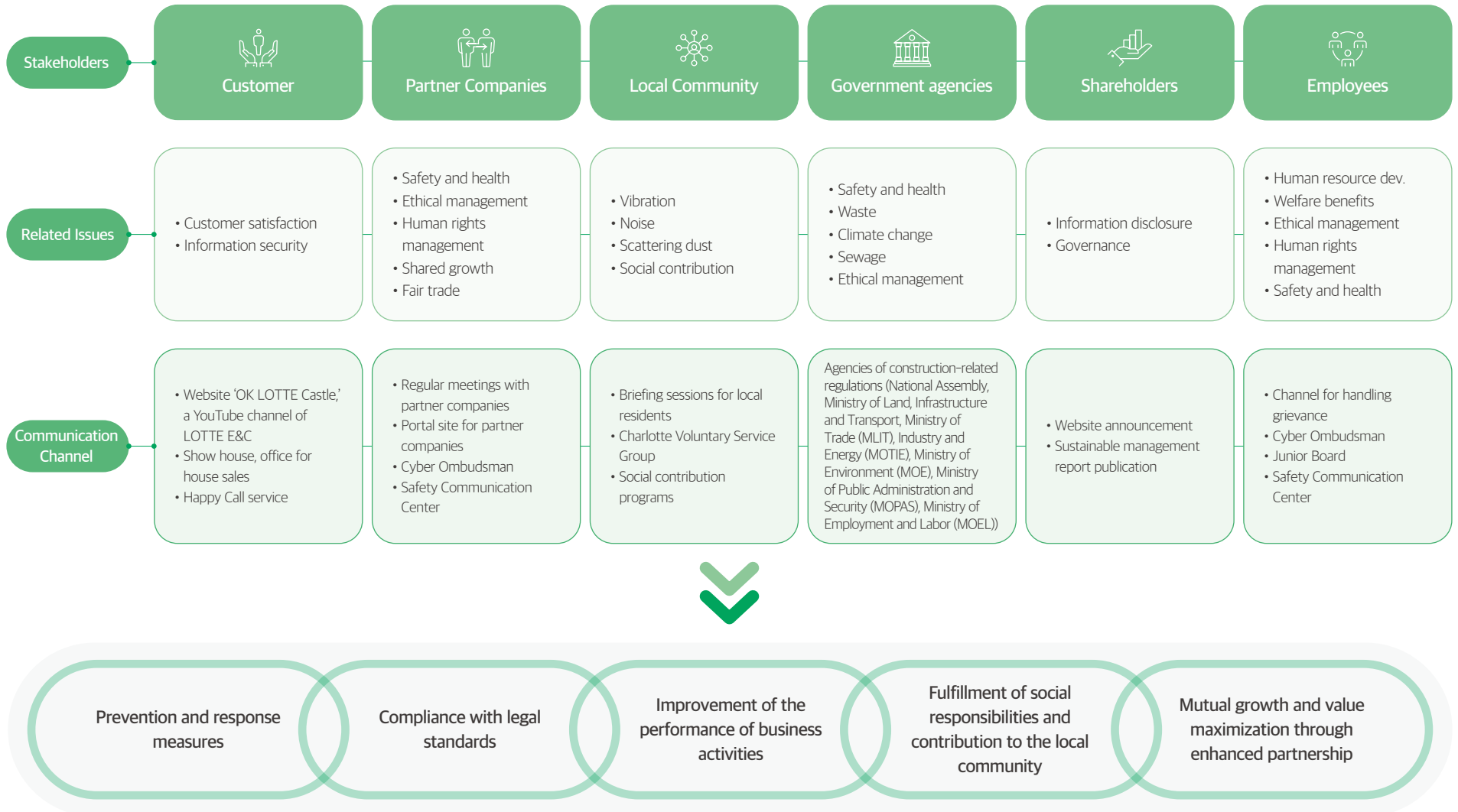
● High Impact ● Mid Impact ● Low Impact

Management Approach

Material topics	Impact of internal and external stakeholders	Strategic approach	GRI	Incorporating into UN SDG
Safety and Health of Employees page. 062 	<ul style="list-style-type: none"> Strengthening corporate responsibility for safety and health management in accordance with the implementation of the Serious Accidents Punishment Act Rising of needs to address the risk of work-related accidents on construction sites 	<ul style="list-style-type: none"> Ensuring safety and health obligations for all employees and partner companies in accordance with safety and health management policies and regulations Enhancing the safety and health promotion system to provide a safe working environment 	403	
Ethics and anti-corruption page. 093 	<ul style="list-style-type: none"> Increasing demands from internal and external stakeholders for ethical and legal management Value creation through the dissemination of an organizational culture of ethics and legal compliance 	<ul style="list-style-type: none"> Standards of appropriate behavior and values for employees to adhere to, and Code of Ethics, Code of Conduct, Behavioral standards, and Implementation Guidelines to prevent conflicts of interest Provision of specialized ethics management education and programs tailored to the construction industry 	205 206	
Shared Growth with Partner Companies page. 038 	<ul style="list-style-type: none"> Increasing the importance of supply chain management for enhancing corporate competitiveness Full implementation of supply chain ESG regulations following the enforcement of Serious Accidents Punishment Act 	<ul style="list-style-type: none"> Establishment and enhancement of Codes of Conduct for partner companies tailored to the characteristics of the construction industry Strengthening support for partner companies' safety management capabilities and managing ESG assessment ratings 	204 414	
Human Resource Management page. 076 	<ul style="list-style-type: none"> Securing the organization's future competitiveness through human resources management and diverse talent acquisition Enhancing sustainability value through strengthening employee capabilities 	<ul style="list-style-type: none"> Expanding the employment and development of diverse talents Promoting mutual development with local communities through securing local talents Expanding and revising welfare and benefits systems to align with employee preferences and demands 	401 404 405 406	
Human Rights Management page. 034 	<ul style="list-style-type: none"> Ensuring the rights of employees and partner companies Identifying risks through human rights assessments and deriving improvement strategies for promoting sustainability 	<ul style="list-style-type: none"> Establishing and enhancing human rights management policies and charters tailored to the construction industry Conducting human rights management surveys and impact assessments for internal and external stakeholders 	410	
Response to Climate Change page. 028 	<ul style="list-style-type: none"> Strengthened need for proactive response in line with the trend towards a carbon-neutral society. Expansion of environmentally friendly investment portfolios 	<ul style="list-style-type: none"> Developing environmentally friendly technologies and construction methods considering the characteristics of the construction industry. Undertaking continuous improvement activities in accordance with the 2040 carbon-neutral roadmap 	302 305	
Local Community page. 084 	<ul style="list-style-type: none"> Minimization of the impact of corporate operations on the local community is necessary Contributing to effective solutions for social issues utilizing the characteristics of the construction industry 	<ul style="list-style-type: none"> Providing and expanding safe and sustainable green buildings Improving facilities and engaging in volunteer activities for marginalized groups in the local community 	413	

Communication with Stakeholders

LOTTE E&C operates communication channels to communicate with not only the stakeholders who have financial impacts on the company but also the stakeholders with non-financial impacts. To proactively respond to potential risks and advance our sustainability management activities, we build strategic partnerships with stakeholders who are directly or indirectly involved in sustainability management.





Interview with 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 by conducting consultation with the advisors and seek ways to promote ESG management.

LOTTE E&C's development of low-carbon, low-hydration heat concrete and implementation of zero-energy buildings are all meaningful activities that contribute to conforming climate change. We hope to become a sustainable company by gradually expanding the scope of LOTTE E&C's climate change response.

Korea Sustainability Investing Forum (KoSIF) | **Tae Han Kim, Senior Researcher**



Could you please provide insights on the domestic and international trends surrounding ESG management and the significant ESG issues that the construction industry should consider?

While concerns have been raised about reduced corporate and financial institution's interest and investments in ESG management due to global energy crises and economic downturns, recent trends indicate an increasing emphasis on ESG management as a strategy to overcome the multifaceted crises the world faces, including energy challenges and supply chain disruptions. Examples include the IRA in the United States, Europe's RepowerEU policy, and the global shift towards mandatory climate disclosure policies. The essence of ESG management lies in understanding market expectations through stakeholder communication and integrating these into business operations to pursue sustainable long-term profits. At present, the most vital ESG issue for the construction industry is safety and construction quality. Consequently, before addressing various ESG concerns like climate change, biodiversity, and inclusivity, the construction industry should prioritize communication regarding building quality and safety.

In achieving carbon neutrality, what climate change mitigation initiatives are being actively pursued by global corporations, particularly in the construction sector? If there are specific climate change mitigation activities that are expected from global construction companies, please elaborate on them as well.

The starting point of carbon neutrality is setting targets based on climate science. Over 5,000 companies worldwide have pledged to establish greenhouse gas reduction goals in accordance with the criteria presented by the Science Based Targets initiative (SBTi), which is grounded in climate science. Moreover, more than 280 global construction companies are pursuing carbon neutrality by applying SBTi criteria. Given that approximately 40% of global carbon emissions and 50% of resource consumption are associated with buildings, reduction goals encompass not only a company's own greenhouse gas emissions (Scope 1 & 2) but also those arising from the energy

use of suppliers and customers (Scope 3). In this context, activities in LOTTE E&C's environmental management, such as overseas emission reduction projects and the implementation of zero-energy buildings, are all significant contributions to climate change mitigation.

The construction industry utilizes materials like steel and cement with substantial carbon emissions, making it challenging to achieve reductions. LOTTE E&C's development of low-carbon, low-hydration-heat concrete is an important endeavor to reduce greenhouse gas emissions throughout the entire construction process. Managing greenhouse gas emissions (Scope 3) from the production of raw materials, which contribute significantly to emissions in the pre-construction phase, in a systematic manner would position LOTTE E&C as a sustainable enterprise. By setting greenhouse gas reduction targets including Scope 3 emissions and expanding the use of eco-friendly products like low-carbon, low-hydration-heat concrete, I hope LOTTE E&C could continue pursuing its vision of becoming a sustainable company that provides enhanced value to its customers.

Could you provide suggestions on the strategies or directions that LOTTE E&C should improve regarding its environmental management activities to address climate change and achieve carbon neutrality? Please specifically discuss climate change mitigation activities that are prominently feasible within the construction industry.

In the construction industry, climate change presents not just challenges but also numerous opportunities. As weather extremes and natural disasters become increasingly common due to climate change, substantial investment in infrastructure is essential for prevention and recovery. The construction industry plays a pivotal role in constructing such critical infrastructure. I hope that LOTTE E&C will formulate and execute distinct objectives and strategies, encompassing not only greenhouse gas reduction initiatives and eco-friendly construction but also leveraging the physical transformations induced by climate change as opportunities. This approach will position the company to enhance its competitive edge in the market during the climate crisis adaptation era.

ESG CHALLENGE

RESPONSE TO CLIMATE CHANGE	028
HUMAN RIGHTS MANAGEMENT	034
SHARED GROWTH WITH PARTNER COMPANIES	038

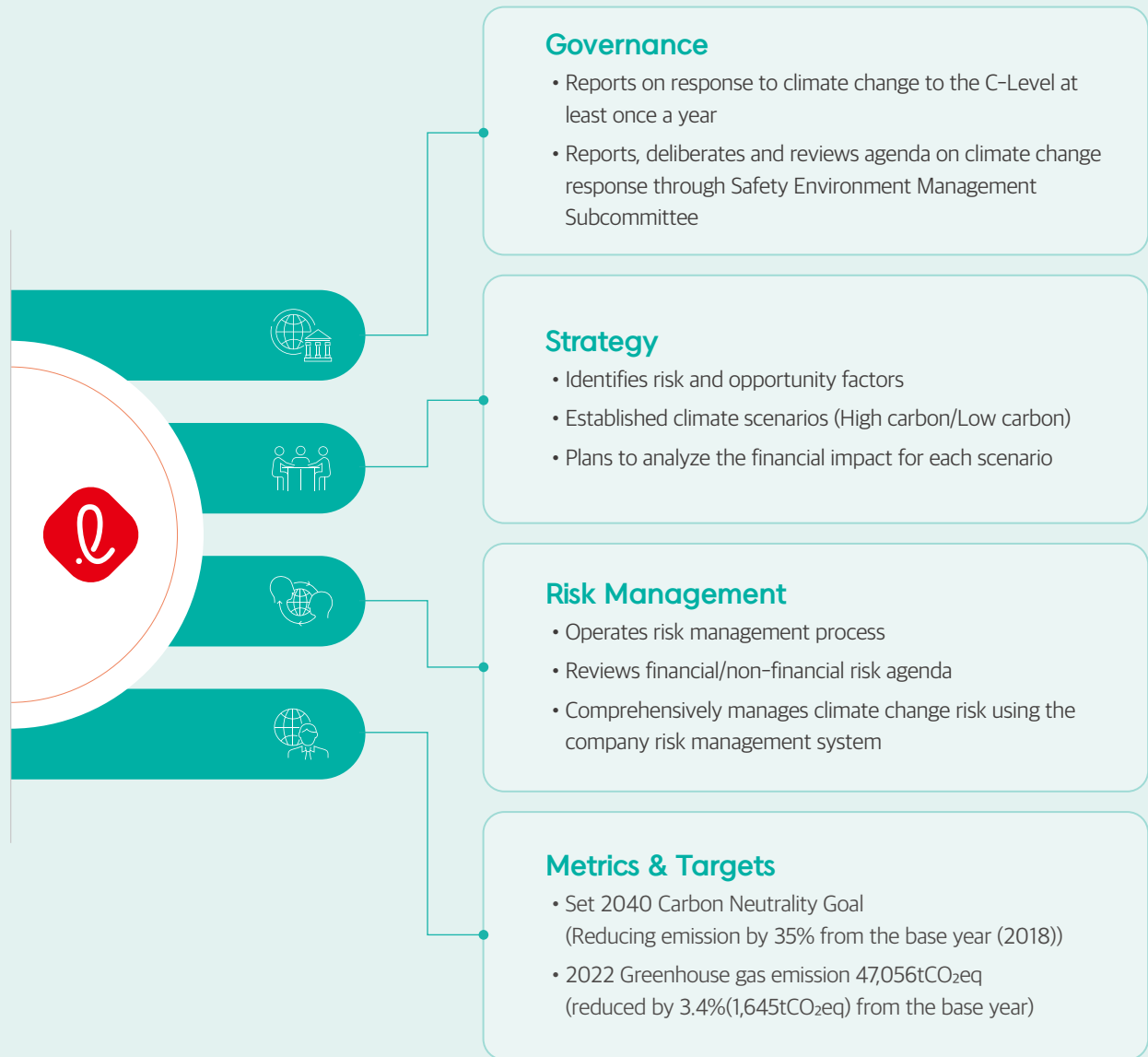
Response to Climate Change

Recognizing the importance of addressing the climate crisis, LOTTE E&C built 2040 Carbon Neutrality Roadmap to take a proactive approach in addressing the climate crisis. To effectively conform the climate crisis and turn it into business opportunities, LOTTE E&C has established a climate change response system based on the recommendations of TCFD. Additionally, we have been committed to public disclosure of climate-related information, ensuring transparent communication with our customers and stakeholders.



- Increasing need for proactive response to the shift toward carbon neutral society
- Increased portfolio weighting on eco-friendly investment

- Social/Environmental Impact ●●●○○
- Financial impact ●●●○○



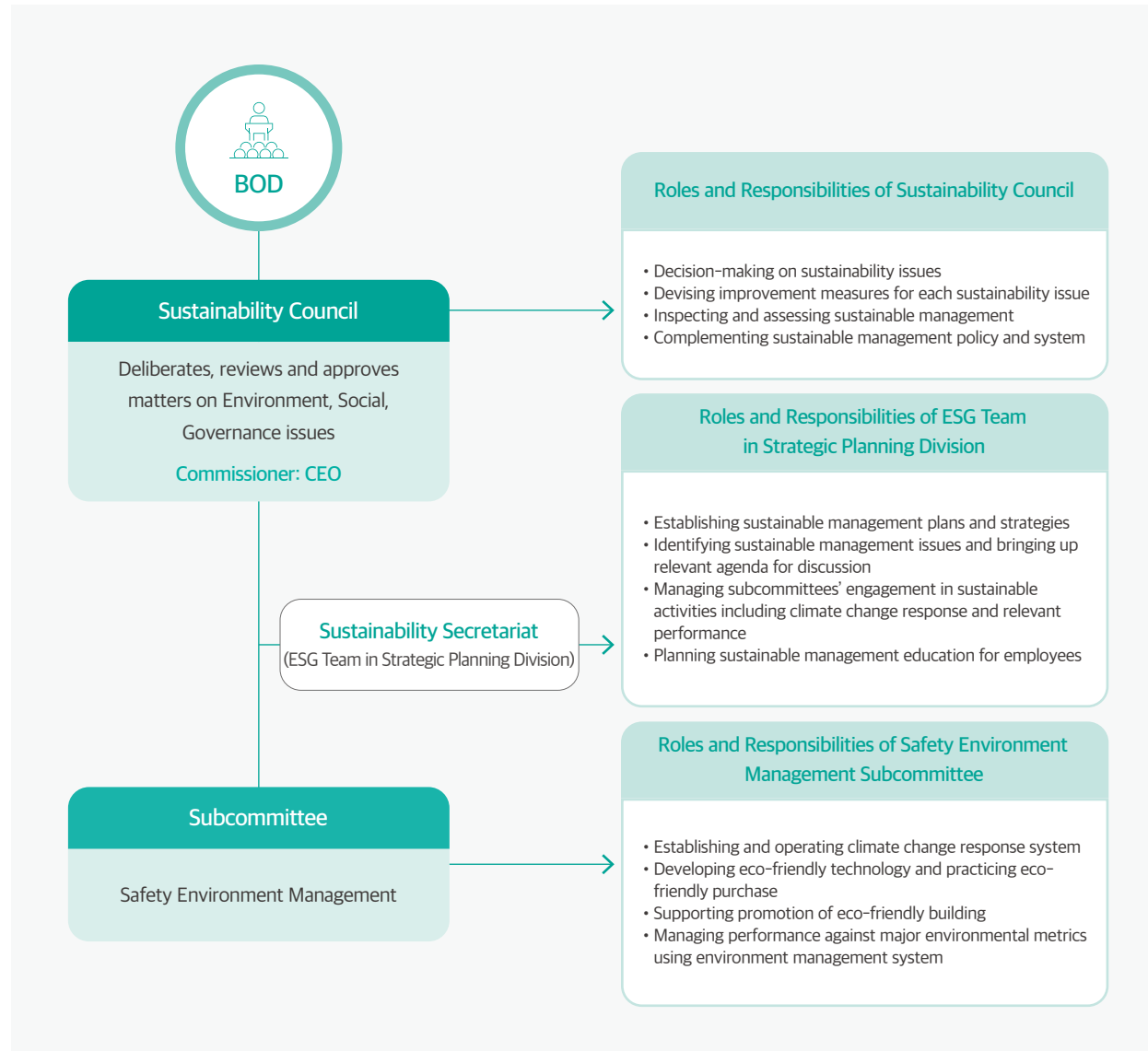


Response to Climate Change

Governance

Board of Directors and Sustainability Council

LOTTE E&C's Sustainability Council reviews major ESG issues, including climate change, and develops relevant systems by expanding its role in managing and overseeing climate change responses. In particular, to reinforce ESG management, we operate a Sustainability Council that reports directly to the CEO and serves as the decision-making body for deliberating and resolving major ESG management issues. Led by the commissioner (the CEO), the Sustainability Council discusses measures and policies to promote ESG management, specifically addressing climate change. The Council reviews climate change-associated issues and establishes response strategies. It also regularly monitors the company's performance in reducing greenhouse gas emissions and achieving its objectives. Major ESG agenda items, including climate change issues, are reported on a quarterly basis. LOTTE E&C has also established the Sustainability Secretariat (ESG Team in Strategic Planning) which sets mid-to-long term strategies and serves as the communication link with each working-level team, supporting them in executing specific climate change response strategies.





Response to Climate Change

Governance

Roles and Responsibilities of the Management

LOTTE E&C is fully committed to contribute to the achievement of the Nationally Determined Contributions (NDC) and leading the transition to a carbon-neutral society. To this end, we have established systemic and proactive carbon neutrality goals. The CEO of LOTTE E&C, who also serves as a Chair of the Board, is responsible for final decision-making on ESG issues. The responsibilities of the CEO include directing strategies for managing carbon intensity, engaging in eco-friendly investments, and enhancing governance related to climate change response. We conduct a comprehensive assessment of our climate change governance, such as evaluating the roles and oversight of the management and the board, to strengthen the leadership's responsibilities, including those of the CEO. In our performance evaluations of management, we consider both financial and non-financial factors. As part of our efforts, we strive to continuously enhance our sustainability capabilities by providing employees with educational sessions on climate change and implementing eco-friendly purchasing and investment practices. The Sustainability Secretariat (ESG Team in Strategic Planning) plays a central role in driving the company-wide climate change response and ESG management practices by establishing relevant strategies and policies. Additionally, the Sustainability Secretariat manages and reports material ESG matters to the C-Level council, which then deliberates and reviews these matters. The responsibilities of Sustainability Secretariat also encompass ensuring compliance with environmental laws, reflecting customer demands on climate change response, and comprehensive operation of ESG management throughout the company by effectively communicating with business divisions such as housing, architecture, civil works, plants, and other relevant teams.



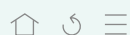
Promoting the C-Level Council

- **Expanded the coverage of the ESG agenda and implemented a robust reporting and deliberation system for the C-Level Council**
 - Strengthened ESG management of the C-Level Council by enhancing reporting and reviewing of ESG agenda
 - Agenda reported to C-Level in 2022
 - ① Establishment of objectives to reinforce clean technology capabilities ('22.09)
 - Reported on the establishment of a roadmap for clean technology R&D and its integration into the business (qualitative/quantitative objectives included)
 - Agenda set to be reported to C-Level in 2023
 - ① Plans to report on the execution of Group 2040 Carbon Neutrality Roadmap
 - ② Plans to report on the eco-friendly/carbon-reducing activity



Execution of the Carbon Neutrality Roadmap

- **Ensures effective climate change governance (reinforced board oversight and clear roles and responsibilities of the management)**
 - Operates organization and process dedicated to responding to climate change
 - Established emission reduction goal and measures for 2023
 - Developed a comprehensive matrix to assess risk, opportunity, and financial impacts associated with climate change and established execution process to reduce emissions
 - Reports on management performance regarding greenhouse gas emissions and progress made in achieving reduction targets
 - Brings up climate change agenda to discussions at the C-Level Council
- **Managing 2023 Greenhouse Gas Emissions**
 - Monitors emission reduction progress against the established reduction goal
- **Managing carbon intensity by comparing with the 2022 record**
 - Facilitates shift toward a low carbon economy by managing carbon intensity (carbon intensity=carbon emissions/revenue)
- **Tracking investment execution performance**
- **Attracting eco-friendly investments by diligently monitoring the execution of investments against its plan**



Response to Climate Change

Strategy

Identifying Climate Change Risk and Opportunities

LOTTE E&C has identified risk and opportunity factors to understand the impact of climate change on its business. LOTTE E&C is planning to conduct a climate change scenario analysis in accordance with the TCFD recommendations and comprehensively analyze the likelihood of occurrence and impact of each risk and opportunity factor to derive the impact of climate change on LOTTE E&C's financial performance (sales, etc.).

Analysis of Climate Change Scenario

Type	Climate Change Scenario	Execution
Physical	SSP 1-2.6 (low carbon), SSP5-8.5 (high carbon)	Analyzed the impact of climate change projections in the project area on LOTTE E&C's business by utilizing analytical results provided by the Korea Meteorological Administration and the National Institute of Meteorological Sciences based on the scenario of a Shared Socio-economic Pathway (SSP)
Transition	IEA NZE 2050, IEA STEPS	Analyzed the impact of the low-carbon transition policy plan on LOTTE E&C's business based on the Net Zero and business-as-usual scenarios.

Type	Risk detail	Response Strategy	Impact on LOTTE E&C	
Transition Risk	Policy and legal risks	Increased carbon price	Adopt internal carbon pricing system	<ul style="list-style-type: none"> Increased operating costs due to increased greenhouse gas emission costs
		Adoption of Emission Trading System	Strengthen greenhouse gas response system	<ul style="list-style-type: none"> Increased investment and operating costs due to the cost of purchasing emission credits Penalties for not implementing greenhouse gas reduction activities
		Reinforced waste management regulation	Boost waste recycling and resource circulation activities	<ul style="list-style-type: none"> Lower sales due to increased waste disposal costs
	Technology risk	Transition to low carbon technology	Develop low carbon technology/method for use in existing products and service	<ul style="list-style-type: none"> Reduced demand for existing products and services and increased R&D costs from developing low-carbon technologies
		Introduction of low carbon alternatives	Purchase alternatives with low carbon emissions	<ul style="list-style-type: none"> Increased construction costs due to utilization of low-carbon alternatives
	Market and Reputational risks	Change in stakeholder preference	Identify stakeholders' needs through communication	<ul style="list-style-type: none"> Decreased orders due to failure to identify stakeholder needs
		Increased energy and raw material prices	Respond to volatility by conducting market analysis	<ul style="list-style-type: none"> Increased production costs due to failure to respond to fluctuations in energy and raw material prices
Negative perspective on carbon intensive-projects		Win eco-friendly projects defined by K-Taxonomy	<ul style="list-style-type: none"> Increased construction costs due to the development of eco-friendly projects such as zero-energy buildings, CCUS, fuel cells, etc. Increased financing costs due to the implementation of multi-carbon projects 	
Physical Risk	Acute	Increased frequency and intensity of extreme weather events (typhoon, flood, wildfire, etc.)	<ul style="list-style-type: none"> Delays in construction period due to increased frequency and intensity of extreme weather events Increased maintenance and repair costs due to extreme weather events 	
	Chronic	Rise of sea level and average global temperature	<ul style="list-style-type: none"> Reduced revenue due to lower project demand as sea levels rise and global average temperatures increase 	
Opportunities	Product and service	Expansion of eco-friendly project	<ul style="list-style-type: none"> Increased demand and revenue from eco-friendly projects due to changing customer preferences for low-carbon products 	
	Energy	Development of low carbon and eco-friendly technology	<ul style="list-style-type: none"> Reduced operating costs through the application of low-carbon and environmentally friendly technologies/processes 	

Response to Climate Change

Risk Management

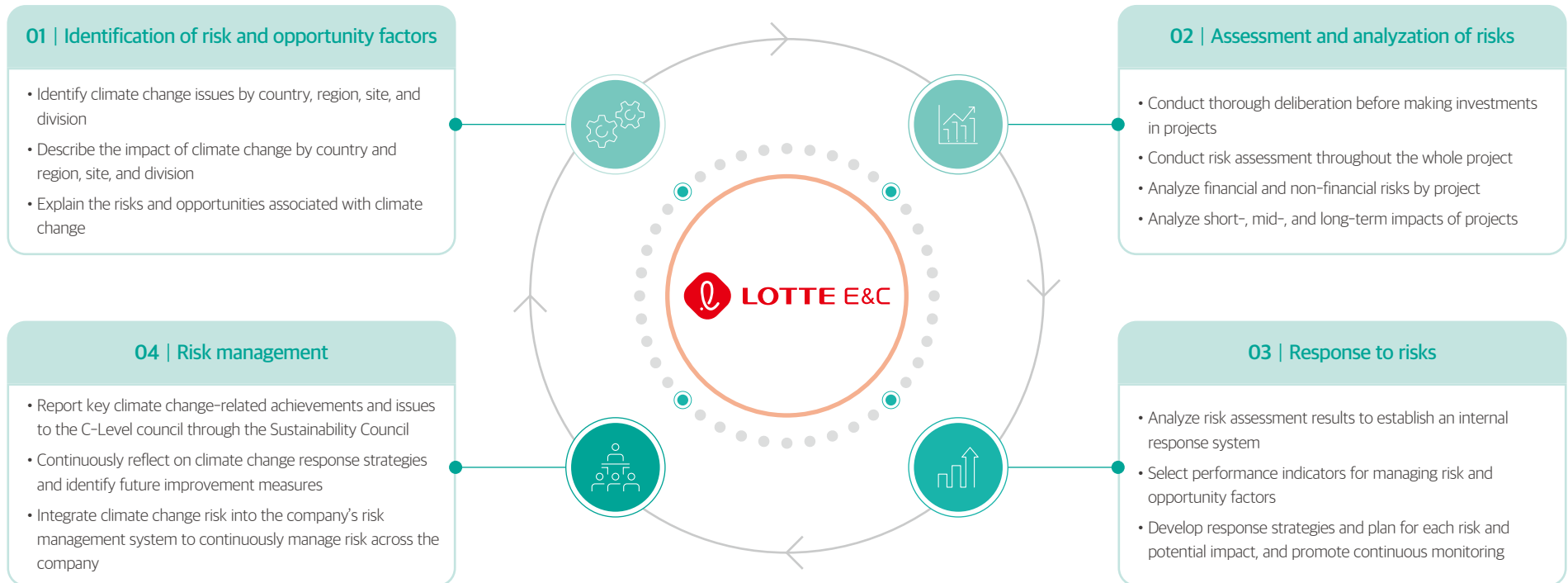
Establishing a Climate Change Risk Management Process

LOTTE E&C has established a risk management process to identify potential climate change issues that may arise throughout the project and effectively mitigate risks. Climate change risks and opportunities are assessed based on country, region, business site, and division, from the pre-project investment phase and throughout the execution stages. Then they are deliberated by the C-Level council to ensure comprehensive management at the company-wide level. The ESG Team in Strategic Planning plays a crucial role by identifying risks, evaluating priorities, and reporting on major environmental indicators such as greenhouse gas emissions related to climate change, energy usage, and waste emissions.

Integration of Climate Change Risk into the Company-wide Risk Management System

Recognizing that climate change has a significant impact on the entire project process, LOTTE E&C is dedicated to integrating climate change into its corporate management. In 2022, we initiated the establishment of 2040 Carbon Neutrality Roadmap to analyze the outlook for greenhouse gas emissions and explore emission reduction strategies, and we are currently seeking ways to seamlessly integrate the roadmap with the company-wide risk management system. The ESG Team in Strategic Planning will integrate the risk management of non-financial performance across relevant departments and identify any gaps in each ESG area to carry out continuous improvement activities.

Risk Management Process



Response to Climate Change

Metrics & Targets

LOTTE E&C's Major Environmental Metrics

LOTTE E&C manages key environmental metrics, such as greenhouse gases, energy, as well as waste and water resources, in order to respond to climate change risks and identify opportunities through the promotion of eco-friendly projects. In particular, we continuously review the development of sustainable projects, which includes the development of eco-friendly technologies and methods, green construction, green remodeling, as well as eco-friendly purchasing and certification, to address climate change. Moreover, we monitor energy purchase costs and greenhouse gas emissions, purchase eco-friendly raw materials for eco-friendly projects, and gradually expand the application scope of eco-friendly technologies and methods. Our goal is to diversify our sustainable business fields with the aim of becoming carbon neutral by 2040. We actively respond to the transition to a carbon-neutral society going beyond reducing our own emissions.

GHG Emission Management

Although LOTTE E&C is not obligated to adhere to the GHG target management system under the Basic Act on Carbon Neutrality and Green Growth in Response to the Climate Crisis, we voluntarily calculate and manage our Scope 1&2 emissions to contribute to the achievement of NDC targets. Moreover, LOTTE E&C is considering to extend our GHG emissions management along the value chain (Scope 3) beyond our organizational boundaries, demonstrating our commitment to leading the transition to a carbon-neutral society as a responsible member of the international community. Initially, we will calculate the major Scope 3 categories required by the international community for the construction industry, and gradually expand the coverage of Scope 3 emission categories.

Greenhouse Gas Reduction Activities

Since 2019, LOTTE E&C has been actively implementing GHG reduction activities. We have made significant progress by transitioning our concrete curing fuel from brown fuel to kerosene and adopting high-efficiency LED lights. We are also exploring various other reduction activities such as transitioning to eco-friendly vehicles, enhancing energy efficiency by improving the insulation performance of temporary offices on-site, and purchasing RECs and building self-generative solar power to strengthen our carbon neutrality strategy. Our target is to achieve GHG emissions reduction of over 35% by 2030 compared to 2018 levels. Furthermore, we are committed to implementing sustainable reduction activities with the ultimate goal of attaining carbon neutrality by 2040.

GHG Emissions

(Unit: tCO₂eq)

Type	2020	2021	2022
Scope 1	9,791	6,577	9,029
Scope 2	31,360	35,983	38,027
Sum	41,151	42,560	47,056
Reduction ¹⁾	2,968	4,993	3,146

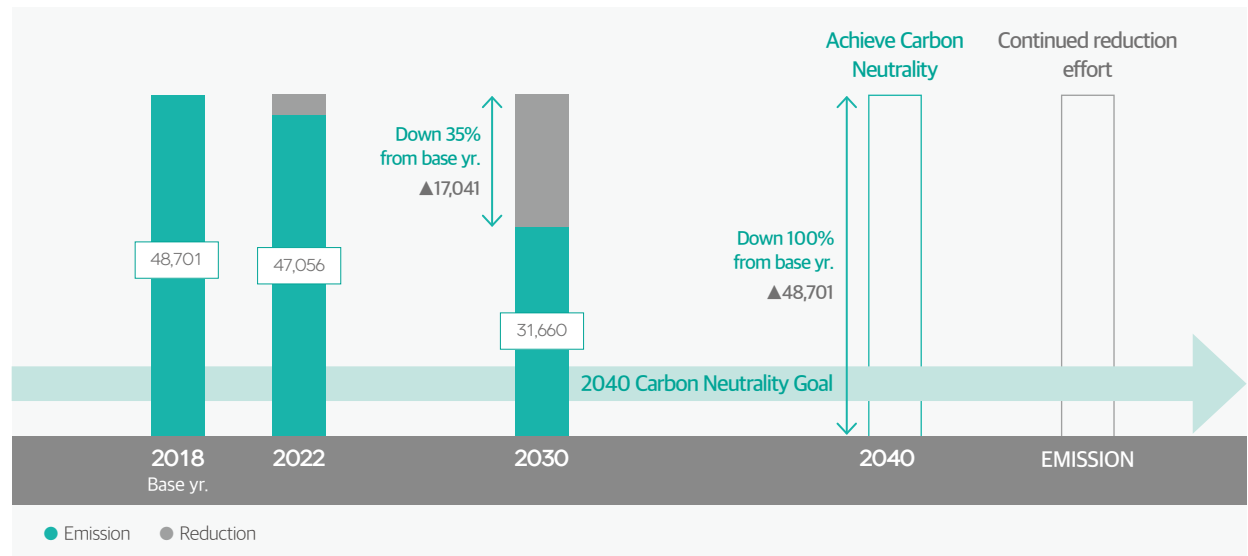
1) Basis for calculation: GHG Reduction from switching concrete curing fuel and replacing LED

GHG Reduction Goals

(Unit: tCO₂eq)

Type	Base year	Mid-term	Target year
	2018	2030	2040
Reduction Goals	-	35%	100%
Emission Target	48,701	31,660	-

LOTTE E&C 2040 Carbon Neutrality Roadmap



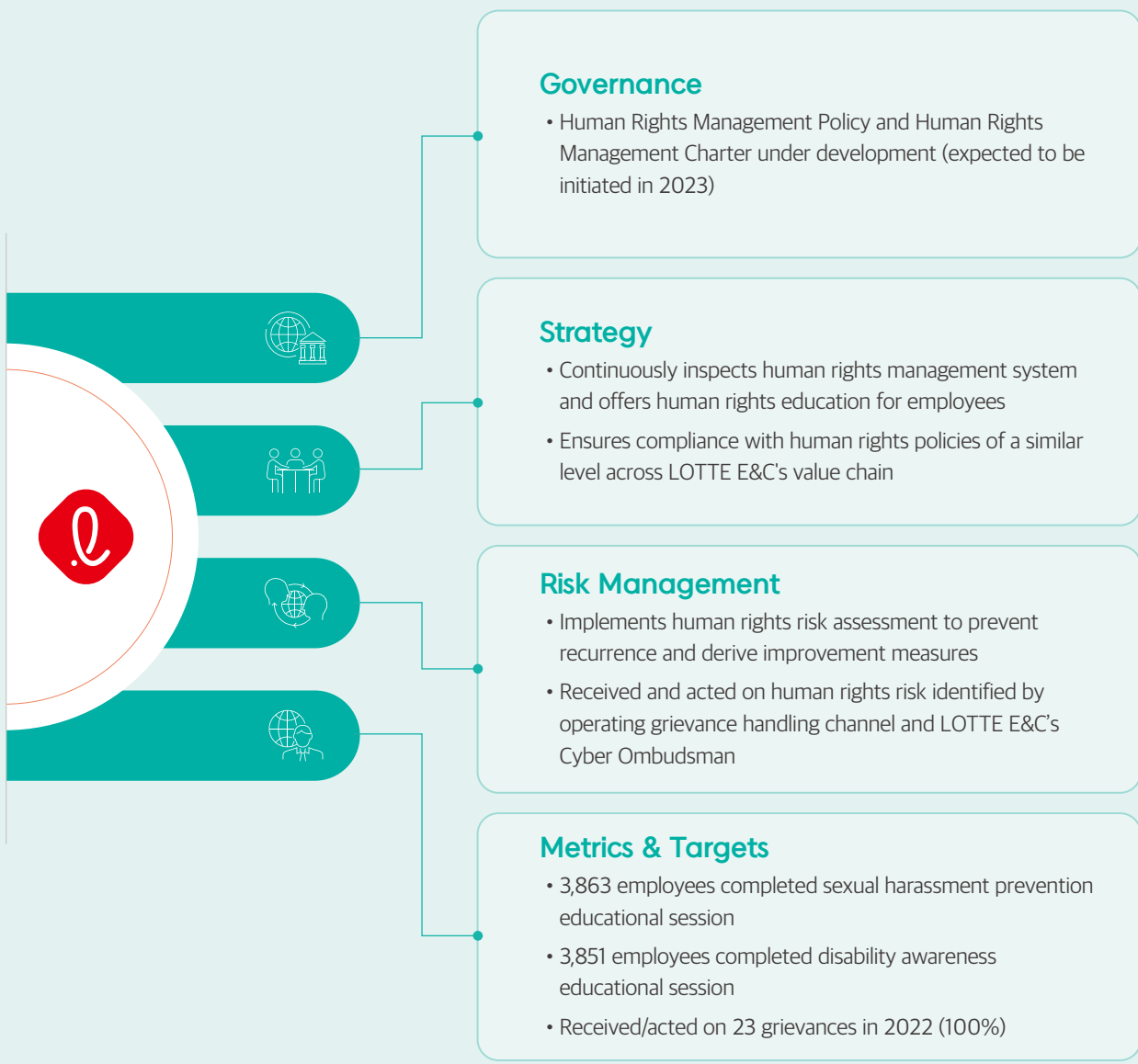
Human Rights Management

As a 'Lifetime Value Creator' that delivers the best value to its customers throughout their entire life cycle, LOTTE E&C actively implements human rights management to uphold human dignity and enrich human lives. Guided by international human rights principles and norms, LOTTE E&C engaged in various activities to ensure that human rights management extends beyond our organization to our partners. Furthermore, we strive to achieve sustainable growth by respecting the human rights of all stakeholders and diligently working to prevent human rights violations throughout our management activities and business operations.



- Protect human rights of the employees and partner companies
- Identify risks through human rights investigation and devise improvement measures to enhance sustainability

- Social-Environmental Impact ●●●○○
- Financial impact ●●●●○



Governance

- Human Rights Management Policy and Human Rights Management Charter under development (expected to be initiated in 2023)

Strategy

- Continuously inspects human rights management system and offers human rights education for employees
- Ensures compliance with human rights policies of a similar level across LOTTE E&C's value chain

Risk Management

- Implements human rights risk assessment to prevent recurrence and derive improvement measures
- Received and acted on human rights risk identified by operating grievance handling channel and LOTTE E&C's Cyber Ombudsman

Metrics & Targets

- 3,863 employees completed sexual harassment prevention educational session
- 3,851 employees completed disability awareness educational session
- Received/acted on 23 grievances in 2022 (100%)

Human Rights Management

Human Rights Management Promotion System

LOTTE E&C's Human Rights Management Policy

Taking a step beyond adopting the Human Rights Charter enacted by LOTTE GROUP, LOTTE E&C enacted a tailored Human Rights Management Policy specific to the LOTTE E&C's business operations. As a Lifetime Value Creator, dedicated to providing the greatest value throughout the customers' entire life cycle, we uphold right behaviors and standards for value judgement that all employees should adhere to across all aspects of management and business activities. The Human Rights Management Policy is firmly grounded in international human rights principles and norms, including the UN Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights, the International Labor Organization Core Conventions, the OECD Guidelines for Multinational Enterprises, and the UN Convention on the Rights of the Child. Moreover, the policy complies with human rights and labor-related laws and regulations in the countries and regions where our operations are located. LOTTE E&C considers human rights management, which respects human dignity and values, to be the number one priority. We have established and implemented policies and systems to ensure that human rights become an ingrained culture within the organization. Our commitment extends particularly to protecting and promoting the human rights of socially vulnerable individuals. Furthermore, we respect the human rights of not only our employees but also all stakeholders throughout the value chain, including customers, partners, and communities. Starting with the Human Rights Management Policy, LOTTE E&C has established the Human Rights Management Charter, which will be publicly disclosed through the LOTTE E&C website.

* [LOTTE GROUP's Human Rights Charter](#)

Management of Human Rights Risk

LOTTE E&C has implemented a comprehensive human rights risk management system aimed at safeguarding the human rights of all stakeholders and minimizing potential risks. Through human rights risk evaluation, we proactively identify areas for improvement and address any detected violations of human rights. Every year, we conduct human rights education for our employees and take prompt action against those who violate regulations and company policies concerning human rights. Not only that, but we also ensure thorough investigations are carried out to identify areas that require improvement, actively managing human rights risks. LOTTE E&C is deeply committed to faithfully practicing human rights risk evaluation and adhering to relevant policies for effective human rights management. We are planning to disclose the results of our regular improvement efforts concerning the human rights management system through the LOTTE E&C website, along with our Sustainability Report in the future.

Human Rights Risk Evaluation Process



Prevention of Discrimination and Bullying

LOTTE E&C ensures that there is no discrimination in recruitment, promotion, and other personnel matters based on gender, race, nationality, skin color, age, disability, religion, or political views. Our primary goal is to cultivate an organizational culture of mutual respect and consideration among all employees. In particular, we strictly prohibit all forms of human rights violations that cause physical or mental distress, such as workplace bullying and sexual harassment, and operate hotlines where employees can report any damages they experience. When any harm is caused, we actively take measures to protect the victim and enforce appropriate disciplinary measures against the perpetrator, and implement preventive measures to make sure that such incidents do not recur in the future.

Prevention of Forced Labor and Child Labor

LOTTE E&C strictly prohibits any kind of forced labor and child labor and abide by statutory minimum work age as mandated by the laws and international standards applicable to our operations. In particular, we strive to comply with international human rights principles and standards such as the UN Universal Declaration of Human Rights, the OECD Guidelines for Multinational Enterprises, and the UN Convention on the Rights of the Child, and guarantee work hours and wages complying with the labor standards of the countries and regions where our operations are located.

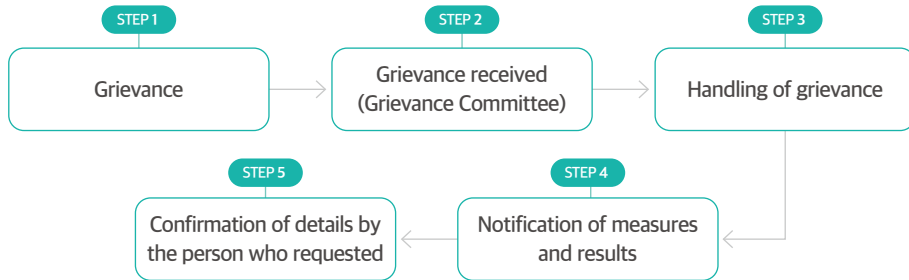
Human Rights Management

Human Rights Management Promotion System

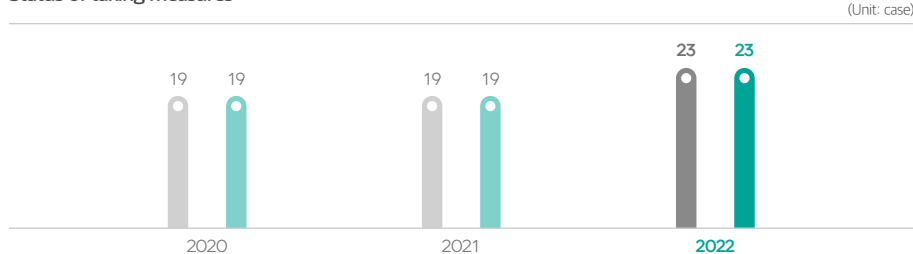
Operation of Channel for Handling Grievance

LOTTE E&C operates a human rights grievance channel known as the “Cyber Ombudsman,” providing a platform for employees, third parties, or organizations to promptly report any instances of human rights violations or identify human rights risks they may encounter. We listen to complaints about human rights violations such as job-related stress, complaints about working conditions, interpersonal grievances, and harassment, and take appropriate measures such as seeking remedies in accordance with relevant laws and internal processing practices. In addition, we thoroughly guarantee the identity and anonymity of the complainant and the informant, to prevent any potential disadvantages they may face as a result of lodging a complaint. Additionally, we operate a system to bulk-delete login or IP records upon receiving the complaint. We are proud to share that 100% of the grievances we received were effectively resolved after consultation with the grievance committee.

Grievance Handling Procedure



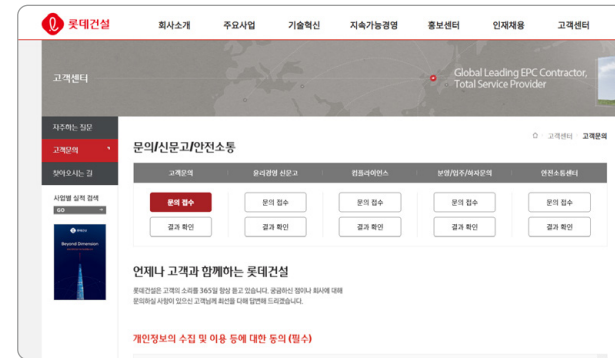
Status of taking measures



● Number of requests ● Number of measures requested

Prevention of Infringement upon the Rights of Local Residents

LOTTE E&C places significant importance on fostering positive relationships with local communities where our operations are located. We are committed to safeguard the human rights, freedom of safety and living of local residents and preventing any potential infringement of the rights that may arise from our management and business activities. In 2022, during the EPC construction of the Gwangyang Biomass Power Plant, we made efforts to ensure that the human rights and safety of local residents were not violated and established a council to facilitate mutual communication, with an aim to promote mutual growth.



Grievance Handling Channel



Grievance Counseling System

Human Rights Management

Spread of Human Rights Management Culture

LOTTE E&C's Code of Conduct for Partner Companies

LOTTE E&C remains committed to fostering mutual growth and equal partnership with its partner companies. As part of our dedication to responsible supply chain management, we support partner companies in implementing human rights management practices. In 2022, we are in the process of developing a Code of Conduct for LOTTE E&C's partner companies that is tailored to the construction industry, building upon LOTTE GROUP's Code of Conduct for partner companies. We strongly encourage our partners to uphold and respect the internationally proclaimed UN Guiding Principles on Business and Human Rights in all their business operations. Moreover, we are also determined to create a corporate culture that nurtures the potential of each individual and fosters respect among all employees, free from any form of prejudice or unlawful discrimination. To this end, we expect our partners to adhere to our detailed standards on non-discrimination, provision of wages and benefits, respect for working hours, humane treatment, freedom of association, protection of minor workers, and prohibition of forced labor. In the event of human rights violations, we actively seek resolutions through inclusive consultations with various stakeholders, striving to prevent material human rights violations from occurring in the future. The Code of Conduct for partner companies will be made accessible via LOTTE E&C's website, and we welcome opinions and reports through our Ombudsman system.

* LOTTE GROUP's Code of Conduct for Partner Companies

* LOTTE GROUP's Ombudsman System

The Code of Conduct for Partners regarding the protection of human rights

Prevention of Discrimination	Provision of Wage and Benefits	Respect for working hours
Humane treatment	Freedom of association	Protection of minor workers
		Prohibition of forced labor

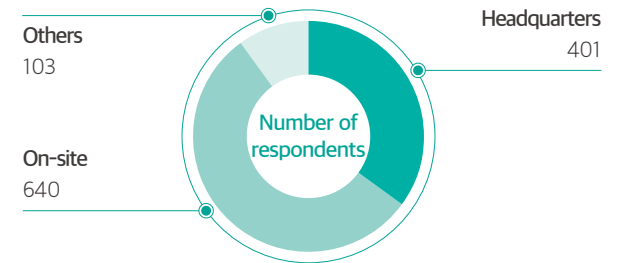
Investigation on Human Rights Management and Evaluation of Human Rights Impact

To ensure human rights management is well settled and spread across the company, and to understand the awareness and status of human rights management among employees, LOTTE E&C conducted a survey on its employees. The survey involved a total of 1,144 employees and covered 16 items, including the establishment of the human rights management system, efforts to prevent human rights violations, and human rights risks and countermeasures. As a result of the survey, Lotte E&C received high scores for its efforts in protecting personal information, implementing policies to prevent workplace bullying and sexual harassment in the workplace, and ensuring the human rights of our partners. These outcomes underscore our ongoing commitment to prevent human rights violations. Moreover, we are further focused on strengthening our human rights violation remedy system. We will consider the needs of improvement for employees, and conduct regular surveys and human rights impact assessments. We will also analyze the results of human rights impact assessments and take measures to bridge any gaps, and continue our efforts to protect human rights throughout the entire business process.

Human Rights Education

In order to enhance our employees' understanding of our human rights management policy and system, we conduct annual education sessions regarding prevention of sexual harassment in the workplace and raising awareness of people with disabilities. Going beyond providing our employees with regular education sessions to raise awareness on human rights, we are striving to extend our commitment to human rights to all stakeholders involved in our operations.

Results of human rights management investigation



(Unit: pt, Scale: 1 to 5)

Efforts to protect personal information	3.88
Operation of policies to prevent sexual harassment in the workplace	3.73
Implementation of efforts to protect the human rights of the employees and partner companies	3.69
Implementation of policies to prevent bullying in the workplace	3.56
Commitment to Human Rights Management	3.55
Enhancement of human rights awareness through human rights education	3.54
Notification of human rights management execution	3.49
Creating a safe and comfortable work environment	3.44
Remedial measures for human rights violations	3.41
Prevention of unreasonable discrimination	3.36
Establishment of the human rights management system	3.32
Efforts to comply with labor standards	3.20

1pt: Never 3pt: Neutral 5pt: Always



Education regarding prevention of sexual harassment in the workplace

3,863 Person



Education regarding raising awareness of people with disabilities in the workplace

3,851 Person



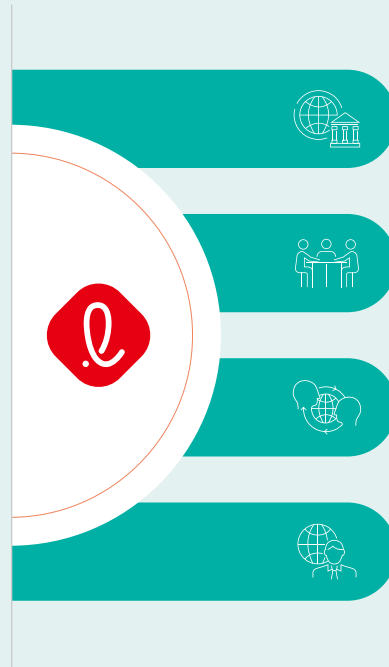
Shared Growth with Partner Companies

LOTTE E&C seeks a sustainable future with its partner companies under the shared growth promotion system based on fair trade and mutual communication. We strive to strengthen the ESG capabilities of our partners to enhance their market competitiveness. We are committed to proactively respond to supply chain risks and practice a culture of shared growth with our partner companies.



- Increasing need for supply chain management to enhance corporate competitiveness
- Reinforcement of supply chain ESG regulation in full swing with the implementation of the Catastrophic Accident Punishment Act

- Social/Environmental Impact ●●●●○
- Financial impact ●●●●○



Governance

- Operates the Secretariat of Shared Growth which directly reports to the CEO
- Deliberates and resolves agenda on shared growth through Shared Growth Subcommittee

Strategy

- Sets strategies and identifies future tasks with focus on fair trade and mutual communication
- Enacted Code of Conduct for partner companies considering the characteristics of construction industry

Risk Management

- Operates Evaluation System for ESG and Safety Capability for partner companies, with 142 partner companies being evaluated using the system
- Established risk management system on core raw materials used in the construction industry

Metrics & Targets

- 2,593 partner companies, 73 excellent partner companies (an increase of 408 partner companies (18.7%), an increase of 22 excellent partner companies (43.1%))
- Prize money for excellent partner companies increased by 38.2% YoY

Shared Growth with Partner Companies

Shared Growth Improvement Programs

LOTTE E&C is currently implementing policies and five key initiatives to promote shared growth under the supply chain strategy goal of "being a leading company in shared growth based on fair trade and mutual communication." These efforts are spearheaded by the Secretariat of Shared Growth, an organization directly under the CEO's office. In pursuit of this strategic goal, LOTTE E&C has set three strategic directions: building fair trade relations, strengthening the support system for partner companies, and building trust with these companies. In accordance with the supply chain strategy system, LOTTE E&C has been steadily implementing the following measures: establishing a fair culture, providing funding for partners, offering training and manpower support, providing technical support, and expanding exchanges.

Strategy Objectives

A leading company in shared growth based on fair trade and mutual communication

Strategy Direction

Build fair trade relations

Strengthen the support system for partners

Build trust with partner companies

Strategy Tasks

- Establish a culture of fair Trade
- Four practices for fair trade

- Offer financial and nonfinancial support
- Improve management conditions of partner companies

- Vitalize communication system with partner companies
- Spread the culture of sustainable management for the supply chain

Five Key Tasks

Create a culture of fairness

Provide a financial support

Provide education and training, and human resources

Offer technology support

Expand mutual interactions

Partnership

Internal executives and employees

Gain expert knowledge and increase capabilities as a leading company for a shared growth (Operate required training for executives and employees, improve organization structure)

Partner companies

Enhance communication with active involvement and close cooperation (Regular meetings with partner companies)

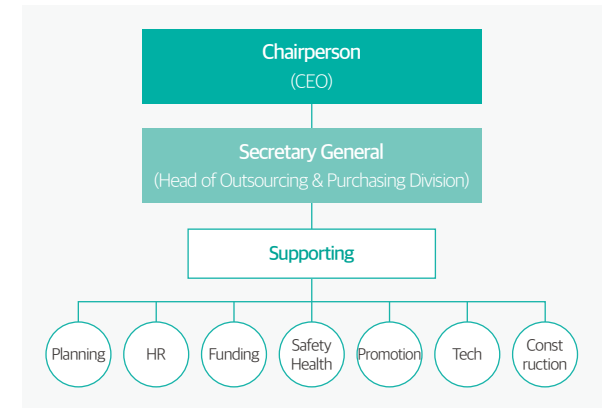
Government · agencies

Create a culture of shared growth by making cooperation and creating synergies (Signing an agreement for a shared growth and participating in Shared Growth Week)

The Secretariat of Shared Growth

LOTTE E&C pursues shared growth with its partner companies. The importance of shared growth is shared with all employees, and in order to build a practical support system for our partner companies, we have been operating the Secretariat of Shared Growth, an organization dedicated to shared growth and directly reports to CEO, since 2010. Under the chairmanship of the CEO, the secretariat organically cooperates with each department, including planning, HR, funding, safety, technology, and construction management, to execute the subtasks for promoting shared growth.

The Secretariat of Shared Growth



3 Main Partners for Shared Growth

LOTTE E&C defines partner companies, employees, and government agencies as three main partners for shared growth, in which it is disclosed on LOTTE E&C website. Our pursuit of shared growth focuses on a balanced partnership with key stakeholders surrounding the company, and we strive to fulfill social responsibilities and provide our partner companies with a value of shared growth.

* [LOTTE E&C's Webpage on Shared Growth](#)



Shared Growth with Partner Companies

Selection and Evaluation of Partner Companies

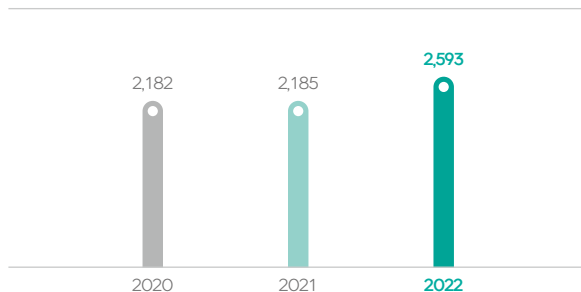
Selecting Partner Companies

There are two types of partner companies for LOTTE E&C; external subcontractors who carry out construction work and suppliers who provide general construction materials and customized equipment and materials. We select partners transparently and fairly in accordance with our partner selection and management practices. We disclose the selection criteria, procedures, and evaluation results through the partner portal site, and require that the selection criteria be relevant to the transaction content to be entrusted, and that there is no discrimination in the selection criteria between existing and new partners without justifiable reasons. The criteria for selecting partner companies include various factors such as construction capability, performance record, revenue, credit ratings, cash flow ratings, etc. When a company is not selected as a partner, we communicate the reason in written form. If the company wishes to contest the decision, they can raise an objection and in such instances, we conduct a thorough reevaluation of the selection process again as necessary.

* [Partner Companies Portal Site](#)

Current Status of Partner Company Selection

(Unit: number of company)



Performance Evaluation of Partner Companies

For those partners who have a trading history with LOTTE E&C, we consider various management indicators, including construction capability, credit ratings, revenue, and on-site performance, such as safety and health management. Based on these criteria, we select excellent partner companies. Among the selected companies, we award the grand prize to the most excellent company, and provide them with additional benefits such as more opportunities for transaction and prize money.

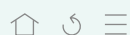
Notification of Selection	Partner Selection Results
<p>Notification of selection criteria and procedures</p> <ul style="list-style-type: none"> - Disclose the information on the Partner Companies Portal Site for at least 15 days 30 days before the validity of partner registration expires or 30 days prior to the start of registration (including renewal registration) <p>In case of changes in partner selection criteria</p> <ul style="list-style-type: none"> - Individually notify partner companies subject to renewal registration 45 days prior to the change, in written form (including electronic notification) 	<p>Notification of partner selection results</p> <ul style="list-style-type: none"> - Individual notification of the results in written form (including electronic documents) within 15 days of the partner selection date - Immediate re-registration measures in case of deregistration due to reasons attributable to LOTTE E&C

Management of Supply Chain ESG Risk

To proactively respond to risks arising from the supply chain, LOTTE E&C operates a relevant C-level council. The Sustainability Council, led by the CEO, oversees and responds to policy issues related to shared growth with partners, and a subcommittee dedicated to promoting shared growth has also been established and operated. The Secretariat of Shared Growth is another essential organization within our company that formulates and advocates for shared growth policies. Based on the results of annual partner evaluations, the CEO, in consultation with the opinions of the heads of each business division, approves a list of excellent partner candidates. In particular, to strengthen the safety and health management capabilities of our partner companies, we apply Evaluation System for ESG and Safety Capability to 142 partners engaged in high-risk work process, such as earth work and reinforcing bar concrete work. As a result of the evaluation, bidding opportunities are reduced for lower-ranked partners. In addition, if a partner encounters an environmental accident while performing construction after signing a contract, it may face legal sanctions, or if the construction is suspended, its participation in the bid may be restricted.

Management of Core Raw Material Supply Chain Risk

LOTTE E&C is diversifying its supply sources for core raw materials such as steel, cement, and ready-mixed concrete. By doing so, we aim to prevent potential construction interruptions and delays in project completion due to supply issues, and reduce the risk of compensation claims and increased construction costs. We are also mitigating the risk of raw material supply disruption by strengthening cooperative relationships with our raw material supply partners and implementing site-specific and timing-specific ordering strategies.



Shared Growth with Partner Companies

Selection and Evaluation of Partner Companies

Operation of the Evaluation System for ESG and Safety Capability of Partner Companies

LOTTE E&C has implemented Evaluation System for ESG and Safety Capability of Partner Companies to assess and oversee the safety and health capabilities of our partners, in light of the strengthened safety and health regulations with the implementation of the Serious Accidents Punishment Act in January 2022. For partners engaged in high-risk construction projects, we conduct ESG evaluations to diagnose their practices and conduct mandatory safety capability assessments, especially for new partners who fall under the high-risk construction category. From the subcontract bidding stage onward, we verify the safety management capabilities of our partners, proactively managing and preventing potential major disasters on-site. Through the safety capability evaluation system, we collaborate closely with our partners to strengthen their safety management capabilities. We provide active support to help them address any deficiencies and ensure the implementation of systematic safety and ESG management practices. To enhance the reliability of our partners' safety management capabilities, we undertake external evaluations commissioned by a credit rating agency, in addition to our internal evaluation. Under the leadership of Head of Safety and Health Department & Director (the CSO), the internal evaluation is carried out semi-annually for partners working on construction sites, in addition when a new partner is registered. The top-ranked partners are rewarded, while the lowest-ranked partners receive warning and are restricted from bidding. Furthermore, the external evaluation has been conducted by a credit rating agency for 142 partners performing high-risk construction projects starting from January 2022, and upon the verification of the results of the safety and health management capability evaluation, partners who receive a lower rating get fewer opportunities to participate in bidding. We manage the ESG evaluation ratings of our partners, and if an industrial accident occurs in the course of construction, we take restrictive measures in consideration of the severity of the accident and the level of the partner's negligence.

Expanding Reward Systems for Partner Companies

LOTTE E&C conducts regular evaluations targeting partner companies to enhance their competitiveness in technology, quality, safety, environment, ethical management, and overall business performance. Based on trading history with partner companies, transaction amounts, and the results of regular evaluation, we classify them into Excellent (best), Major, and General Partners. We offer practical benefits to partner companies selected as excellent partners, such as priority bidding opportunity, 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. In 2022, we recognized and rewarded a total of 73 excellent partners, including 58 excellent partners, 12 small but strong partners, 2 excellent global partners, and 1 excellent partner for safety. Going forward, we will continue to identify partners who are striving to enhance their competitiveness and seek cooperation, supporting their growth.

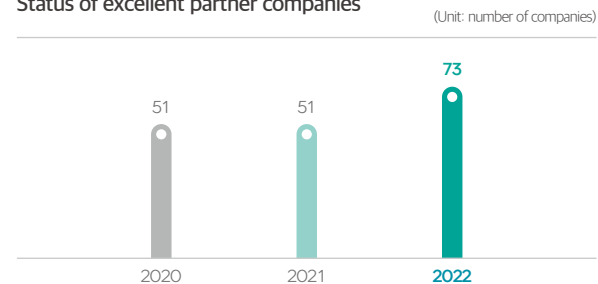
Incentives for excellent partner companies

Awards for excellent partner companies	Awarding excellent partner company plaques and signing shared growth agreements
Expansion of contract opportunities	Priority to participate in bidding
Expansion of interactions	Supporting LOTTE Partners activities for excellent partner companies
Waiver or reduction of performance bonds	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
Training and management support	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
Financial support	Giving priority to excellent partners that request loans

Safety capability evaluation status of partner companies



Status of excellent partner companies





Shared Growth with Partner Companies

Promotion of the Culture of Shared Growth

Four Practices for Shared Growth

LOTTE E&C has been actively pursuing three practices for shared growth consisting of selection and management of partner companies, installation and operation of Internal Deliberation Commission, and fair contract execution, starting from 2019. In 2011, we took a step further to proclaim our commitment for shared growth by signing a contract for shared growth and fair trade with construction companies. In the following year, we adopted all 4 practices for shared growth suggested by the Fair Trade Committee, adding practice on issuance and preservation of written document. These practices are available to public via LOTTE E&C's webpage for shared growth.

* [LOTTE E&C's Webpage for Shared Growth](#)

Internalizing the Culture of Shared Growth

LOTTE E&C is dedicated to promoting a corporate culture where fair trade with partner companies is encouraged. Our dedication is well demonstrated in annual lectures we offer to both our employees and partner companies, featuring external professionals on laws on subcontracting from relevant organizations such as Free Trade Commission (FTC). The culture of shared growth is also emphasized in our internal evaluation system. In the process of evaluating candidates for an executive position in Outsourcing and Purchasing, LOTTE E&C considers the candidates' performance in promoting shared growth.

Operation of the Infrastructure for Signing Contracts for Mutual Growth

LOTTE E&C has been committed to establishing an environment that upholds the autonomy of Small and Medium Enterprises (SMEs) in contractual agreements, preventing the exploitation of bargaining power by larger companies. This commitment ensures that SMEs secure fair profits. To this end, we have been implementing relevant practices and receiving proposals from potential partner companies through our partner portal site. Additionally, we actively cultivating open culture across our supply chain where partner companies are encouraged to communicate freely with each other and hold regular meetings online through our PRM (Partner Relationship Management) system.

4 Practices for shared growth

Contract Signing Practices for Win-Win Cooperation Among Large, Medium and Small Businesses	LOTTE E&C provides SMEs with an environment where their interests can be properly reflected in the contract and prevents the company from abusing superior bargaining power in transactions with SMEs, undermining the freedom of contract of the SMEs. To this end, we outline practice guidelines on signing contracts, thereby contributing to creating a culture of reasonable and fair trade. (Practice Guideline)
Practice guideline for selection and management of partner companies	LOTTE E&C aims to contribute to the establishment of a fair subcontracting culture by enhancing transparency and fairness in selecting and operating partners, and to set general practice guideline to prevent violations of the Act on Fair Subcontracting. (Practice Guideline)
Installation and operation of Internal Deliberation Committee for contract with subcontractors	LOTTE E&C aims to contribute to the establishment of a fair subcontracting order by enabling LOTTE E&C to deliberate on the fairness and legality of subcontracting transactions above a certain size on its own before or after the fact, and to present general points to prevent violations of the Act on Fair Subcontracting Transactions. (Practice Guideline)
Practice guideline for issuance and preservation of document	LOTTE E&C aims contribute to the establishment of a fair subcontracting culture by specifying matters that the company must comply with or pursue in relation to the issuance and preservation of documents in the course of concluding subcontracting contracts and transactions. This ensures that the company and the subcontractor are clearly aware of the matters related to the issuance of documents under the Act on Fair Subcontracting Transactions, and facilitates the exercise of rights and the performance of obligations thereunder. (Practice Guideline)



Shared Growth with Partner Companies

Promotion of the Culture of Shared Growth

Code of Conduct for Partner Companies

LOTTE E&C enacted our own Code of Conduct for Partner Companies building on LOTTE GROUP's Code of Conduct for Partner Companies tailored to the characteristics of the construction industry. All partner companies working with and signing contract with LOTTE E&C should adhere to the Code of Conduct and relevant guidelines, which also applies to partners of the partner companies. LOTTE E&C's Code of Conduct for Partner Companies provides practical guidance on environmental protection, human rights protection, safety management, legal compliance, ethical management, and management system. The Code of Conduct will be available to public through LOTTE E&C's website.

* LOTTE GROUP's Code of Conduct for Partner Companies

Received 'Excellent' Grade in Win-Win Index

Under the leadership of the Legal & Compliance Team, LOTTE E&C is committed to effectively respond to supply chain risks by adhering to the legal requirements in a company-wide level. LOTTE E&C received "Excellent" rating from the 2022 Fair Trade Agreement Implementation Evaluation conducted by the Korea Fair Trade Commission of the Korea Fair Trade Commission, and also achieved "Good" rating in the overall evaluation of shared growth practices.

Win-Win Index	★★★ Excellent
Implementation of Fair Trade Agreement	☆☆☆ Good

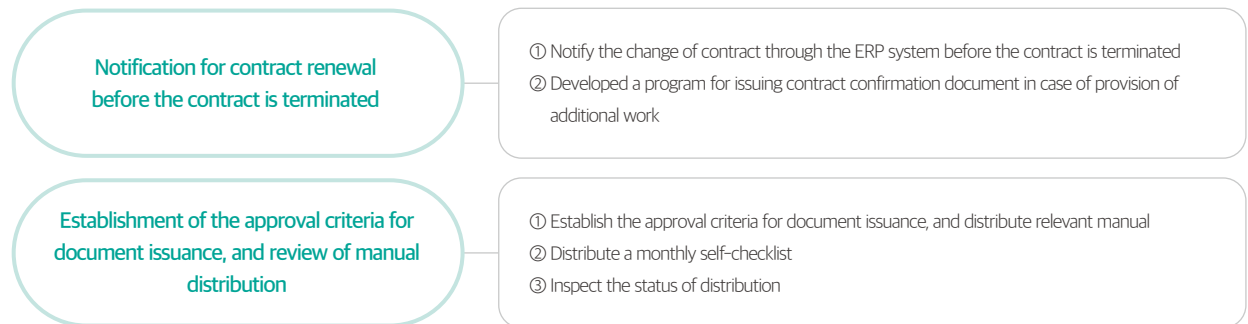
Guideline for Code of Conduct for Partner Companies

Environmental Protection	Human Rights Protection	Safety Management	Compliance and Ethical Management	Management System
<ul style="list-style-type: none"> ① Establishment of Environmental Management System ② Climate crisis response ③ Air pollution management ④ Waste Management ⑤ Water resource management ⑥ Chemicals Management 	<ul style="list-style-type: none"> ① Anti-discrimination ② Provision of wages and benefits ③ Observance of working hours ④ Humane treatment ⑤ Freedom of association ⑥ Protection of minor workers ⑦ Prohibition of forced labor 	<ul style="list-style-type: none"> ① Industrial Safety Assessment ② Contingency plan ③ Accident management ④ Safety management of machinery, equipment, and facilities ⑤ Health management ⑥ Product quality and safety 	<ul style="list-style-type: none"> ① Prohibition of illegal profits ② Transparency of management ③ Prevention of unfair trade ④ Information protection 	<ul style="list-style-type: none"> ① Manifestation of sustainable management ② Risk Management ③ Education and communication ④ Compliance with laws and regulations ⑤ Responsible supply chain management

System to Prevent Unfair Practices for Subcontractors

LOTTE E&C informs its subcontractors in advance when contract termination is expected, using the notification function of the ERP system to minimize the possible unfair practices. This prevents any chances of subcontractors carrying out construction work after the termination of the contract, ensuring the issuance of documents to subcontractors. In addition, we have computerized the process of document issuance in case of subcontractors performing additional works to avoid any potential disputes. LOTTE E&C distributes guidelines on document management to all employees, mandates that checklists are prepared on a monthly basis, and conducts on-site supervision of major worksites.

System to prevent unfair practices





Shared Growth with Partner Companies

Promotion of the Culture of Shared Growth

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 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 monthly and occasional meetings 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.

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. In 2022, we have resolved dispute with a total of 4 partner companies.

Shared Growth Programs

Financial Support for Partner Companies

LOTTE E&C offers a variety of financial programs in connection with the financial sector to help small- and medium-sized partner companies 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 issuance cost of payment guarantee bonds, which was previously paid by partner companies. We also established a joint growth fund with Industrial Bank of Korea to support low-interest loans. We started with 10 billion won in 2010 and have been expanding the scale of support every year, and as of 2021, we are operating a fund worth 57 billion won. We offer a 2-3% interest rate reduction, and since 2012, we have jointly developed a network loan with Industrial Bank of Korea, supporting our partner companies to make an increased size of loans with a lower interest rate based on their revenue performance. In addition, since February 2020, LOTTE E&C improved payment terms and implemented all-cash payments to partners who have signed subcontracts for construction and services. LOTTE E&C will continue to increase the size and types of financial support, such as emergency financial support, rewards for excellent partners, rewards for long-term cooperation, and support for welfare of partner companies, for their financial soundness and stable growth.

Financial support programs



Financial support programs

Type	Size	Remark
Direct loan	KRW 13.36 billion	
Issuance cost of Payment Guaranteed	KRW 178 million	
Shared Growth Fund	KRW 57 billion	From LOTTE E&C and IBK (each 28.5 bil.), support for low interest loans
Prize money for excellent partner companies	KRW 525 million	
Rewards for long-term cooperation	KRW 221 million	
Support for welfare of partner companies	KRW 9 million	

Shared Growth with Partner Companies

Shared Growth Programs

Support for Training and Recruitment

LOTTE E&C believes that partner companies' strong competitiveness indicates our own competitiveness. Based on such belief, we provide our partner companies tailored training program specific to the needs of the companies. We encourage our partner companies to take part in recruitment exhibitions, helping excellent partners promote their companies so that they can hire talented manpower. In addition, we operate a 'Shared Growth Fund for Green Jobs.' If any partner company with a shared growth loan hires a new employee, the company is rewarded KRW 500,000 (points) and the newly employed KRW 300,000. Based on fair trade and mutual communication, we work with our partners to grow together and secure talented people.



Discovering Excellent Companies in Local Communities and Making Close Cooperation

LOTTE E&C strives to find excellent companies in local areas to come up with win win measures for the local community. In 2022, we have discovered 58 excellent companies, 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 73 excellent companies, including 58 newly selected local companies.

Providing Technical Support for Partner Companies

LOTTE E&C supports technological development of partner companies to secure mid- and long-term core competitiveness. In 2022, we supported 27 joint research and development projects, and joint development of 48 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 2022, a total of 42 new contracts were signed with partner companies by adopting their patented or newly developed technology, and a total of 94 million won was rewarded to 15 companies who won the technology innovation contest.

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 provided in 2022

(Unit: KRW thousand)

Type	Number of support cases	Size of support
Joint R&D	27	1,099,160
Joint product development	48	14,214
Patents and new technology contract orders	42	-
Technology Innovation Contest	15	94,000
Total	132	1,207,374

Performance Sharing Program

LOTTE E&C makes continued efforts to promote shared growth with partner companies by taking gradual approach in executing each task, under our mid-to-long term vision and objectives. Every month, we hold regular meetings led by the Secretariat of Shared Growth to explore ways to advance shared growth with our partners, and in 2006, we introduced the first performance sharing system in the construction industry and have been operating it continuously. In 2011, we received the Minister of Land, Infrastructure, and Transport Award for the Creative Construction Innovation Contest, and in 2012, we signed an agreement with the Ministry of Knowledge Economy to spread the performance sharing system. Furthermore, we are promoting various research and model development to settle the performance sharing system in the industry. Since 2021, Lotte E&C has conducted performance sharing activities of various types, 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. In case of the performance sharing type of setting a goal in advance, we are planning to select targeted partner companies at the time of signing a contract and measure their performance after 2023, when the contract is completed. We plan to further increase these cooperation activities with our partners to make this a best practice for performance sharing in the construction industry.

Shared Growth with Partner Companies

Reinforcing Communication with Partner Companies

Regular Meetings with Partner Companies

LOTTE E&C has been strengthening trusted relationships with the partner companies by actively listening to the opinions of the partners on-site. In 2022, we collected the opinions from a total of 33 regular meetings held in 7 construction areas.

Regular meetings held with partner companies

Areas	Companies participated	Areas	Companies participated
Electricity	4	Interior design	5
Renar concrete (construction)	6	Steel frame	4
Mechanical equipment	5	Landscape	5
Earth work (construction)	5		

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 suggestions are received, LOTTE E&C makes every effort to address the issues raised in a fair and timely manner. The anonymity of the reporter is ensured to prevent the person from facing any disadvantages.

* LOTTE E&C's Cyber Ombudsman 

Survey on Partner Companies with “Excellent” and “Major” Rating

In September 2022, LOTTE E&C conducted a survey of 440 excellent and major partner companies to measure their satisfaction with activities aimed at strengthening partnerships and promoting shared growth, as well as to gather suggestions for further improvements. Out of the total, 261 partners (59%) responded to the survey. The results showed that partners expressed high satisfaction with transactions centered on excellent major partners, the expansion of the scope of excellent partner companies, improved communication, incentive activities for long-term partners. They also expressed a desire for expanded opportunities for participation and reward. Taking partner companies' feedback received through various channels into account, LOTTE E&C aims to make systematic and practical improvements to its partnership activities.

LOTTE E&C aims to spread sustainability through mutual growth. We interviewed excellent partner companies for sustainable mutual growth. By sharing the best practices of our partner companies, we hope to promote the culture of sustainability further and explore the development direction that LOTTE E&C should take for enhanced shared growth.

We always prioritize on-site communication and safety. We are deeply committed to promoting shared growth by establishing a safety culture based on participation and communication.



Olleh Construction Inc. | Young Bok Choi, CEO

Could you please tell us about your company and your partnership with LOTTE E&C?

Olleh Construction Inc. has been in the reinforced concrete construction business for 25 years, prioritizing faithful and responsible construction. We have had the privilege to participate in various Lotte E&C projects, including Lotte Yongin Outlet, Osan Human Resource Development Center, Magok MICE CP2, and numerous residential houses and commercial facilities. Our focus on technical expertise and reliable services in framing has allowed us to contribute to the construction industry and foster a shared growth relationship with LOTTE E&C, emphasizing site safety. We hope to continue our shared growth relationship with LOTTE E&C based on communication.

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

I think the secret to Olleh Construction Inc. receiving the award as an excellent partner is our sense of responsibility for safety. Under the management philosophy that safety is the number one priority, we have established and implemented a safety and health policy called 'Establishing a safety culture based on participation and communication'. We have established a dedicated safety department within the organization placing utmost priority, and are conducting 1:1 face-to-face management to prevent unsafe practices on site. Furthermore, we have established a proactive safety management system by acquiring KOSHA 18001 certification for the safety and health management system and CSMS certification for the cybersecurity management system, and we will continue to actively participate in safety management as the core of shared growth.

Please tell us about your future direction in pursuit of enhancing the shared growth with LOTTE E&C.

I believe that the basis and core of shared growth lies in site-centered communication for a safer workplace. Safety is something that LOTTE E&C and its partner companies create together, and we can mitigate safety risks at the workplace through active communication. To establish a safety culture, LOTTE E&C actively reflects the needs and opinions of its partner companies by operating programs such as the 'Excellent Partner Award' and the 'Safety Communication Channel'. Based on communication, LOTTE E&C provides customers with the highest quality residential spaces and strengthens the trust and partnership with its partner companies. As LOTTE E&C is dedicated to proactively prevent safety accidents and major disasters, Olleh Construction Inc. will also do our best to manage construction safety on site.

ESG PERFORMANCE

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PROSPERITY GOVERNANCE FOCUSING ON FUNDAMENTALS	092



PLANET | SUSTAINABLE GREEN CONSTRUCTION

LOTTE E&C aims to become a ‘Lifetime Value Creator,’ by expanding its support and investment in green technology, such as zero energy buildings, carbon reduction, and CCUS. We remain committed to actively discovering new green business models to create a more sustainable and eco-friendly construction market.

MINIMIZING ENVIRONMENTAL IMPACT 049

SECURING NEW GROWTH ENGINE 056

2022 KEY PERFORMANCE



Minimizing environmental impact

Executed KRW 58,558 million in green purchases (purchases of eco-friendly certified products)

- Increased by KRW 3,149 million (↑ 5.7%) from the previous year

Executed 12 eco-friendly projects (cumulative)

Issued KRW 40 billion in sustainable bonds

- KRW 30.2 billion of green bonds used for eco-friendly projects for environmental improvement purposes (KRW 9.8 billion in other social bonds)

Acquired 124 green building certifications (G-SEED) (cumulative)

38 professionals acquired the green building professional qualification (LEED AP)

Recycled 629,134 tons of construction waste (↑ 99.92%)

- Increased by 42,605 tons (↑ 0.4%) from the previous year



Securing new growth engine

Executed KRW 3,300 million in Research and Development

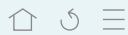
Maintained expenditure target for R&D, at 0.05% of total revenue

Maintained a ratio of R&D personnel exceeding 5% of the total number of regular employees

Invested KRW 221.03 million in eco-friendly R&D

- Increased by KRW 32.25 million (↑ 17.1%) compared to the previous year

Developed ‘Low Carbon Hydrogen Heat Reduction Concrete’ capable of reducing carbon emissions by 90% compared to conventional cement



Minimizing Environmental Impact

Promotion of Environmental Management

LOTTE E&C is actively engaged in environmental practices, utilizing technologies based on the harmony of human and environment. We have been maintaining ISO 14001 certification since our initial acquirement of the certification in 1996, passing annual review every year. In January 2023, to carry out advanced tasks of company-wide environmental management and quality management, we transferred environment-related tasks to the Quality Management Team of the Research and Development Institute, dedicated to environmental management. In addition, we integrated the environmental management and quality management policies, which are subsequently amended to the quality environment management policy. The policy is now being put into practice throughout the company since the announcement of its launch. Furthermore, in order to contribute to the 2050 NDC, we have been taking on specific tasks according to our own standards with the goal of achieving carbon neutrality by 2040. In January 2022, LOTTE E&C calculated BAU¹⁾ until 2040, and in August, we established Carbon Neutrality Roadmap. In the future, we plan to achieve carbon neutrality step by step in keeping with the internal and external changes, by converting business vehicles to eco-friendly vehicles, introducing photovoltaic power generation facilities to field offices, and signing new and renewable energy purchase contracts.

1) BAU: Business As Usual, estimated greenhouse gas emissions when the current trend persists without intentional reduction efforts

Environmental Management Charter

Lotte E&C is committed to actively practicing environment management such as complying with environmental laws and regulations, establishing an environmental management system, and minimizing pollutants. Our efforts are grounded in the LOTTE GROUP's Environmental Management Charter, which contributes to the sustainable development and affluent life of mankind and recognizes environmental value as a key element of management activities.

* LOTTE GROUP's Environmental Management Charter

Objectives

Introduce the concept of ESG management

Promote activities to achieve eco-friendly certifications

Aim for zero environmental accidents

Detailed objectives

- Efficient management of environmental data
- Discover new items that can reduce GHG and energy use
- Conduct campaigns to spread a company-wide green culture

- Maintain ISO 14001 certification

- Conduct an efficient environment inspection on worksites
- Strengthen training programs for working-level employees in charge of environment issues
- Response to environmental issues in the construction industry

Implementation system

PLAN

- Determine the environmental impacts
- Evaluate environmental impact by item
- Set environmental goals
- Establish environmental improvement plans

DO

- Delineate responsibilities within the organization
 - Provide environment-related training
- Establish a daily work system related to environment management
- Build an emergency response measure

ISO 14001
Environmental
Management
System

ACTION

- Review by the management
- Improve nonconformities and the level of environment management
- Communicate with stakeholders

RESTART

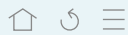
- Conduct audits and measurements
- Manage environment-related documents
- Conduct environmental inspection

Mission

Improve environmental management through continuous communication with stakeholders and management review

Forge eco-friendly construction environment by efficiently using energy and reducing energy use

Execute 2040 Carbon Neutrality Roadmap for the transition to a carbon neutral society



Minimizing Environmental Impact

Promotion of Environmental Management

Organization Dedicated to Environmental Management

Originally, LOTTE E&C's company-wide environmental management was led by the ESG Team Strategic Planning, but starting from 2023, it has been transferred to the Research and Development Institute. Currently, ESG-related works are handled by the ESG Team Strategic Planning and the Quality Management Team of the Research and Development Institute is in charge of environmental management. Greenhouse gas related works are handled by the Eco Energy TFT. In addition, the Safety, Environment and Health Subcommittee is established within the Sustainability Management Council, and the CEO, who serves as the chairperson, deliberates on major issues. We support environment managers on site to comply with environmental laws and internal standards, and promote environmental management with relevant departments in each area, such as green procurement and eco-friendly technology development.

Environmental Data Management System

To ensure the accuracy and efficiency of data collection, LOTTE E&C has incorporated major environmental data such as waste, GHG, air and water quality, noise and vibration into the ERP system and monitor them. In addition, we provide guidelines on how to input greenhouse gas and water information to increase the accuracy and credibility of the environmental data. We also take inspections from LOTTE Group on environmental management on a half-year basis to keep track of environmental data management.

Review and Evaluation of Environmental Performance

LOTTE E&C monitors the environmental management on site and find areas of improvement under the leadership of the Research and Development Institute. The status and conditions of on-site environmental management are regularly inspected and assessed, and the results are reflected in the KPI and BSC¹⁾ of corresponding sites and teams. By reflecting the results of the BSC evaluation in the employee evaluation linked to compensation, we encourage environmental management practice by matching the company's goals with the individual's goals. In addition, the top two sites with best practices of environmental management are selected as 'excellent environmental management sites' and are rewarded every year. In particular, LOTTE E&C participates in the construction environment best practice contest held by the Construction Environment Association every year to encourage voluntary environmental improvement activities on site, and additional points are applied to the BSC evaluation when the team wins in the contest.

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.

Employee Training on Environmental Management

Starting from 2021, LOTTE E&C conducts employee training on environmental management for on-site managers to enhance their management capabilities. The education and training were conducted virtually, covering the environmental management issues, amendments in environmental regulations, precautions when installing and operating environmental facilities, cases of violation of environmental laws and regulations, and operation of the environmental management system. In 2022, a total of 123 employees, including environmental practitioners, engaged in training across 114 sites. Moving forward, we intend to bolster our environmental management standards through ongoing training efforts. Furthermore, each site plans to provide training session for employees, partner companies, and actual workers to prevent environmental pollution and damage to residents for field.



Number of sites participated in environmental education

114



Number of employees who took environmental education

123



Minimizing Environmental Impact

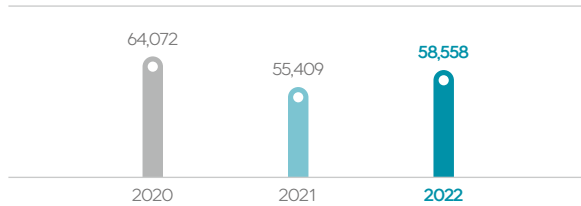
Activities to Minimize Environmental Impacts

Green Procurement Policy

LOTTE E&C purchases green products in the entire business cycle, since the signing of the 'Voluntary Green Procurement Agreement' in 2009. In 2022, we purchased certified green products worth KRW 58.5 billion. By operating a green procurement system, we endeavor to find qualified and certified suppliers of green products.

Green Procurement

(Unit: KRW million)



2022 Green procurement by category

(Unit: KRW million)

	HB Mark	12,293
	ECO Mark	6,824
	High-efficiency Energy Equipment	3,845
	GR Mark	1,023
	Energy Efficiency Rating 1, 2	34,573
	Saving energy	-
TOTAL		58,558

Green Projects

LOTTE E&C carries out projects defined as green in accordance with K-Taxonomy Guidelines. Especially Plant Division focuses on hydrogen infrastructure, electric vehicle battery materials, recycling and biodegradable plastic industries, as well as renewable energy industries such as solar and wind power.

Green projects by category

(Unit: cases)

Electric vehicle battery materials	Recycling and biodegradable plastic	Biomass	Reduction of carbon emission	Carbon capture	Solar power
2	1	4	3	1	1

Selecting ESG-focused Worksites

LOTTE E&C is planning to select new sites for investment that is in line with our ESG management goal and implement separate business management and fund management measures, specific to the sites. In 2022, we have established "Selection&Operation Process of Eligible Projects" to select ESG sites. In particular, we aim to increase the credibility of project evaluation and selection by managing internal documents, which include meeting minutes on project selection process and results.

Project evaluation and selection process

Type	Discover Projects	Review ESG Competence	Review Financial Product Suitability	Selection of Projects
Division in Charge	Business teams of each divisions, Cost center	ESG Team in Strategic Planning Division	Financial Administration Department	Sustainability Secretariat of Sustainability Council
Major Task	<ul style="list-style-type: none"> Discover projects Improve existing business process (ESG integration) 	<ul style="list-style-type: none"> Check ESG competency 	<ul style="list-style-type: none"> Fund characteristics Size of fund Input schedule Establish measures to manage fund 	<ul style="list-style-type: none"> Review and selection of projects subject to ESG integration

Eco-friendly Investment

LOTTE E&C issued sustainable bond worth KRW 40 billion in August 2021, and conducted a post-review in August 2022 through credit rating agency. Among the sustainable bonds, Green Bonds, used for the purpose of environmental improvement, are valued at KRW 30.2 billion and the proceeds were entirely put into the competent projects that are expected to create positive social and environmental impacts. In addition, LOTTE E&C received the highest rating, ST1, for its excellent project evaluation and selection system, proceeds management system, and disclosure quality.

Investment in sustainability bonds






Minimizing Environmental Impact

Activities to Minimize Environmental Impacts

Green Building Design and Lifecycle Management

In 2021, LOTTE E&C established eco-friendly standardization guidelines in, which are now applied to project-specific designs. In 2022, our Design Research Institute and the Research and Development Institute have jointly start developing an optimal design model for energy and cost efficiency of zero-energy apartment buildings. This initiative aims to contribute to the construction of eco-friendly cities. For each project, we conduct the green building certification system (G-SEED) and store test report files for eco-friendly materials. Over the years, we have accumulated 124 green building certifications since 2005, and we are strengthening our design capabilities for eco-friendly products by continuously recruiting personnel who have acquired the U.S. Green Building Council's professional qualification (LEED AP). Green building certification can be obtained by acquiring preliminary certification during the permitting phase and then obtaining the final certificate upon completion. For the most part, we use certified materials, but occasionally, we also develop materials through technical cooperation to meet our eco-friendly objectives.

 Number of G-SEED certification (accumulated)

124

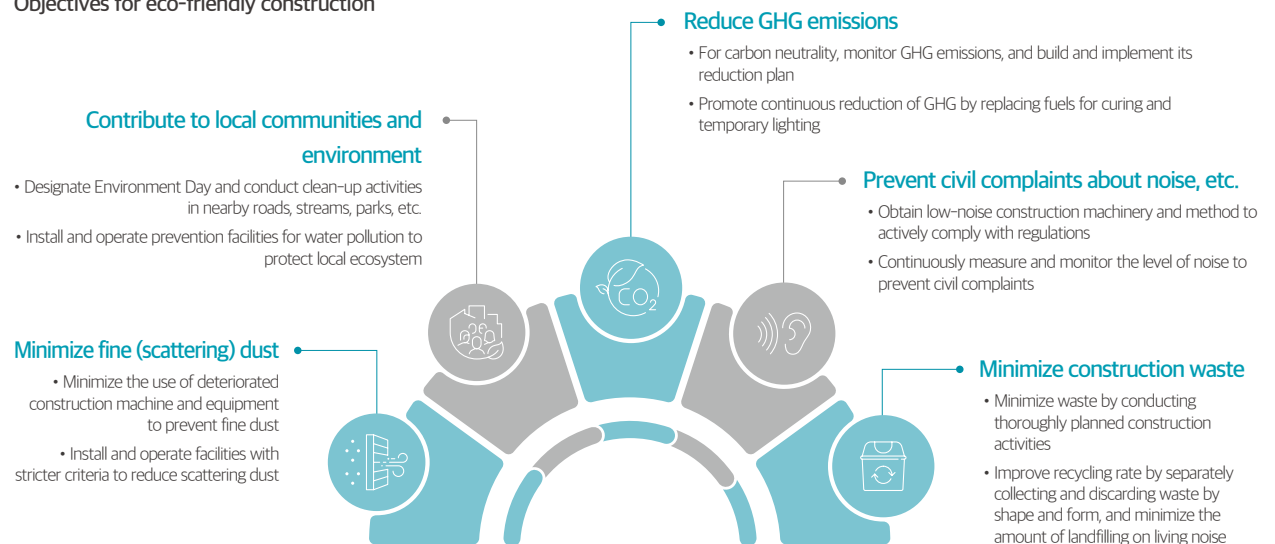
 Number of LEED AP License Holders

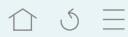
38

Environmental Risk Evaluation and Management

LOTTE E&C consistently formulates environmental management plans with the objective of mitigating the environmental effects arising from construction such as air, water, noise, vibrations, and waste production during construction. At the initiation of each project, all sites are mandated to devise and oversee an environmental management plan tailored to the specific environment and construction attributes. The implementation and operation of facilities are guided by this plan and are aligned with the government affair status to effectively reduce environmental pollution. Regular self-inspections are conducted at each site to identify and address environmental risks, and the head office conducts an annual inspection of construction sites. Especially the environmental management plan is reviewed by identifying environmental aspects by process and evaluating their importance to assess and manage environmental pollution risks. Key management targets are periodically updated to ensure timely environmental management in response to process changes. In addition, standards for minimizing environmental impacts, such as environmental impact assessment, are applied to various projects and designs are consulted with relevant organizations. Considerations include sunlight environment analysis, noise prevention measures, energy-saving design, green building certification, low-impact development, light pollution reduction, and zero-energy building certification, considering the project's scale and location. We also manage unit design and interior standards in line with health-friendly housing construction standards. Interior design and materials are organized to meet various health-friendly housing standards, including the use of building materials with low indoor air pollutant emissions, implementing flush-out and bake-out procedures, and applying eco-friendly living products. Furthermore, we operate a 'registration system for environmental management status' where information from government affairs and environmental facility installations is recorded in the ERP system. This allows us to prevent potential issues and ensure compliance with relevant regulations.

Objectives for eco-friendly construction





Minimizing Environmental Impact

Activities to Minimize Environmental Impacts

Reinforcement of Reporting Standards in Cases of Violation of Environmental Regulation

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 Quality Management Team of Research and Development Institute. Previously, our focus was limited to fines and penalties due to violations of serious environmental regulations. In 2022, we enhanced the standard for reporting, extending the scope of reporting to include any administrative measures regarding the environment such as warnings and document-basis improvement orders. Throughout 2022, no instances of environmental regulation violations were reported, except for cases involving negligence fines or minor offenses. Any issues identified during internal inspections, including those resulting in on-site improvement orders, were promptly addressed and resolved directly at the site.

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 to actively participate in voluntary cleaning activities.

Management of Raw and Subsidiary Materials

LOTTE E&C's usage of raw and subsidiary materials depends on the number of design specifications for each construction project and the progress of the process. The quantity of raw and subsidiary materials is adjusted to match the final design quantity, considering potential design modifications that may arise during the construction process.

Development of Zero-energy Buildings

LOTTE E&C is increasing the energy efficiency and self-reliance of buildings by developing and implementing zero-energy building technologies. Particularly LOTTE E&C applies passive technologies such as insulation, thermal bridges, and airtightness to minimize energy losses in buildings, high-efficiency equipment, active technologies such as LED lighting density optimization and building energy monitoring (BEMS), and renewable energy systems such as photovoltaic, geothermal, hydrothermal, and fuel cells to achieve energy independence. In addition, we construct high-efficiency buildings by establishing guidelines to internalize design and construction know-how. Furthermore, we actively introduce geothermal and broad hydrothermal heat pump systems to reduce energy consumption in the operation of buildings and improve energy efficiency for heating and cooling. Additionally, LOTTE E&C is verifying the power generation performance and constructability of building elevation integrated photovoltaic systems to maximize the power generated by the building itself. We have set up a residential environment demonstration center (a research facility) dedicated to validating zero-energy technologies. Concurrently, we are in the process of developing a Grade 1 zero-energy building design. Moving forward, we plan to encompass integrating energy production and consumption monitoring, utilizing this facility as a testing ground for zero-energy buildings capable of self-generating 100% of the electricity they consume.

Minimize Scattering Dust

The scattering dust is generated mainly in sites during construction and demolition processes, and this could cause damage to 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 equipment¹⁾ 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

Common measures to reduce fine dust

- 01 Reduce construction work causing excessive scattering dust
- 02 Spray water and install dust nets
- 03 Minimize the use of deteriorated construction machine and equipment
- 04 Install fine dust meters, take periodic measurements, and display the fine dust level
- 05 Support cleaning of nearby roads



Minimizing Environmental Impact

Activities to Minimize Environmental Impacts

Waste Management

In accordance with the Act on the Construction Waste Recycling Promotion, LOTTE E&C segregates and disposes of waste generated at construction sites based on its type and treatment requirements. We entrust waste disposal, except for some materials that we recycle on-site, to third-party contractors through a contractual agreement involving a transporter and a treatment company. We conduct monthly assessments of waste disposal and handling at each site to ensure the lawful treatment of construction waste. Once the monthly discharge volume is verified, we input the findings into our company-wide system. These results are aggregated semi-annually to monitor the cumulative discharge volume comprehensively. Acknowledging the substantial impact of environmentally friendly treatment and reutilization of construction waste on transitioning towards a circular economy society, we established a voluntary agreement with the Ministry of Environment in 2022. This agreement is aimed at curbing mixed waste discharge and storage while enhancing awareness regarding proper waste management, right from the stage of waste disposal at construction sites. Our commitment extends to adhering to waste-related regulations and laws, as well as overseeing the appropriate discharge and storage of construction waste.

① Construction Waste

To minimize waste generation, LOTTE E&C carries out construction work based on thorough planning that reduces improper construction. We also classify and discard 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. We work to realize sustainable construction by overcoming the resource limitations of construction materials and expanding recycling even at the disposal stage.

Recycled Construction Waste Management Performance

Type	2020	2021	2022
Amount of waste recycled	453,242	586,529 ¹⁾	629,134
Waste recycling rate	97.18	99.52	99.92

1) Data revised due to changes in calculation criteria

② 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 nourished 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. We aim to achieve sustainable construction by overcoming the limitations of construction materials and promoting recycling even at the disposal stage.

Noise Management

When using noise-generating equipment and machinery at sites, LOTTE E&C 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 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.

Water Management

LOTTE E&C acknowledges the significance of water throughout the construction process. We oversee the complete cycle of water intake, utilization, and discharge to prevent environmental pollution stemming from water usage at both business and construction sites. Our approach involves monitoring water consumption through the examination of bills issued to each business and construction site, with the total usage being compiled on a semi-annual basis.

① Turbid Water Management

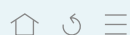
When construction activities produce turbid water due to rainfall or underground water, LOTTE E&C treats the turbid water by passing it through soil runoff prevention facilities. Through this treatment suspended solids are deposited, and only clean water can be discharged. In this process, we pay extra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

② 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.

③ Wastewater Management

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 necessary 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.



Minimizing Environmental Impact

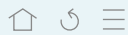
Activities to Minimize Environmental Impacts

Biodiversity Protection

Lotte E&C is dedicated to mitigating its ecological footprint as it conducts its business operations. We proactively anticipate both direct and indirect effects on the natural and living environment, encompassing factors such as air and water quality, noise and vibration, and alterations to topography, along with potential disruptions to animal and plant ecosystems. Subsequently, we develop response strategies founded on the outcomes of environmental impact assessments, aimed at enhancing biodiversity and minimizing negative ecological ramifications.

Biodiversity Protection Activities

Type Sites	Legally Protected Species					Protection activities
	Birds	Mammals	Fish	Amphibians and reptiles	Plants	
Changwon, Facilities for generating bioenergy from foodwaste leachate	Goshawk (legally protected species)	Wildcat (legally protected species)	-	-	-	<ul style="list-style-type: none"> • Install temporary soundproof panel • Avoid nighttime work
Hwado - Yangpyeong Section	Whooper swan (endangered, natural monument), Mandarin duck, Kestrel (natural monument)	Otter (Critically endangered, natural monument), marten, wildcat (endangered)	Chinese minnow, Korean dark chub, common minnow, pale chub, Siberian stone loach and 30 other species in 11 families	Narrow-mouth frog, Korean golden frog, Korean terrapin (endangered)	-	<ul style="list-style-type: none"> • Install eco-corridor • Installation of wildlife crossings and fences • Installation of silt protectors
West Inland Expressway	-	-	-	Suwon-tree frog (Critically endangered), Seoul frog (Endangered)	-	<ul style="list-style-type: none"> • Establish alternative habitat and support the move to the habitat (established a 3,971 square meters of alternative habitat for legally protected species)
Section 2-1 of Gwangju Metropolitan Transit	Mandarin duck (natural monument), Whooper swan, Osprey, Kestrel, Long-billed plover, Scope owl	Otter, wildcat	-	-	Invasive species (bur cucumber, ragweed, Frost aster, Prickly lettuce, Tall golden-rod, Joint grass)	<ul style="list-style-type: none"> • Reduce scattering dust and air pollutant • Avoid nighttime work and use low-noise and low-vibration equipment • Phased project planning to avoid habitat displacement • Avoid construction work in rainy seasons
Section 1 of Aphae - Hwawon	Osprey (endangered), Kestrel, Oyster bird (natural monument, endangered)	Otter, wildcat	-	Narrow-mouth frog (endangered)	East Asian shield sundew (endangered)	<ul style="list-style-type: none"> • Install facilities such as drain system • Install vegetated swale • Monitor legally protected species • Remove invasive species



Securing New Growth Engine

Research and Development (R&D) System

LOTTE E&C remains committed to reinforcing its research and development capabilities to support the company's innovative management, enhance global technology competitiveness, secure future growth engines, reduce costs, and shorten construction periods. These endeavors are spearheaded by LOTTE E&C's Research and Development Institute, which was initially established in September 1986. The Research and Development Institute plays crucial role as the Think Tank of the organization to fulfil LOTTE E&C's vision to become 'Lifetime Value Creator.' Leveraging our extensive construction experience and business management capabilities, we are actively securing core technologies for new future construction projects, such as urban air traffic (UAM) technology, submarine city construction technology, and expanding into the smart charging business for electric vehicles in apartment buildings. We are opening up new horizons for high-value future construction projects by developing CCUS, hydrogen energy, and eco-friendly technologies to achieve low-carbon green growth. In particular, through continuous creative and innovative thinking, we are diversifying our business areas and securing value chains by converging with new areas such as the environment and IT industries going beyond the existing construction industry. We are enhancing our global technological foundation by broadening our global network and forming collaborations with industry leaders and academia in pivotal strategic domains of the future construction industry. This includes the development of technology to address noise complaints, eco-friendly noise buffers, urethane boards with quasi-flammable performance, zero-energy construction, green remodeling technologies, and carbon-reducing eco-friendly cement. Through these efforts, we engage in technology research for future industries, knowledge-based global technology management, and commercialization support. We have also implemented a dedicated management process to prevent technical safety accidents on-site and address quality risks through rigorous quality control measures.

Research & Development Institute

Objectives

A Year of Re-emergence through Quality Management and Improvement of Management System
Improving the R&D system through digital quantification of work and discovery of future businesses

Detailed tasks

Swifter on-site ENG, strengthen execution **Strategize R&D to secure technological competitiveness** **Improve quality & enhance customer satisfaction**

Detailed strategy

<p>Support for entering technology-linked businesses</p> <ul style="list-style-type: none"> • BIM • PC method (Precast Concrete) • Modular construction 	<p>Synergy with the Group's new growing businesses</p> <ul style="list-style-type: none"> • Develop CCUS & Hydrogen Energy Technology • Participate in mobility (UAM) technology development and demonstration projects • Develop green remodeling technology 	<p>Development of customer-friendly technology (CFS)</p> <ul style="list-style-type: none"> • Advance noise reduction technology • Introduce clean housing technology (water/air quality) • Develop specialized products for apartment buildings
<p>Strengthen risk management in difficult work sites</p> <ul style="list-style-type: none"> • Pre ENG, centralization • Technical risk elimination of remodeling site • Comprehensive ENG support for overseas sites 	<p>Securing technologies for future markets</p> <ul style="list-style-type: none"> • Smart technology R&D • Green Tech (ZEB, environmentally friendly materials) 	<p>Strengthening company-wide quality&environmental activities</p> <ul style="list-style-type: none"> • Strengthen quality&environmental management capabilities • Advance operating system • Strengthen risk prevention activities

R&D Expenses
KRW 3,300 million

R&D Target
Maintain 0.05% of sales

Securing R&D personnel
More than 5% of the number of full-time employees



Securing New Growth Engine

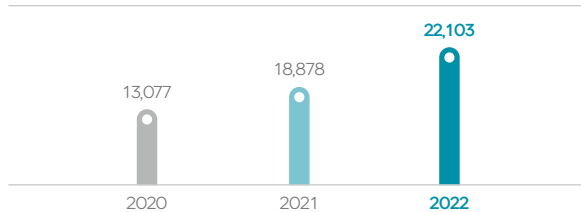
Research and Development (R&D) System

Operation of Eco Energy TFT

LOTTE E&C operates the Eco Energy TFT under the Research and Development Institute to promote the development of zero-energy building technologies, carbon reduction technologies, and hydrogen/renewable energy technologies, aimed at achieving carbon neutrality by 2050. The TFT is developing zero-energy building design technology and green remodeling technology to respond to the zero-energy building mandate and achieve carbon neutrality goal. Additionally, we are promoting the development of hydrogen energy production/utilization technology and carbon capture technology through collaboration with LOTTE GROUP's including LOTTE Chemical. In 2022, we laid out a comprehensive roadmap for the development of eco-friendly technologies. Aligning with this roadmap, we are actively progressing with strategic initiatives, low-carbon technologies, and research into future energy technologies.

Green R&D investments

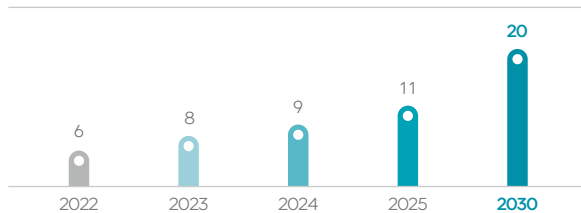
(Unit: KRW 10 thousand)



* Calculated based on R&D expense for technology development including consignment expense

Green technology development objectives

(Unit: 100 million)



* Calculated based on the sum of Net R&D cost and R&D labor cost

Eco Energy TFT

Vision

Carbon zero begins now, the future begins now!

Promotion Strategy

Preparation for future market and development of new business

Reinforce technology competitiveness

Improve quality and fulfill customer satisfaction

Targets

Hydrogen production

- Develop production technology for developing low-carbon clean hydrogen utilizing CCUS
- Develop hydrogen for ammonia decomposition

ZEB¹⁾ Design/construction

- Develop integrated design model for ZEBs
- Standardize airtight construction technology for ZEB apartments

Insulation

- Develop green remodeling technology
- Develop automated review technology for insulation designs

Hydrogen Utilization

- Fuel cell system utilizing blue hydrogen for buildings

ZEB Elementary Technology

- Develop apartment house-specified ZEB items

Waste resources/water management

- Demonstrate smart biogas technology
- Develop integrated tap water control system

1) ZEB (Zero Energy Building): Eco-friendly buildings that minimize the energy load needed for buildings and uses new and renewable energy resources to minimize energy consumption

Securing New Growth Engine

Research and Development (R&D) System

Zero Energy Building Standard Integrated Model

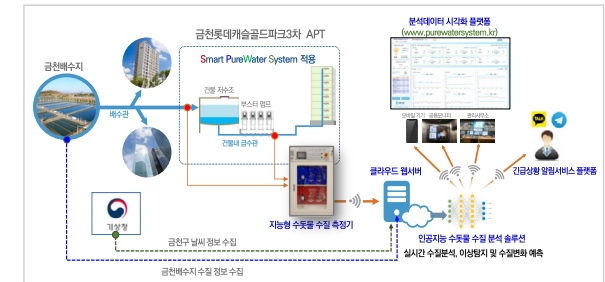
In preparation for the mandatory certification of zero-energy buildings, LOTTE E&C is building a ZEB integrated design model that incorporates our unique technology. By securing low-cost, high-quality ZEB building design and construction know-how, we can derive the optimal combination of passive, active, and renewable technology elements, and realize energy independence of more than 20% through the integrated model. By deriving the optimal model for integrated design for each level of zero-energy building certification, our aim is to mitigate the construction risks associated with zero-energy apartment buildings while enhancing their quality and affordability. We will also remain committed to pursuing zero-energy building certification to establish our expertise and credibility in green, low-carbon buildings.

Developing Airtight Construction Standards for Apartment Buildings to Realize Zero-energy Apartment Buildings

LOTTE E&C is developing an airtight construction standard for apartment buildings to improve the energy efficiency of buildings. LOTTE E&C measured airtightness performance of an apartment building completed in 2022 to identify the construction status and set priorities for each expected leakage area. In order to bolster airtightness performance through standardized construction practices, LOTTE E&C collaborated with specialized organizations and relevant departments to generate an exhaustive airtightness performance construction manual for each construction zone. In the future, LOTTE E&C will apply airtightness performance enhancement measures to apartment building sites for the implementation of zero-energy apartment buildings.

Developing a Real-time Tap Water Quality Diagnosis System for Apartment Buildings

LOTTE E&C is conducting a field application study of an 'AI-based smart tap water quality measurement system' for the first time in the Korean construction industry. This technology measures the quality of tap water distributed to residents and provides tap water quality information to the residents. LOTTE E&C has signed a R&D cooperation agreement with MSTEC to install the system at Lotte Castle Gold Park 3rd Complex in Geumcheon from March 2022, and is conducting research to evaluate the system's performance. The technology consists of an "intelligent tap water quality meter" that can measure six water quality items (turbidity, electrical conductivity, dissolved solids, hydrogen ion concentration, and water temperature), a "cloud computing web server" that can build big data related to water quality, an "analytical data visualization platform" that allows users to check water quality information through a mobile app, and an "emergency notification service platform". Moving forward, LOTTE E&C plans to expand the application of such technology to its apartment construction projects.



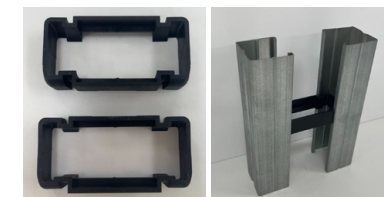
Process of smart tap water quality measurement system

Application of High Insulation System on Drywalls

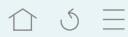
LOTTE E&C is developing a highly insulated, lightweight dry wall system using a thermal-bridge reducing stud structure. For high-rise buildings, lightweight walls are required to ensure stability. Traditional drywall, however, posed a challenge of thermal bridging due to heat loss from studs in areas exposed to the external environment. To address this issue, we developed and implemented special clips that can be inserted in the wall for separating studs, effectively reducing thermal bridging, and enhancing thermal insulation. This improvement significantly boosts the energy efficiency of the building. Since 2020, we have actively participated in the Energy Technology Development Project, which is sponsored by the Ministry of Trade, Industry, and Energy. As part of our ongoing efforts, we are planning to replace conventional lightweight drywall that is exposed to external elements with a high-insulation drywall system, aimed at minimizing energy loss in buildings.



AI-based smart tap water quality measurement system



A sample connecting clip

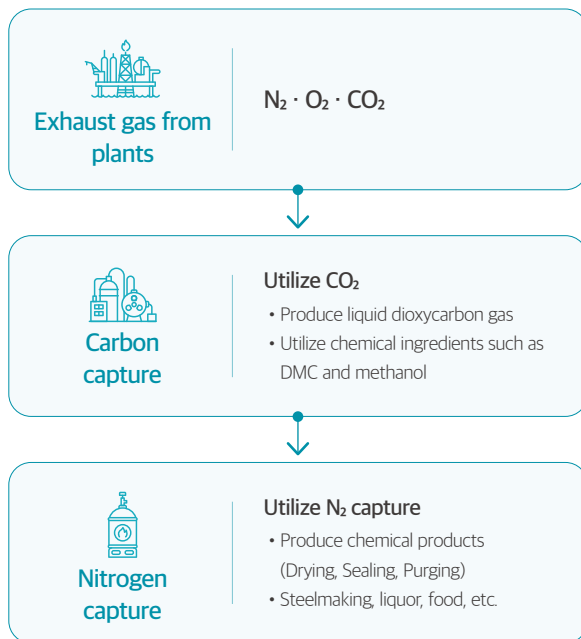


Securing New Growth Engine

Research and Development (R&D) System

High-purity Nitrogen Production Technology Utilizing Carbon Capture Byproducts

LOTTE E&C is jointly conducting research with LOTTE Chemical to produce high-purity nitrogen by utilizing exhaust gas emitted from carbon capture facilities, aiming to expand carbon capture technology and secure future business competitiveness. LOTTE E&C signed a joint research MOU with Lotte Chemical in July 2022 and is building a demonstration facility for research on the nitrogen production process that can be connected to a carbon capture facility. This facility will serve as a platform for researching the nitrogen production process, which can be seamlessly integrated with a carbon capture facility. The ultimate aim of this research is to facilitate the commercialization and technology licensing of dual carbon and nitrogen capture methods.



Low-Carbon Hydration Heat-lowering Concrete

LOTTE E&C has successfully decreased the utilization of cement, a significant emitter of CO₂, and introduced low-carbon hydration heat-lowering concrete, using industrial by-products as a binder. The technology adapted the 'high sulfate cement of BS EN 15743' which uses 95% of the total binding material as the developed product and only 5% of the standard Portland cement, resulting in an approximate 90% reduction in carbon dioxide per cubic meter of ready-mixed concrete produced. In addition, the heat of hydration of mass concrete generated during concrete curing is reduced by 20-30%, reducing the risk of cracking due to internal and external temperature differences by 20%. Additionally, the saltwater resistance¹⁾ is increased by 15 times compared to formulations using only OPC²⁾, increasing the service life by 50 years. Going forward, we aim to contribute to creating a healthy and safe environment by applying the technology to the foundations of buildings and large underground structures

- 1) **Saltwater resistance:** Resistance to corrosion of concrete internal reinforcement in structures placed in marine environments under the influence of salt.
- 2) **OPC:** Ordinary Portland Cement, usually Portland cement, commonly used cement.

Compared to conventional cement Reduces carbon by 90% (10,580 tons)	Thermal cracking due to Hydration heat Reduced more than 20%
Shrinkage crack Reduced by 30%	Salt-resistant durability Increased by 50 yrs

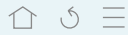
Carbon footprint by cement type

Type	OPC rate	Carbon footprint*	/OPC
[KS] Ordinary Portland Cement Type 1	100%	0.9263	1
[KS] Slag cement Type 2	50%	0.5037	0.54
[Jamsil Lotte World Tower]	18.5%	0.2155	0.23
[K mark] Low carbon eco-friendly cement	4 ~ 5%	0.1030	0.11

* Calculated based on kg CO₂eq per 1kg

Smart Farm Utilizing Fuel Cell Generated CO₂

Since 2021, LOTTE E&C has been participating in the Renewable Energy Core Technology Development Project led by the Ministry of Trade, Industry and Energy to develop a smart farm system applicable to apartment buildings that can capture and utilize carbon dioxide (CO₂) generated by fuel cells for buildings. The technology contributes to reducing carbon dioxide emissions generated during the fuel cell production process. LOTTE E&C has additionally confirmed the effectiveness of promoting plant growth. Moving forward, we will discover various ways to utilize smart farms in buildings, such as operating user experience facilities, to enhance eco-friendly practices.



Securing New Growth Engine

Research and Development (R&D) System

LOTTE E&C Living Environment Demonstration Center

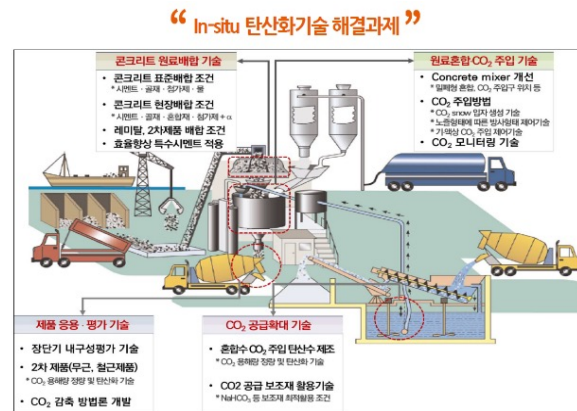
LOTTE E&C is actively preparing the establishment of the LOTTE E&C Living Environment Demonstration Center, a testing ground designed for the advancement, demonstration, and monitoring of zero-energy building technologies and noise reduction solutions for apartments. By focusing on zero-energy building technologies, the center is preparing for the climate change crisis and policy changes such as mandatory certification of zero-energy buildings. Additionally, it promotes the standardization and advancement of verification for core eco-friendly technologies such as cooling energy, heating energy, renewable energy, smart farms using carbon, and integrated monitoring systems. The Center is scheduled to be constructed by 2025. Especially by demonstrating technologies applied in Busan Centum project, we plan to secure the quality of curtain walls, insulation materials, photovoltaics, and heating and cooling systems, strengthen technical capabilities, and verify technical issues in the design, construction, and operation phases. In addition, the Apartment Noise Test Building in the Living Environment Demonstration Center conducts direct experience with apartment noise and research and demonstration of related technologies to solve the problem of apartment noise, which is arising social issue. By configuring different structural types and slab thicknesses for each room in the test building, development and verification of apartment noise reduction technologies become possible under various conditions. LOTTE E&C is planning to continue to apply the developed technologies and construction methods to apartment buildings.



- Energy efficiency rating for buildings in design stage: 1+++
- Zero Energy Building: Grade 1
- Preliminary certification of excellent grade for green building certification

Development of Captured Carbon Infused Concrete

LOTTE E&C is actively advancing its in-situ carbonizing concrete technology as a response to the government's "2050 carbon neutrality" objective. Our focus is on establishing a low-carbon and environmentally friendly concrete manufacturing process that integrates CO₂ capture and utilization technology. By infusing captured CO₂ into the concrete production, we enhance its strength and reduce cement usage by 3% compared to conventional concrete formulations of equivalent strength. This innovation not only diminishes carbon emissions from cement manufacturing but also amplifies our ESG clean technology prowess through CO₂ utilization. Furthermore, this cutting-edge technique has the capacity to capture over 0.4 kg of CO₂ per cubic meter of concrete mix, generally used in construction industry, like ready-mixed and precast products. This serves as a significant measure to mitigate additional CO₂ emissions. Upon completion, this technology will play a role in obtaining green building certifications for utilizing eco-friendly products, and is planned to achieve validation from external certification bodies on its contribution to greenhouse gas reduction.



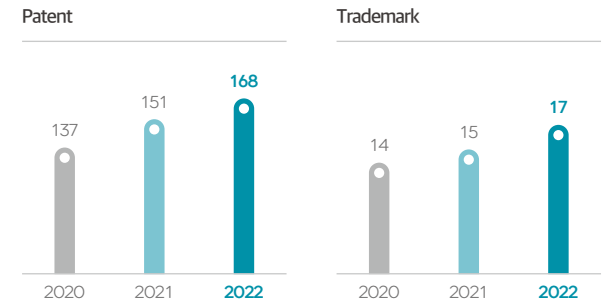
Schematic diagram of carbon capture carbon injection concrete manufacturing technology

Intellectual Property Rights

LOTTE E&C constantly researches and challenges to secure the best quality and technology. In 2022, we applied for a total of 22 patents and registered 16 patents. The status of our intellectual property rights is disclosed on our website.

* LOTTE E&C's Intellectual Property Rights

Intellectual Property Status





PEOPLE | SAFE AND HEALTHY WORKPLACE

LOTTE E&C is diligently working at sites across the globe, making significant efforts to contribute to the betterment of humanity and to bring our vision of being a 'Lifetime Value Creator' to fruition. Our focus remains on establishing comfortable and secure work environments, with an ultimate objective of achieving 'ZERO fall fatalities'. Guided by the management philosophy that 'Happy employees make happy customers', the evolution of LOTTE E&C will persist.

SAFETY AND HEALTH OF EMPLOYEES	062
HUMAN RESOURCE MANAGEMENT	076
WELFARE BENEFITS	080

2022 KEY PERFORMANCE

Safety and Health of Employees

Secured 29 staff and 443 managers dedicated to improving safety and health of employees

- 61.1% increase in dedicated safety and health staff year-over-year
- 16.9% increase in the number of safety and health managers year-over-year

Held 12 meetings led by Employees' Council for Safety and Health which deliberated and resolved 24 cases

Completed 100% of nonconformities through safety and health inspections

Developed safety and health education for partners

Human Resource Management

49% year-over-year increase in employee training costs

An average of 123 hours of training per employee

Diverse new hires (new/experienced, veterans, disabled, etc.)

Welfare Benefits

Conducted an investigation of employee perceptions of corporate culture

Held 4 labor-management council meetings which deliberated and resolved 22 cases

Adopted and applied 21 out of 42 suggestions through the ERRC Employee Suggestion Campaign

Safety and Health of Employees

Under the safety and health mission of 'Ensuring a safe working environment with zero loss of life by securing safety and health responsibilities', LOTTE E&C aims for zero falls and fatal accidents at construction sites through continuous investment in safety and health as well as thorough implementation of safety and health policies. We actively promote the unified safety management across all construction sites by improving the level of safety and health awareness of not only among our employees but also among our partner companies.



- Strengthening Corporate Responsibility for Safety and Health Management with the Implementation of the Serious Accident Punishment Act
- Need to address the risk of accidents at construction sites

- Social/Environmental Impact ●●●●●
- Financial impact ●●●●●



Governance

- Operate and advance Employees' Council for Safety and Health led by CSO
- Report on agenda about safety and environment and review/resolve the agenda through Safety Environment Management Subcommittee

Strategy

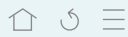
- Expand the safety and health budget to identify site improvements and advance management
- Improve the comprehensive review method for safety management at construction sites
- Conduct emergency response training twice a year to address potential major industrial accidents

Risk Management

- Establish recurrence prevention measures and post-accident risk assessment system
- Manage integrated risk index utilizing big data
- Develop AI-based risk assessment program
- Develop smart safety and health technology

Metrics & Targets

- A total of 24 resolutions passed by Employees' Council for Safety and Health
- Recruited 29 dedicated safety and health personnel and 443 safety and health managers
- 101 sites and 2,312 employees completed safety training as of November 2022



Safety and Health of Employees

Safety and Health Management System

LOTTE E&C places safety and health management at the forefront of all management endeavors, reflecting our core philosophy of upholding the value of life. In order to create a comfortable and safe workplace, we have established and thoroughly implemented a safety and health policy on 'continuous investment in safety and health and providing a working environment without loss of life', and disclosed the safety and health management policy and safety and health management regulations on our website. The safety and health policy is applied to all employees of the company in accordance with Article 2 (Scope of Application) of the Safety and Health Management Regulations, and is equally applicable to all workers and partners who enter the workplace for business purposes. Under the safety and health mission of 'Securing safety and health obligations and providing a safe working environment without loss of life', we have declared and practiced 'ZERO falls and fatal accidents' since 2022. To achieve this, we are improving the safety and health management system, expanding the safety investment budget and executing it 100%. Furthermore, LOTTE E&C is actively expanding SMART safety and health technologies such as ABCI¹⁾ to prevent major accidents. We strive to encourage safety and health management activities by incorporating safety and health management indicators into KPI and BSC²⁾ evaluation. We also maintain KOSHA-MS and ISO 45001 certifications by conducting annual reviews on safe business activities.

1) ABCI: Ai, Big Data, Cloud, IoT

2) BSC (Balanced Score Card): A system that manages performance by deriving performance indicators from financial, customer, internal process, learning and growth perspectives with the aim of realizing the organization's vision and strategic goals.

Safety and Health Management System

Mission

By complying the safety and health requirements, we provide a safe workplace without loss of life.

Goal

Zero Accidental Falls to Death (Injury cases caused by falls: Below 5)

Detailed strategies

Improve new management system for safety and health

Managerial leadership, communication, checking employees' engagement, reporting system, continuous improvement

① Management takes the initiative in preventing safety accidents by making safety and health the core value of management activities.

④ Find hazards and risk factors continuously and improve them immediately through risk evaluation.

Increase the investment budget for safety and execute it all

Execution of mid- and long term investment budgets, installation of safety facilities, Providing budgetary support for sites

② Make an active investment in safety and health so that employees are able to feel the changes.

⑤ Listen to employees and have them participate in activities for safety and health.

Expand the application of SMART technologies for safety and health

Establishing ABCI, etc. (Ai, Big Data, Cloud, IoT)

③ Never accelerate the construction period or cut down costs when safety is not secured.

⑥ Raise awareness of safety by providing employees with appropriate education and training.

Safety and Health Management System (KOSHA-MS, ISO 45001)

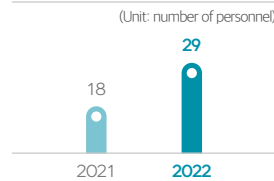
Safety and Health of Employees

Reinforcing Safety and Health Governance

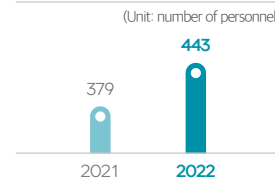
To practice comprehensive safety and health management, LOTTE E&C operates the Safety and Health Management Office, a dedicated safety and health organization under the CEO, which consists of the Safety and Health Operation Team, Education and Training Team, and Prevention and Assessment Team. Each business division also has a safety team under the general manager to proactively manage safety accidents that may occur on site. In 2022, we strengthened the organization and manpower dedicated to safety and health to respond to the Serious Accident Punishment Act and effectively prevent safety accidents. We are planning to appoint a Chief Safety Officer (CSO) to grant swift decision-making authority on safety and health accident prevention, including manpower and budget, and strengthen safety and health management in accordance with the implementation of the Serious Accidents Punishment Act. In addition, we reorganized the safety and health organization at the headquarters to be more optimized for safety and health risk management considering its capabilities and job functions, and expanded the number of relevant personnel from 18 to 29. By reorganizing the into a function-oriented organization with planning, inspection, and education team, we strengthened our execution capabilities to enable integrated operation. In fiscal 2022, we recruited 43 safety and health professionals, expanded the number of safety and health managers from 379 to 443, and improved the ratio of full-time safety employees from 30% to 42%. The Safety and Health Management Office reports its plans and performance on safety and health management to the BOD every year, and reports the status of relevant measures taken to the CEO and management through the monthly safety and health management meeting.

Reinforcement of safety and health manpower

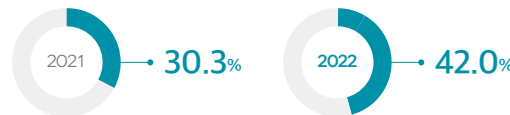
Number of dedicated safety and health personnel



Number of dedicated safety and health managers



Ratio of full-time safety and health personnel



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 employment opinions, performance, results and future plans regarding the company's safety and health management activities and identify areas for improvement.

Key agenda of safety and health management meetings

- Current status of industrial accidents
- Pending issues about safety and health
- Performance of safety and health activities
- Policy changes
- Actions needed to comply with the requirements of safety reporting

Employees' Council for Safety and Health

In November 2021, LOTTE E&C established the Employees' Council for Safety and Health to review and make decisions regarding organization status, H&R issues, budget and policies of safety and health. Hosted by the Chief Safety Officer (CSO), the Council is held every month where executives across various divisions such as HR, Legal, and Outsourcing and executives in charge of safety management, representing each business division to share opinions and hear voices from the on-site manager of each business division. Additionally, the Council collects opinions from safety and health management personnel through diverse communication channels to support the worksites to effectively practice accident prevention measures.

Performance of Employees' Council for safety and health (2022.01~2022.12)

Resolved matters	24
Number of Council held	12
Key agenda	<ol style="list-style-type: none"> 1. Company-wide labor and budgetary commitments 2. Breakdown of partner safety management costs and labor costs 3. Other matters related to safety and health management



Employees' Council for Safety and Health

Safety and Health of Employees

Reinforcing Safety and Health Governance

Random Inspection on Site Safety by Executives

LOTTE E&C has been carrying out random inspections on site safety by executives since 2019 to raise the awareness of safety and practical improvements in managing safety and health-related risks. The entire executives take part in safety and health management to identify potential risk factors and come up with measures to make immediate improvement. In 2022, a total of 39 executives conducted 78 random inspections on sites.

Inspection process

- 01 **Preparation** | Understand(major tasks/status)
- 02 **Safety Inspection** | Use Checklist
- 03 **Debrief and share** | Safety Evaluation
- 04 **Improve and report** | On-site → Head office

Safety Communication Day

In order to fulfill the safety and health management responsibility of the management in accordance with Articles 4 and 5 of the Serious Accidents Punishment Act, LOTTE E&C's CEO and executives visit sites to inspect the on-site safety management and listen to the opinions of workers through safety and health meetings. In 2022, LOTTE E&C held a total of 10 safety communication days to inspect the status of safety and health management implementation, working environment, and orders at the site, and took immediate action on matters requiring improvement.

Operation status of Safety Communication Day

Housing	Civil Works	Plant	Architecture
5	2	1	2



Safety Communication Day (Onsite Inspection)



Safety Communication Day (Debrief and share)



Before and after removing hazardous factors (non-slip measures near staircases)

Expanding the Budget for Safety and Health Management Expenses

In 2022, LOTTE E&C received approval from the BOD to expand its safety and health budget, improving the system so that the headquarters can directly support the budget required for safety management activities at the site. During the same year, a 'Worksite Support Budget' was introduced, aiming to offer assistance to sites facing shortages in safety management resources. Moreover, the 'Disaster Prevention Activity Budget' was introduced for application of smart technologies, which was also used for labor costs and rewards for accident-free or excellent activities. We plan to continue to identify areas of improvement and advance our management, aiming to achieve 100% execution of the safety investment budget.



Safety and Health of Employees

Worksite Safety and Health Management Activities

Analyzing Causes for Accidents and Finding Preventive Measures

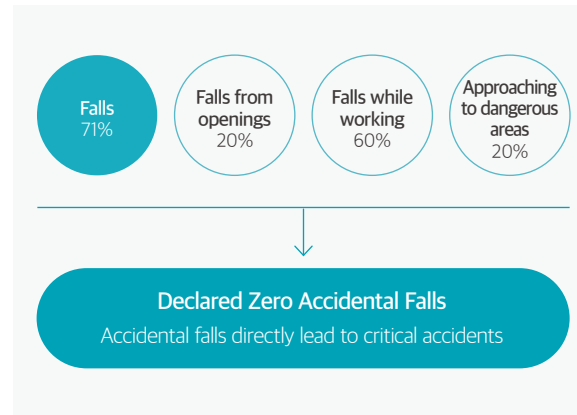
LOTTE E&C conducts thorough analyses on safety accidents and their root causes to devise preventive measures to counter them. Over the past 3 years, we have analyzed critical accidents and found a higher occurrence rate of critical accidents from accidental falls. In response, we declared our commitment to achieving Zero Accidental Falls in 2022, and have made a continuous effort to prevent accidental falls in construction sites. To prevent industrial accidents, we proactively address harmful risk factors in our processes after risk assessment, and identify additional risk factors through on-site inspections. The hazards of industrial accidents include openings, ends, fire hazards, harmful substances, equipment, tools, electricity, work platforms, and materials. Hazards identified through regular inspections are rectified in accordance with legal protocols, and measures to prevent recurrence are systematically devised through follow-up management. In addition, to prevent occupational diseases, we meticulously review the MSDS¹⁾ of hazardous substances to be handled before work, measure the work environment based on the MSDS, and conduct a basic survey on hazards related to musculoskeletal diseases. If harmful factors such as noise, dust, hazardous substances handled at work, handling of heavy objects, and improper posture that can cause serious illnesses are found, we conduct follow-up management and improvement activities through special medical examinations, industrial accident disease protection programs, and basic surveys on harmful factors for musculoskeletal diseases.

1) MSDS: Material Safety Data Sheet

Disaster Investigation Criteria



Analysis of the status of falls



Prevention measures to avoid recurring accidents

Worksite Info.	<ul style="list-style-type: none"> Site name, construction duration, progress rate, contract amount, shareholding percentage Site manager, safety team leader, site photos
Status of Damage	<ul style="list-style-type: none"> Casualties (Department of the victim, severity, etc.) Property damage
Details of Accident	<ul style="list-style-type: none"> Date, time and place of occurrence Accident type, accident status
Causes of Accident	<ul style="list-style-type: none"> Technical causes Systematic causes Administrative causes
Recurrence Prevention Measures	<ul style="list-style-type: none"> Improvement measures based on the cause of the accident
Post-accident Evaluation	<ul style="list-style-type: none"> Risk factor analysis of accidents Establishment of short- and long-term safety management measures

Management of Integrated Risk Index Utilizing Big Data

LOTTE E&C operates an integrated risk index system that utilizes big data to apply a standardized quantitative risk assessment index to all sites, aiming to improve the fact that risk factors can vary dynamically depending on factors such as construction type, progress rate, and weather conditions on-site. The risk level of each site is categorized into 70 types of management items, and data required for risk calculation is entered once a month to identify high-risk sites. High-risk sites are classified as a priority for concentrated management, with a focus on the preliminary review for additional personnel and budget allocation. We annually collect a total of 90,000 data points. Utilizing this data, we forecast changes in risk factors, such as head office, progress rate, and construction volume, which serve as the base data for establishing our systems and policies.

Calculation of Integrated Risk Index Management



Administrative resources	Risk Index ▼	<ul style="list-style-type: none"> Resources to manage hazards Safety and health manager/facility staff, etc.
Risk factor	Risk Index ▲	<ul style="list-style-type: none"> Hazards that cause accidents Hazardous tasks/hazardous sites/equipment Site conditions that increase risk Lack of budget/overstaffing, etc.

Safety and Health of Employees

Worksite Safety and Health Management Activities

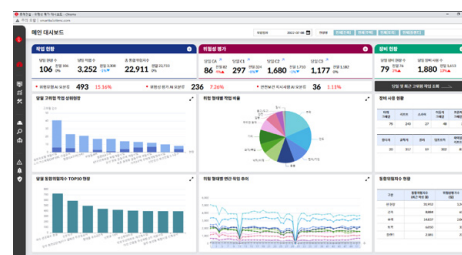
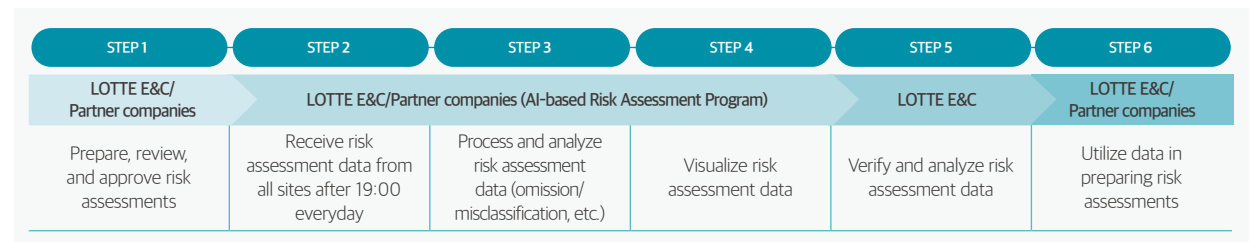
Development of AI-based Risk Evaluation Program

To diagnose and eliminate work-related hazards and risks, LOTTE E&C conducts risk assessments divided into initial, periodic, and frequent assessments. Initial risk assessments are conducted within one year from the date of construction for all projects, and regular assessments are conducted once a year after the initial risk assessment. In addition, monthly risk assessments are conducted through the Safety and Health Council before the start (resumption) of the project, and daily risk assessments are conducted through work safety meetings. In addition to these risk assessments, we identify additional hazardous risk factors through TBM activities, safety inspections, and listening to workers' opinions, and provide feedback on their implementation. Our risk assessment process is verified for effectiveness through semi-annual performance measurement and internal audits, and is reflected in the establishment of safety and health standards and goal setting. In 2022, we developed the Risk Assessment AI Program, which offers various statistics on risk assessment and the ability to receive recommendations on risk factors, safety and health instructions, risk ratings, and improvement measures based on site-specific work contents based on the risk assessment data. Through this risk assessment AI program, company-wide site risk assessments can be improved in general, and errors and omissions in site-specific risk predictions can be reduced. We are also advancing safety and health management by building a user-centered system environment rather than simple paperwork.

Risk evaluation management criteria by risk level

Level	Severity	Management criteria
CA Absolute Risk	<ul style="list-style-type: none"> Absolutely critical risk that may tarnish external image and cause loss in company's management Prohibit downgrading field risk ratings regardless of the level of risk reduction Technical errors, etc. should be reviewed and shared in advance at the company level to reduce harm and risk factors. 	<ul style="list-style-type: none"> Reflect to safety and health management target Put the agenda for Safety and Health Council Report to Business Division of Safety and Health Management Office Risk level cannot be downgraded Designate manager
C1 High Risk	<ul style="list-style-type: none"> Critical risk where new works need management until the level of risk is decreased to an acceptable level Risks must be reduced through technical, human, and systematic controls, and risk ratings are downgraded based on the level of risk reduction. 	<ul style="list-style-type: none"> Incorporated into safety and health goals Put the agenda for Safety and Health Council Designate manager
C2 Medium Risk	<ul style="list-style-type: none"> Risk that can be controlled without significant system damage Damage may occur due to negligence 	<ul style="list-style-type: none"> Manage partner companies <ul style="list-style-type: none"> provide feedback in case of inappropriate level of risk factor
C3 Low Risk	<ul style="list-style-type: none"> Minor but acceptable risk which can be managed and maintained by current practices and operational procedure 	<ul style="list-style-type: none"> Acceptable risk <ul style="list-style-type: none"> - no need for additional management

Process for AI-based Risk Assessment Program



Sample page for AI dashboard of risk assessment program

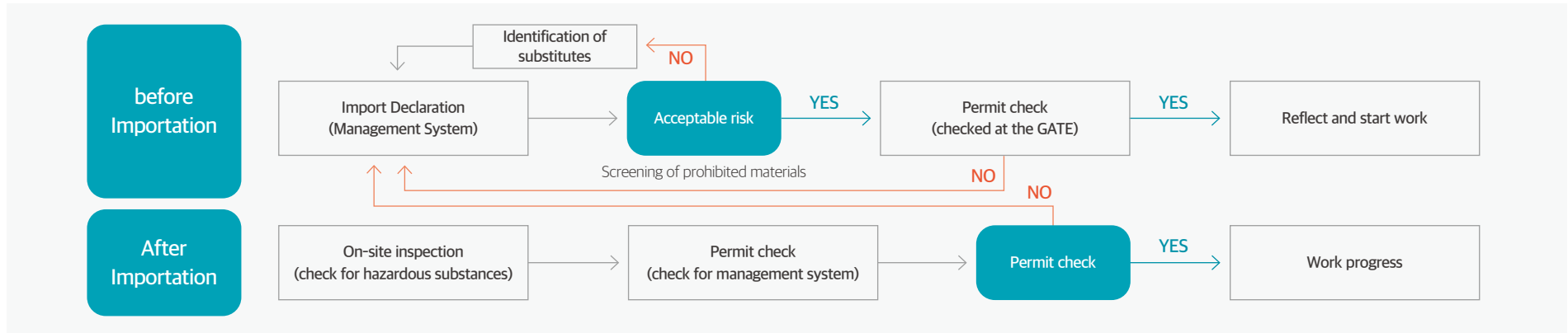
Safety and Health of Employees

Worksite Safety and Health Management Activities

Operation of the Web System for Hazardous Substance Management

LOTTE E&C has designed and currently manages the 'Web System for Hazardous Substance Management' to prevent workers from experiencing acute poisoning due to hazardous substances and to ensure compliance with relevant regulations by pre-identifying substances slated for import. During the importation of hazardous substances, we conduct thorough checks to confirm their authorization status and take punitive measures against the import or use of unauthorized substances.

Management Procedures for Carrying Hazardous Substances



Improvement in Comprehensive Review Method for On-site Safety Management and Reinforcement of Support

LOTTE E&C advanced the previous targeted safety inspection system into comprehensive review system which investigates general safety management on-site. This aims to prevent accidents more effectively by strengthening safety management level. In particular, we placed emphasis on increasing the effectiveness of the safety check by introducing interview sessions with key employees. When necessary, we extend the safety check period and conduct reassessment of the worksites that do not meet the requirements. In addition, we are devoted to increasing the effectiveness of safety management by identifying fundamental weaknesses and allocating human resources and budget.

Changes in Safety Inspection Process

Type	Content
Increase execution	<ul style="list-style-type: none"> Expansion of comprehensive inspection → quality improvement 2-3 days of intensive inspection of large construction sites
Strengthen expertise	<ul style="list-style-type: none"> Outsource inspections to qualified third-party experts Operate a dedicated inspection team (One Team)



Safety and Health Inspection in 2022

(Unit: number of cases, number of personnel)

Type	Operation of inspections		Inspection result	
	Number of inspections	Number of personnel	Number of nonconformity cases	Number of cases addressed
Internal review	56	5 ~ 6	1,078	1,078
Special inspection	477	1 ~ 2	2,910	2,910
Entrusted inspection	86	2 ~ 4	569	569
Others ¹⁾	451	1 ~ 3	-	-
Total	1,070	-	4,557	4,557

¹⁾ CSO Inspection, Executive Inspection, Early Construction Stage Inspection, etc.



Safety and Health of Employees

Worksite Safety and Health Management Activities

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 in case of occurrence. To prepare for severe industrial accidents or imminent risks that could lead to such incidents, we have established Precaution Guideline for Severe Industrial Accidents. These guidelines serve as the foundation for comprehensive and sector-specific training, ensuring a smooth process for reporting and implementing necessary measures. Comprehensive training occurs biannually, involving all employees practicing response protocols for severe industrial accidents, including scenarios like falls, fires, and equipment overturns. On the other hand, sectoral training takes place quarterly, involving employees in specific job roles and areas. During these sessions, they practice suspending work and evacuating swiftly and accurately in the face of imminent risks. Additionally, employees receive training on using AED (Automated External Defibrillator)¹⁾ and CPR (Cardiopulmonary Resuscitation)²⁾ techniques to acquire basic life-saving skills in case of emergencies. The training results conducted on-site are analyzed by the Safety and Health Management Office to identify any issues. These findings are then utilized for the creation of manuals and process improvements. Additionally, semi-annual safety and health management meetings are held to report these outcomes to the CEO.

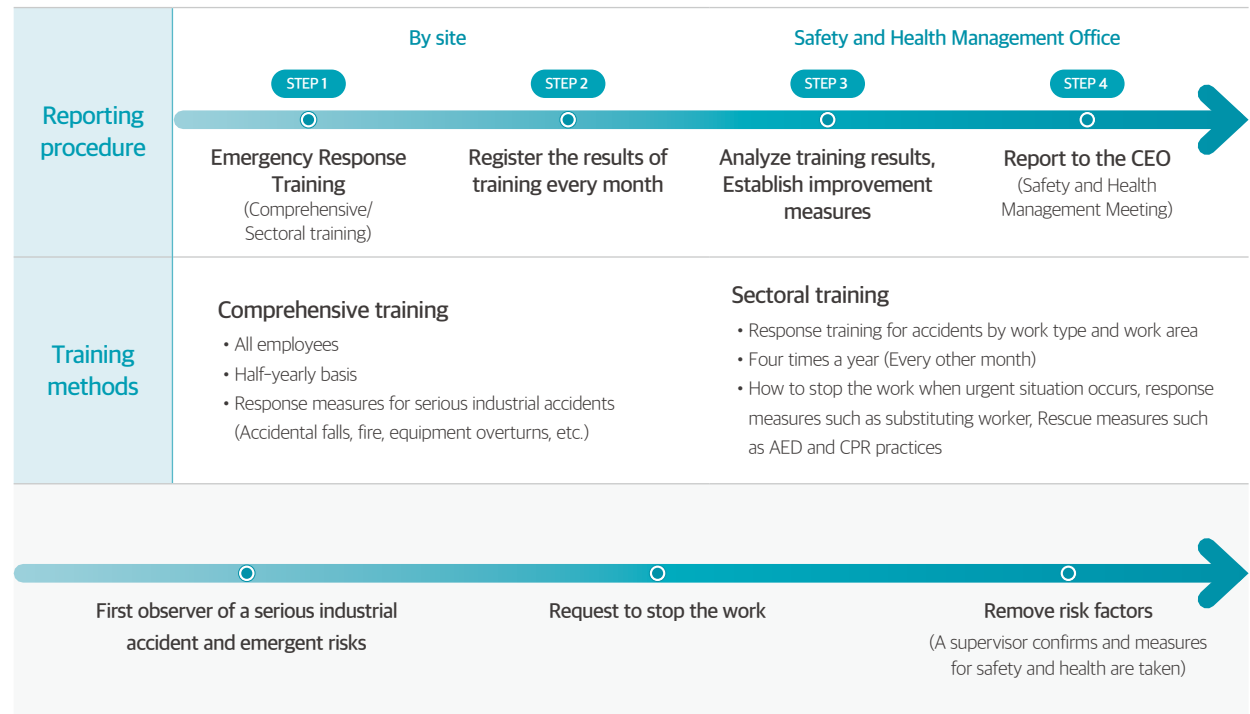
1) AED: Automated external defibrillator, a device used to deliver electric shock through the chest of a patient with sudden cardiac arrest to bring back the heart rhythm

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

Examples of urgent risks

1	When there is a high risk of accidental falls due to the lack of scaffolding, safety handrails, etc.
2	When the installation of scaffoldings, molds, supporting posts are not done properly or inappropriate materials have been used
3	When there is a high possibility of collapse due to deformation of soil, fixtures, etc.
4	When there is a possibility of fire and explosion due to combustible and flammable substance use in authorized area
5	When there is a possibility of leakage of chemical materials due to failure or deformation of facilities that handle hazardous and dangerous chemical substances
6	When oxygen concentration is not measured before working in a closed area
7	When a local air exhaust system is not installed at sealing facilities for hazardous chemical materials
8	When there is a risk of falling or collision of cranes and excavators
9	Other instances where it is deemed to be an urgent risk

Actions taken by guidelines to prepare for serious industrial accidents



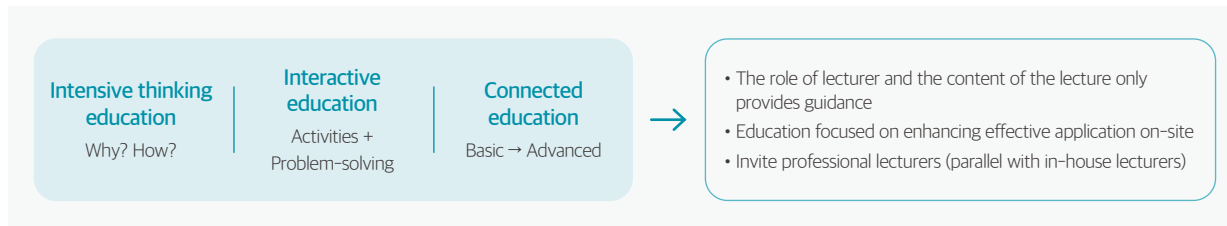
Safety and Health of Employees

Promoting the Culture of Safety and Health

Improvement of Safety and Health Education System

LOTTE E&C is operating various education curriculum with enhanced system for the employees of LOTTE E&C, our partner companies, and safety workers, aimed to enhance awareness and attitude toward safety and health as well as reinforcing management capability. In particular, we have placed our focus on promoting interactive education where employees can actively participate in resolving safety issues on-site, moving away from lecture-based education. Additionally, we worked to reflect the preference and level of knowledge of the employees by categorizing education programs by class and stage. In 2022, a total of 4,023 employees took 14 education programs, consisting of 4 courses for Leaders in safety and health management, 7 courses for safety and health managers, and 3 courses for the promotion of shared growth. We have also developed multilingual educational content for foreign employees, fulfilling tailored needs of the workers. Furthermore, we are dedicated to strengthening our education infrastructure to improve the effectiveness of the education program we offer through various efforts such as developing mobile safety and health management system, and operating safety and health experience center.

Operation methods



Main curriculum

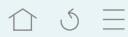
Safety and Health Leader Customized training for safety and health workers specific to their positions (4 courses)	Safety and Health Manager Safety and Health Manager Progression Training (7 courses)	Shard growth Promoting shared growth (3 courses)	Safety Experience Center Hands-on experience training (Safety On)
Regular	Professional	Level-up	Hands-on experience
① Employee (Awareness) ② Site manager (Legal) ③ Highest-ranking manager (Legal) ④ Manager of each work type (Legal)	① Introduction (New) ② Basic job training (Legal) ③ Advanced training for new team leaders (Expertise) ④ Practice-focused Equipment/Lecturer (Professional)	① Employees (Customized) ② Partner companies (Required) ③ Employees of the head office and worksites (Required)	① Employees in construction (Training) ② Employees of partner companies (Training) ③ Employee (Training)

Operation of 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 Safety Experience Center provides experiential training for employees, partners, and workers, as well as manual training for dealing with urgent risk situations in the event of a major industrial accident. As of November 2022, a total of 2,312 employees from 101 sites participated in the training sessions tailored to each class and theme, involving 14 types of experience facilities, 13 types of VR, and Venta VR. To raise workers' awareness of safety management, we provide various awards for excellent safety and health activities such as the Behavior-based Safety Management System (BBS), excellent safety and health leaders, and accident-free 365+.



Safety Experience Center



Safety and Health of Employees

Promoting the Culture of Safety and Health

Established a Safety Culture Certification System for Industry-Academia Cooperation

In December 2021, LOTTE E&C entered into an MOU with Eulji University's Department of Health, Environment, and Safety as part of the 'Safety Culture Promotion Project to Prevent Major Accidents.' This collaboration aims to impartially assess and enhance the safety culture within the organization by engaging external experts in safety culture promotion activities, with the ultimate goal of preventing major accidents. Commencing with the signing ceremony, we conducted safety culture assessments of our sites in partnership with Eulji University. Based on the assessment outcomes, we provided guidance, advice, and recognized sites with outstanding safety management with certification for excellent safety culture. In 2022, six out of seven sites obtained certification through external audits. We are committed to ongoing collaboration to further elevate safety culture awareness across our sites, partner companies, and workforce.

Strengthening Training for New Supervisors

In accordance with Article 29 of the Occupational Safety and Health Act, LOTTE E&C provides training to raise safety and health awareness before job placement. In 2022, we strengthened statutory pre-placement training and the head office training to enhance the competency of newly hired supervisors.

Fostering Construction Equipment Safety Specialists

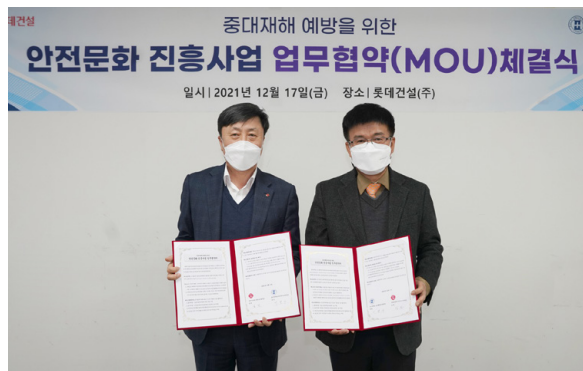
To mitigate the rising occurrence of severe accidents involving construction equipment, LOTTE E&C bolstered its workforce dedicated to equipment management. In 2022, the company organized the 'Construction Equipment Specialist Training Course.' To methodically cultivate expertise, we collaborated with the external organization of construction equipment specialists to conduct an intensive eight-week training program. In total, eight individuals successfully completed this course.

Operation of Safety and Health Culture Contest Project

LOTTE E&C supports the costs of activities to improve or promote safety and health to spread the safety and health culture. In 2022, we allocated a budget of approximately KRW 60.9 million for a total of five sites.

Safety Culture Promotion Activities

LOTTE E&C is committed to encouraging the voluntary practice of safety and health management and establishing it as a corporate culture. We have been producing and distributing safety and health card news once a week since May 2022 to promote safety awareness by improving the readability of educational materials, and have produced a total of 33 episodes. In addition, we have been sharing short-form contents on our YouTube channel since September 2022 to make it easier for employees to participate in trainings through their smartphones anytime, anywhere. We have been uploading the training contents in short videos of 3 minutes or less at least once a week and have recorded the highest number of views at 5.2 thousand and cumulative views at 60.1 thousand. We intend to maintain various communication channels that facilitate easy and engaging access to safety and health information, encouraging awareness and implementation.



MOU Ceremony with Eulji University for Safety Culture Promotion Project



Completion Ceremony of Construction Equipment Specialist Training Program



Example of YouTube short-form content for safety and health education

Safety and Health of Employees

Promoting the Culture of Safety and Health

Employee Participation and Communication Regarding Safety and Health Culture

LOTTE E&C recognizes workers as independent safety manager, and encourages active participation in risk assessment and safety and health activities to eliminate unsafe behavior, and provides rewards for best practices. Furthermore, we strive to facilitate on-site-centered practical safety and health activities through various channels to listen workers thoughts.

Safety and Health Activities

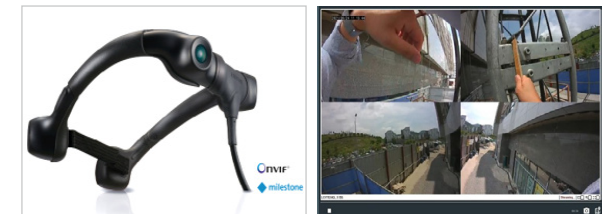
Zero Accident 365+	Activities for all site personnel, including business owners, supervisors, and workers, to achieve the target number of accident-free days
SMS Contest	A funding activity to induce the development of various safety and health activities on site
Safety Culture Promotion Business	A business that certifies excellent safety culture sites and shares culture through internal audits and external professional organizations
Behavior-based Safety Management (BBS) Rewarding System	A system to induce safety behavior by observing and discovering active safety behaviors of workers and recognizing and rewarding safety activities
Excellent Safety and Health Leader Reward	A system to identify and reward managers of active partner companies that conduct excellent safety and health activities
Preventive Activities for Safety Accidents	A system to identify and reward construction teams with excellent implementation rates of safety accident prevention activities for high-risk tasks
Rewards for Best-Practices for Safety and Health Management	A rewarding system to discover and reward best practices to motivate voluntary safety and health activities on site

Organizations for receiving opinions from safety and health workers

On-site	Council for Safety and Health	Monthly	Monthly meeting of contractors and recipients to receive safety and health suggestions or improvements
	Occupational Safety and Health Committee	Quarterly	Quarterly meeting of employers and workers to receive improvement measures to maintain and promote worker safety and health
	Safety Communication Center	Timely	Receive on-site risk reports and safety suggestions via telephone and website on a real-time basis
	Safety and Health Management Meetings	Monthly	Report the results of collecting opinions from workers to the CEO and management every month and share them with all employees
Head office	Safety Communication Day	Monthly	Conduct monthly safety and health meetings held by the CEO and management on site
	Local Council	Quarterly	Share system improvements and near miss cases through quarterly safety and health stakeholder meetings

Application of Smart Safety and Health Technology

LOTTE E&C is strengthening its smart safety management capabilities by leveraging Digital Twin (DT) technology. DT is a technology that simulates all situations in a virtual space and predicts outcomes using information and communication technologies such as 3D scanners, Internet of Things (IoT), virtual reality (VR), cloud computing, artificial intelligence (AI), and big data solutions. We are conducting risk assessments using AI systems and utilizing the recommendations for risk factors and improvement measures to enhance our activities. Additionally, we employ AI-based collision prevention systems for construction equipment, which use AI technology to prevent pedestrian collisions and congestion. We also operate an integrated risk index management system that utilizes big data to manage on-site risk levels and a hazardous chemical substance management program. Furthermore, we record work videos at the site using wearable cameras and conduct safety inspections by referencing the recorded videos. We have installed mobile surveillance cameras in high-risk work areas, which can be integrated with web and mobile platforms. We also invest generously in effective safety management, including the application of IoT technology to smart protective gear and other measures.



Mobile wearable device and real-time screen-sharing

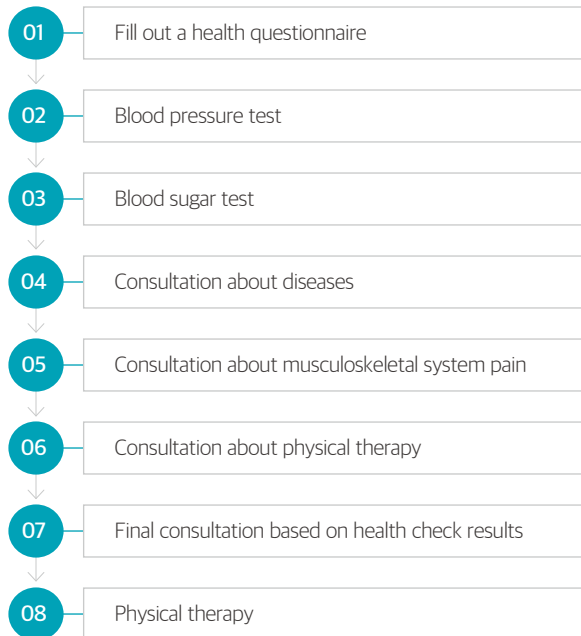
Safety and Health of Employees

Promoting the Culture of Safety and Health

Health Management Program for On-site Workers

In connection with a health care center, LOTTE E&C provides health checks and follow-up 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. Additionally, we have installed devices at work sites to measure stress levels and cardiovascular health, enabling on-site workers to conveniently monitor their well-being. Moreover, we distribute safety and health guidelines for working in extreme weather conditions such as heatwaves, cold snaps, or outdoor settings.

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

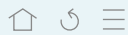
Shower room	Limit the number of users, disinfect and ventilate the area
Rest area	Refrain from sharing and using common items with others
Office and warehouse	Ventilate and disinfect the area
Restaurant	Schedule different mealtime for partner companies, install partitions on the table, etc.
Training 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, and many others. We have secured the needed budget and appointed people in charge of managing and maintaining rest areas to keep the area clean and hygienic. When there is insufficient space to install these facilities, we establish mobile and temporary facilities to ensure a work environment that safeguards the health of on-site workers.



Rest Facilities and Work Environment



Safety and Health of Employees

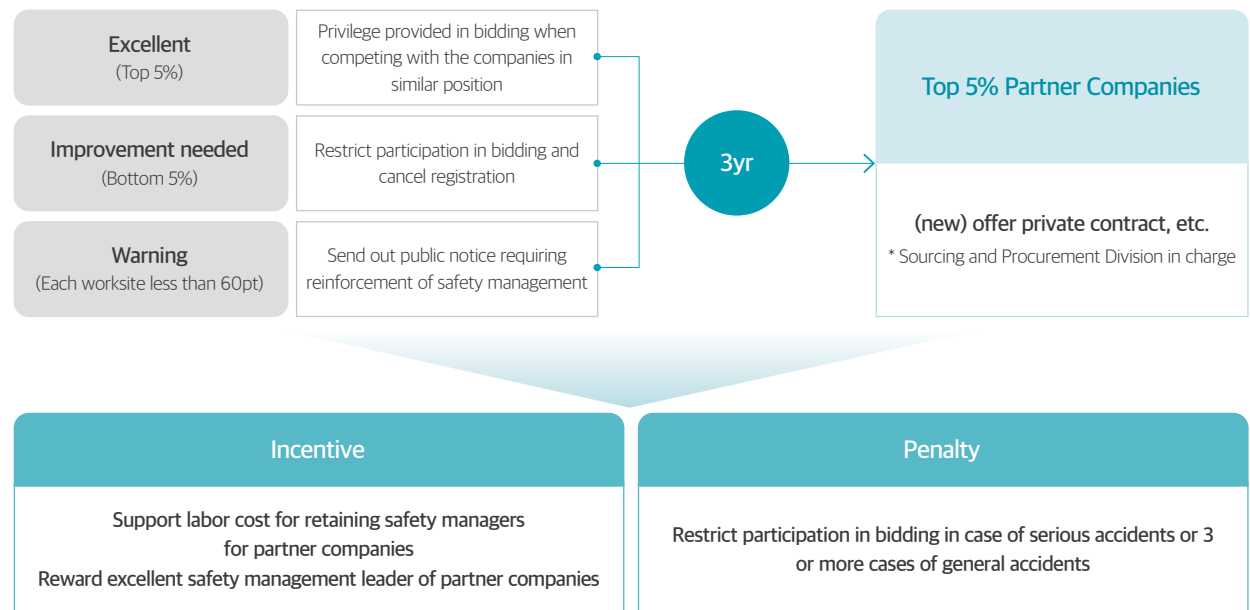
Promoting Safety and Health of Partner Companies

Introduction of Evaluation System for ESG Safety and Health Management Capability of Partner Companies

With a goal of reinforcing the management capability of the partner companies regarding safety and health management, LOTTE E&C introduced ESG Safety and Health Capability Evaluation System for Partner Companies, for the first time in the construction industry, and devised a cooperative system to prevent serious occupational disasters. For PC, earthwork, steel frame, plant steel frame, and rebar concrete construction, we conduct an initial evaluation by the Safety and Health Management Office when a partner company is newly registered. When participating in bids after registration, we conduct frequent evaluations with external specialized organizations once a year. We also conduct regular evaluations in the first and second halves of the year by the site director and safety manager for all construction types. To ensure that the evaluation is objective and based on expertise, we diagnose the four areas of safety management, safety management, safety investment, and safety performance based on 19 evaluation items with a credit rating agency, and classify safety capabilities into 1-7 grades. Partners with poor ratings (6-7) or below are restricted from bidding, and partners with the history of three or more major or general disasters are also restricted from bidding. On the other hand, the top 5% of excellent partners will be able to receive benefits such as preferential contract review, grant of private contract, support for safety manager labor cost, excellent safety leader reward for partner companies and additional points. As such, LOTTE E&C encourages its partner companies to actively practice ESG. We are preemptively reducing the possibility of serious accidents from the bidding stage, and plan to expand the application to partners in other types of work as well as high-risk work type partners in the future.

Criteria and procedure for assessment of safety and health management capabilities

Type	Work type	Assessment period	Organization in charge	Remark
Initial assessment (Initial registration)	<ul style="list-style-type: none"> • PC construction work • Earthwork (Architecture/Civil work) • Steel frame, Plant steel frame construction work • Rebar concrete (Architecture/Civil work/Plant) 	Registration phase	Safety and Health Management Office	<ul style="list-style-type: none"> • ESG safety rating specific to construction industry • Rating based on 7 grades (On a scale from S to D) • Restrict the bidding of 6~7 grade rated companies • Gradually expand high-risk work type
Timely assessment (Participate in bidding)		Annually	External ratings (Credit rating companies)	
Regular assessment (participation in construction)	All work types	Semi-annually	Work site manager, safety management	Classify partner companies as Excellent/Improvement needed/Warning grade, upon the result of assessment

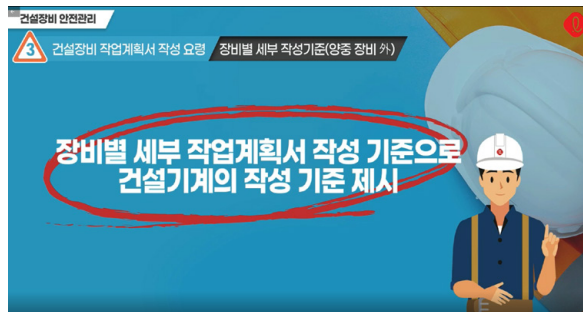


Safety and Health of Employees

Promoting Safety and Health of Partner Companies

Developing Safety and Health Training for Partner Companies

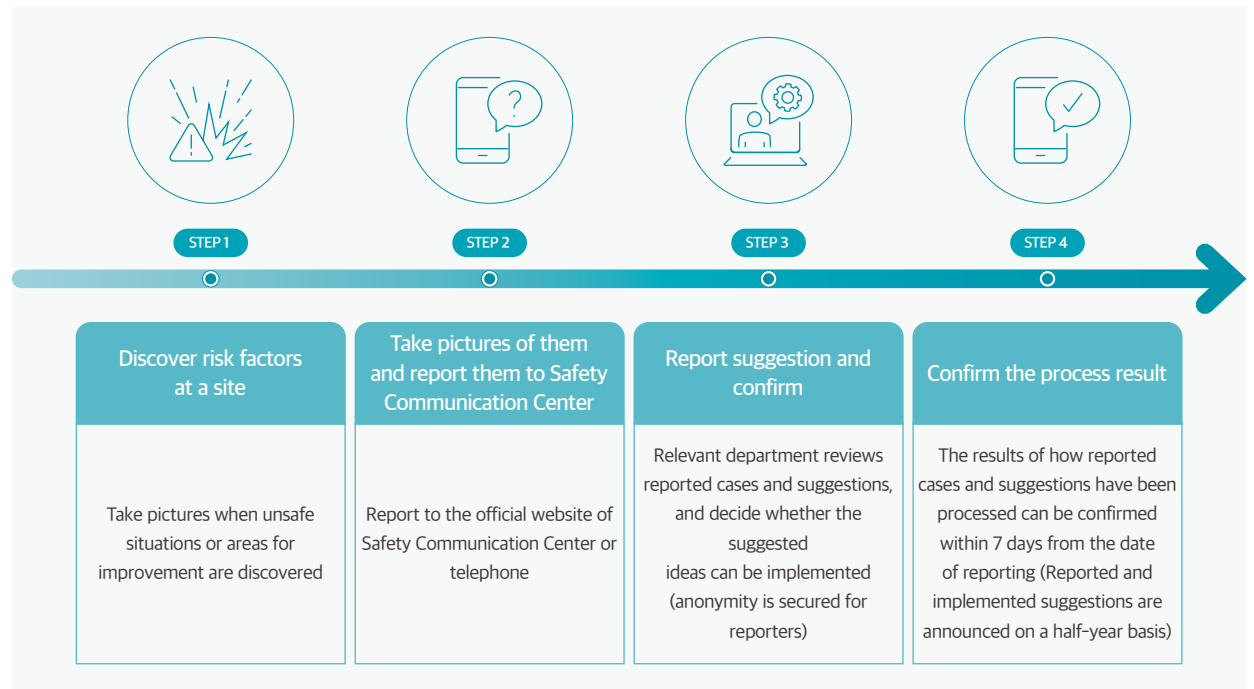
LOTTE E&C offers safety and health training to its partner companies upon their initial hiring to facilitate a smooth transition into safety and health practices and enhance their on-site performance. In 2022, we introduced partner companies to safety and health education in the form of video content for the first time. Looking ahead, we intend to broaden this initiative to encompass training connected with safety experience centers to further enhance the practical application of this education in the field.



Sample education contents for safety and health management education content for partner companies

Operation of Safety Communication Center

LOTTE E&C has been operating 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, and the result will be notified back after 7 days. According to the Article 58 (Suspension of Work) and Article 6 (Responsibilities and Compliance) of our Safety and Health Management Regulation Standard, employees may suspend work or evacuate if there is an imminent risk of an industrial accident occurring, and the employer shall not dismiss or give other unfavorable treatment to those who suspend work and evacuate. In addition, to prevent any retaliatory acts, we monitor them through the Safety Communication Center and the Cyber Ombudsman on our website. The result of responses regarding the matters reported, are announced semi-annually, encouraging employees to actively participate in safety and health practices. We also have communication mechanisms such as the Safety and Health Council, Occupational Safety and Health Committee, and Safety Communication Day to actively listen to the opinions of our partner company workers. Currently, we award prizes for good suggestions, good practices, and those who achieved zero accidents. We also operate safety culture promotion activities, and Behavior-based Safety Management rewarding system (BBS).





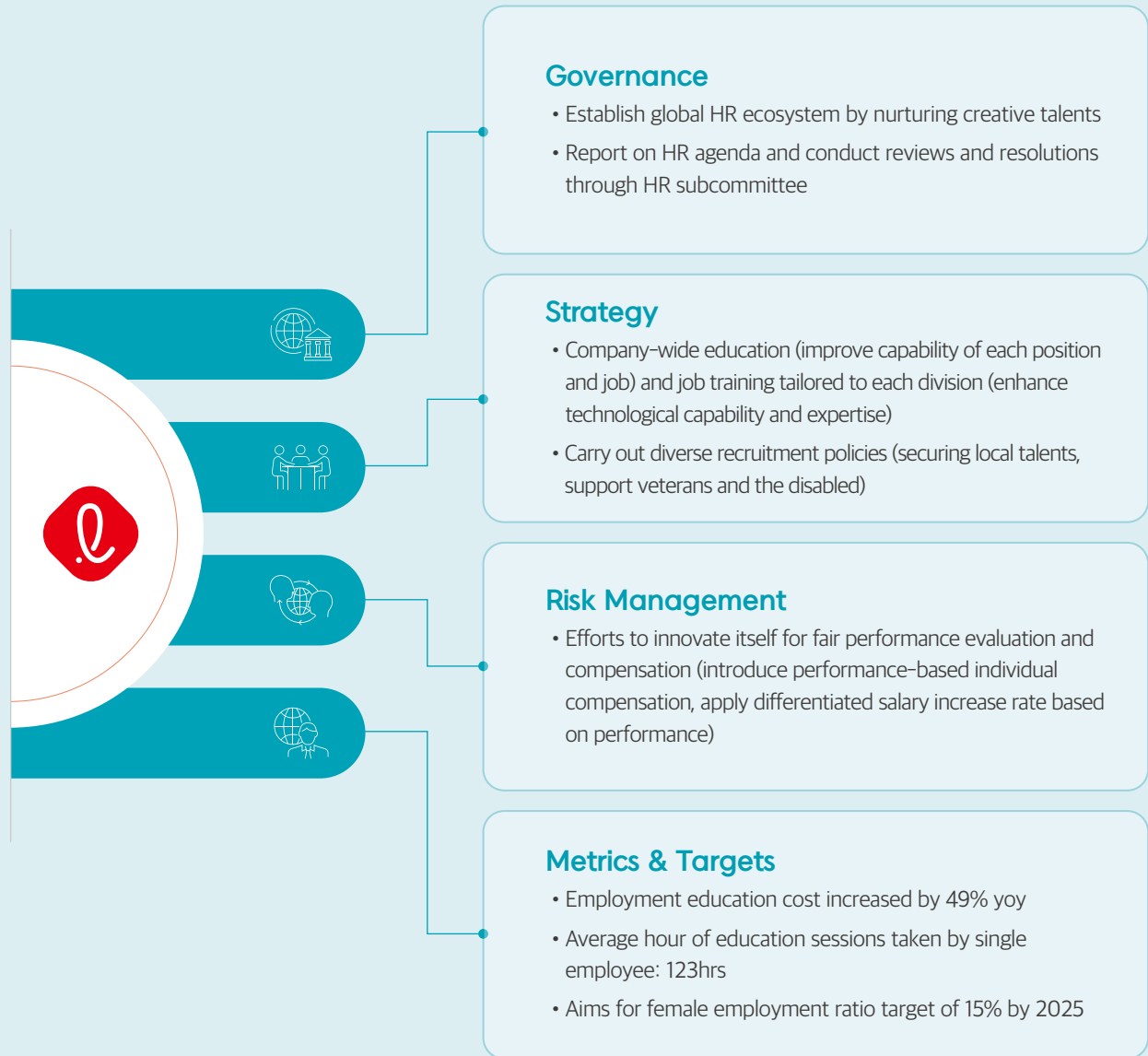
Human Resource Management

Our employees stand at the core of the values and assets that LOTTE E&C pursue. We remain committed to ensure work and life balance of our employees and enhancing our corporate culture. Guided by the management philosophy which is 'Happy employees make happy customers', the evolution of LOTTE E&C will persist. We promise to achieve sustainable growth by creating happy work environment and operating various projects to motivate our employees.



- Secure future competitiveness of the company by focusing on HR management and recruitment of diverse talents
- Enhance sustainability by reinforcing employee capabilities

- Social-Environmental Impact ●●●●○
- Financial impact ●●●●○



Governance

- Establish global HR ecosystem by nurturing creative talents
- Report on HR agenda and conduct reviews and resolutions through HR subcommittee

Strategy

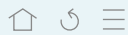
- Company-wide education (improve capability of each position and job) and job training tailored to each division (enhance technological capability and expertise)
- Carry out diverse recruitment policies (securing local talents, support veterans and the disabled)

Risk Management

- Efforts to innovate itself for fair performance evaluation and compensation (introduce performance-based individual compensation, apply differentiated salary increase rate based on performance)

Metrics & Targets

- Employment education cost increased by 49% yoy
- Average hour of education sessions taken by single employee: 123hrs
- Aims for female employment ratio target of 15% by 2025



Human Resource Management

HR Management Promotion System

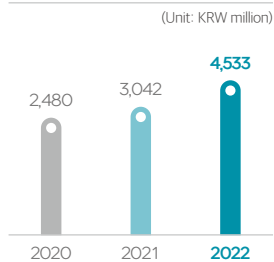
LOTTE E&C strives to recognize and foster global talents with passion and responsibility, who not only have personal potential but also can positively impact societal development, and strive to "think ahead and act creatively". We place greater value on future potential of talents over their existing skill sets. In line with this perspective, LOTTE E&C is building a talent management ecosystem that enables our employees to grow into proficient specialists within their respective roles.

Desirable images of talented human resources

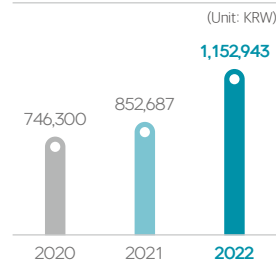


HR Training Performance

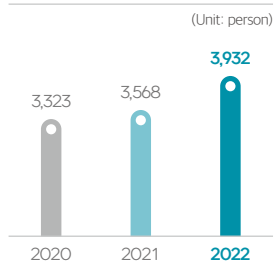
Total training expenses for executives and employees



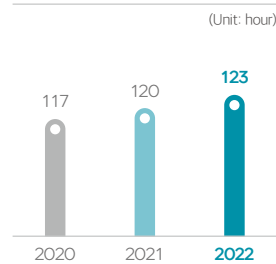
Per capita training expenses



Number of training participants per year



Per capita average training hours



Nurturing system





Human Resource Management

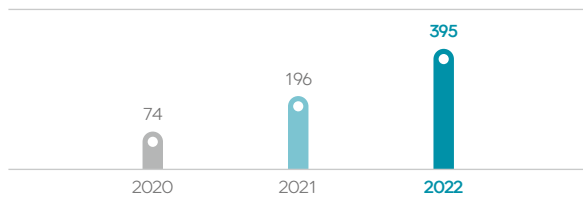
Hiring and Nurturing Human Resources

Recruitment

LOTTE E&C has an occasional recruitment system and operates campus recruiting programs and Job-Cafe 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

(Unit: number of employees)



Introduction of a Semester Dedicated to Hands-on Job Training for Local National University Students

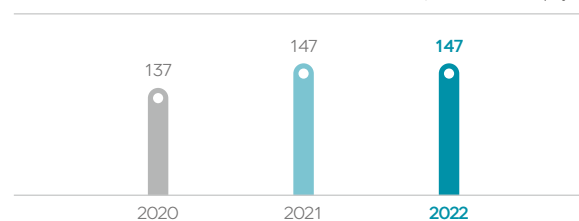
In 2022, Lotte E&C introduced a semester dedicated to hands-on job training for local national university students to secure local talent through industry-university cooperation and seek mutual growth with local communities. Due to numerous local construction site, a nature of the industry, many local talents are needed to manage such sites. For the local university graduates who received hands-on job training, LOTTE E&C exempts job application documents requirement for their first application. (Request for additional data on this year's performance) has been carried out, and we plan to advance public relations and systems to attract more local talents going forward.

Diverse Talent Employment Policy

Lotte E&C is implementing policies to fulfill its social responsibilities and discover and secure various talents. For those eligible for special support for veterans, we are preparing the 'Special Recruitment Process for Persons Subject to Government Employment Support (by Ministry of Patriots and Veterans Affairs)' and operating the 'Recruitment Process for Employees with Disabilities' for hiring the disabled. In 2022, a remote working system for the severely disabled was newly established to increase the employment rate of the severely disabled. For severely disabled people who have difficulty commuting to and from work, we have established a system allowing them to work from home for 4 hours a day, so that they can engage in doing paperwork, and identifying trends with clients. In addition, in order to achieve a female talent employment rate of 15% by 2025, we are striving to maintain the female talent ratio of new recruits at 30% every year. In addition, we provide a wide variety of opportunities from office workers to technical positions by operating a 365-day recruitment system, and offer mentoring and job-related training to support capability enhancement.

Number of employees with disability

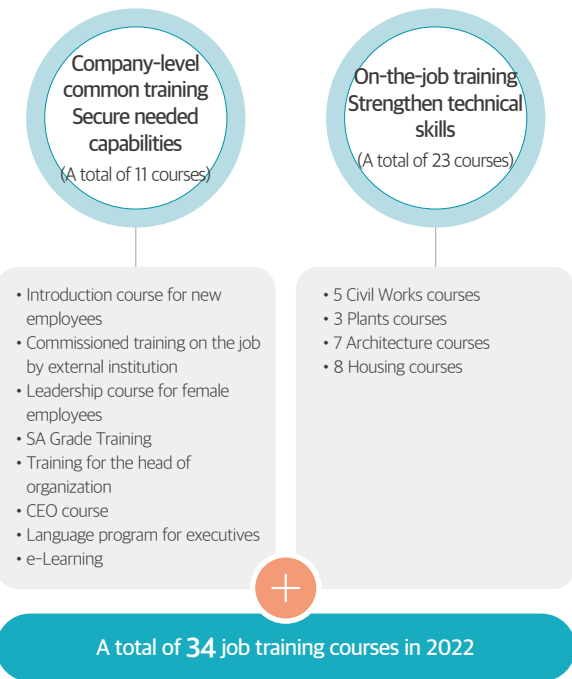
(Unit: number of employees)

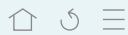


Welcome Course for the New Employees

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 courses





Human Resource Management

Developing Capabilities of Executives and Employees


LOTTE E&C offers company-wide general training and on-the-job training specific to each division to provide training tailored by job and experience of the employees. Led by the HR team, the company-wide general 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. To measure the operational performance of the training program each year, we set a target of "average training time per employee" as an indicator, and encourage employee participation in training by evaluating the achievement of the target. We also conduct satisfaction surveys for training recipients after the completion of company-wide training to measure the effectiveness of the training and identify training-related improvements. We strive to create an atmosphere of voluntary learning for job competency development.

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 leader 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, LOTTE E&C conducts a PC and mobile-based survey to find the gap between employees and leaders view on each leadership and its level, and help leaders to change their leadership style the way employees want. We are committed to making further effort to narrow the gap in the types and levels of leadership between employees and their leaders, creating a horizontal and flexible corporate culture.

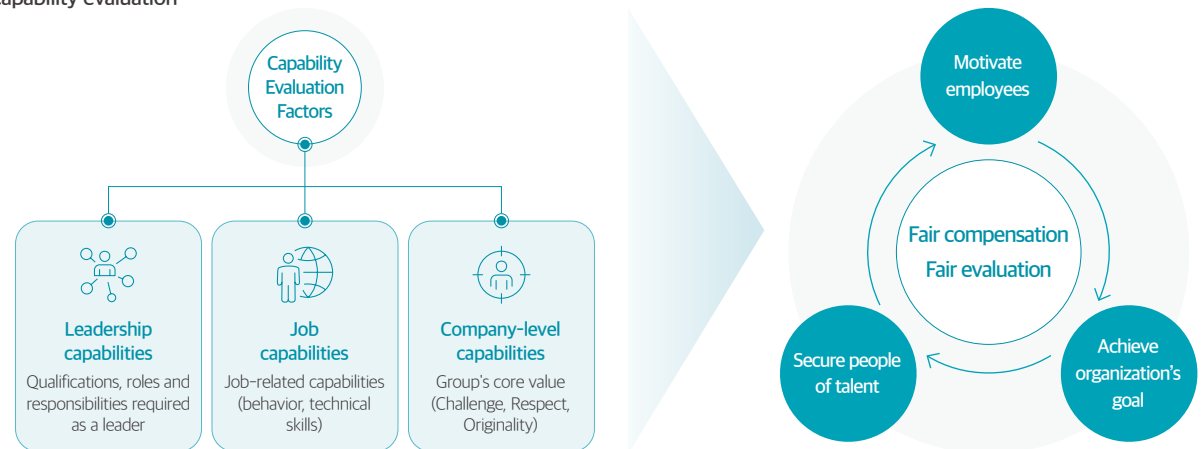
Fair Evaluation and Adequate Compensation

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 to translate the achievement of company's goal to employee's opportunity for individual growth. 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 to ensure that employee's 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.

 2022 Average hour of education sessions taken by single employee

123 hrs

Capability evaluation



Welfare Benefits

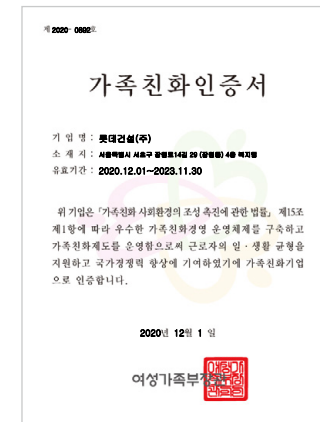
Welfare Benefit System

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. We now pay 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.

Selective benefit system		
Health promotion	<ul style="list-style-type: none"> Health check for the spouse Group insurance 1 for parents/parents of the spouse (death, cancers) 	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
Welfare Cards	<ul style="list-style-type: none"> Corporate credit card (Self-development, leisure, entertainment, others) 	
Basic welfare		
Health promotion	<ul style="list-style-type: none"> Health check Group insurance 1 (death, cancers) Group insurance 2 (hospitalization/outpatients) 	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.
Children's education	<ul style="list-style-type: none"> Education fees for children 	
Housing	<ul style="list-style-type: none"> Loan for housing or living Congratulatory and condolence money, items or leaves Financial support for moving and packing service, moving to a new post 	
Fun workplace	<ul style="list-style-type: none"> Support for clubs Prize for employees with long-term service, Regular and occasional prizes Gifts on Workers' Day, Foundation Day, Souvenirs for regular retirement Regular vacation, annual leave Financial support for mobile phone service, cars and car insurances 	

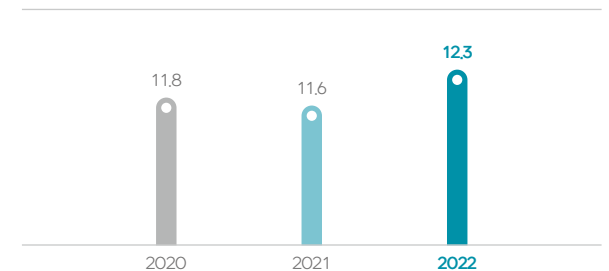
Work and Life Balance

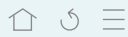
LOTTE E&C has made continuous efforts for the balance of work and family for our employees and was acknowledged by acquiring the family-friendly company certification in 2015 and the leisure-friendly company certification in 2019. In addition, we have implemented the system for 'active use of vacation' 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 expenses per person

(Unit: KRW million)





Welfare Benefits

Promotion of values for employees

Implementation of Flexible Commuting System and Compensatory Leave System

LOTTE E&C has introduced a flexible commuting system and a compensatory leave system to create a more flexible working environment. The flexible commuting system is piloted only for employees at the headquarters, and is implemented by the employees themselves by selecting their working hours, setting the application unit period to one month or more, and obtaining approval from the company. In addition, we comply with the legal working hours and prescribed working hours, and guarantee employees' vacations by granting compensatory leave for additional working hours.

Retiree Defined Benefit Pension Plan

LOTTE E&C operates a defined benefit pension plan to support retirees. After calculating the estimated amount by the department in charge, the pension plan sponsor calculates the estimated amount through actuarial methods, and we contribute more than the minimum legal contribution amount, such as minimum contribution amount set by the Act on the Guarantee of Employees' Retirement Benefits.

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.

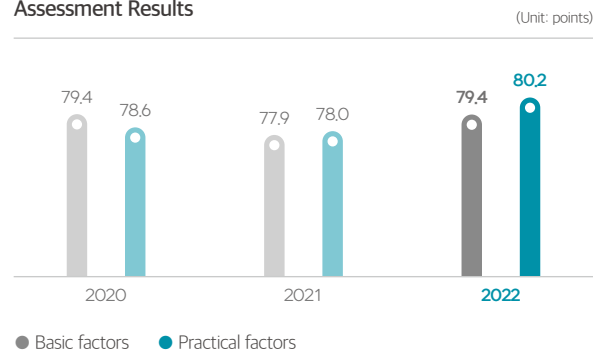
Assessing the Value Creation Culture

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	Core value, fundamental belief
 Practical factors	Happiness of employees, corporate value, social value


Assessment Results



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. Following the first L-Junior Board in 2021, the second board actively engaged various activities 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 and serves the role of communication channel between management and Generation MZ. Relevant departments actively listen to the voices of the juniors and reflect their ideas to the current system, aimed at improving work processes and facilitating communication between the generations.

Agenda on Junior Board



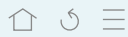
Open management

Directions and policies for longterm development from the perspective of Generation MZ were suggested to the CEO



Open culture

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



Welfare Benefits

Promotion of values for employees

Labor-Management Council

LOTTE E&C does not have collective agreements in place, as it does not operate labor union. Instead, Labor-Management Council is serving the role of making the employees' voices heard. 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 and management gather together on a quarterly basis to discuss a given agenda. When necessary, temporary meetings can be held. In 2022, a total of 22 agenda was resolved.

Major agenda resolved at the 2022 Labor-Management Council

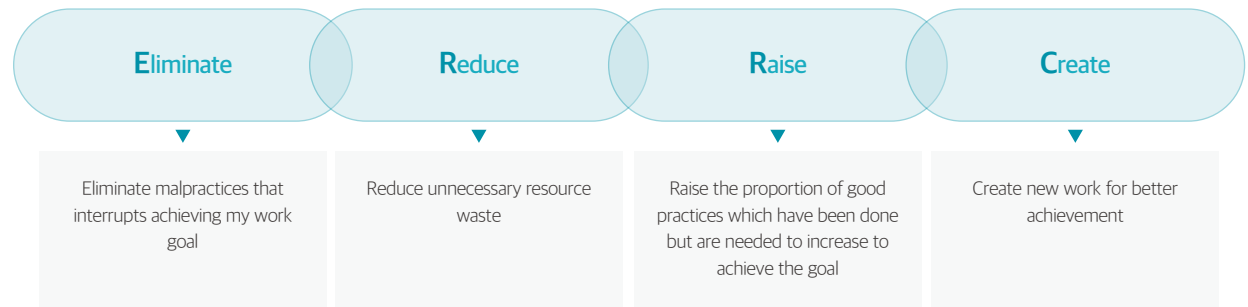
Major agenda	
<ul style="list-style-type: none"> • Reform of work hours on site • Activation of the use of leave of absence due to personal reasons • Salary increase 	<ul style="list-style-type: none"> • Operation of health check and group insurance • Regular collective reward



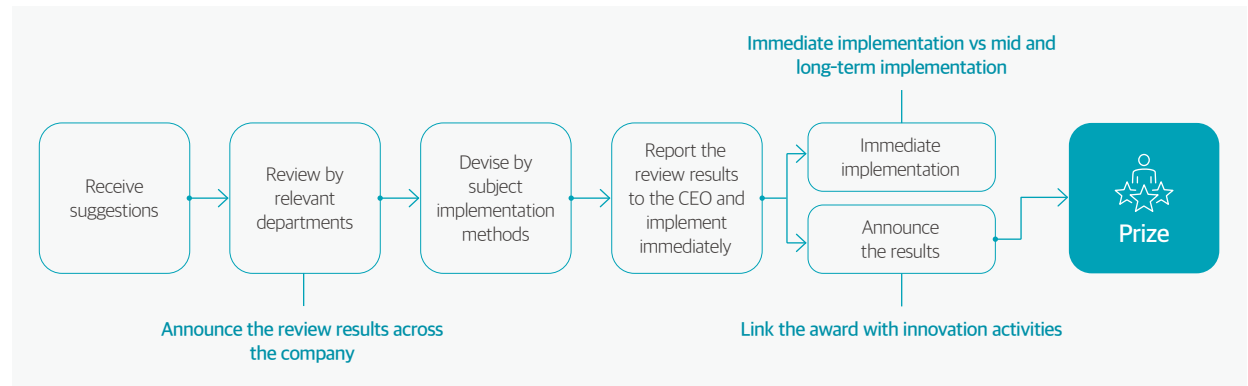
ERRC Suggestion Campaign

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 2022, 21 ideas out of 42 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



ERRC Process





SOCIETY | COMMITMENT TO PROSPEROUS LIVES OF HUMANITY

Social contribution and community care form the foundation of LOTTE E&C's existence, and our customers represent our greatest value. We are committed to enriching people's lives through products and services that are cherished and trusted. Our goal is to evolve into a company that advances alongside society, guided by principles of integrity, fundamental values, mutual growth, and a spirit of sharing management.

LOCAL COMMUNITY 084

CUSTOMER SATISFACTION 089

2022 KEY PERFORMANCE

Local Community

(Charlotte Voluntary Service Group) A total of 500 employees participated in 120 voluntary services

(Sharing Briquettes of Love) A total of 620,000 briquettes were donated (cumulative)

(Love House of Dreams and Hopes) Improved facilities and renovated houses in need, demonstrating social contribution leveraging the characteristics of construction business

(Volunteering at Seoul National Cemetery) Participated in volunteer activities at Seoul National Cemetery on a total of 15 occasions (cumulative number of employees: 934)

Customer Satisfaction

Launched CS Service brand, CASTLing (2022.11)

Operation of Quality Innovation Education

- A total of 1,018 employees from architecture, civil work, landscape, mechanical electricity participated

Operation of Happy Call Service

- 54.53% (1,335 cases) were 'very satisfied,' according to the survey on 2,448 respondents



Local Community

A company's foundation is grounded in society, and it is mutual interaction with stakeholders that creates profit for the company. LOTTE E&C is devoted to take social responsibility as a corporate citizen by making social contributions utilizing the characteristics of construction business and expertise of the employees and executives. Additionally, we promise to enhance communication with the stakeholders so that we can contribute to tackling of issues local communities are facing, by carrying out social contribution activities to promote sustainability.



- The need to minimize the impact of corporate operations on local communities.
- Contribute to effective social issue resolution by leveraging the characteristics of the construction industry

- Social-Environmental Impact ●●●○○
- Financial impact ●●●○○



Governance

- Establish and enhance cooperation with NGOs and other social contribution networks
- Report, deliberate, and resolve social contribution-related issues through the Social Contribution Subcommittee

Strategy

- Launch Quality Innovation Academy to strengthen technical expertise in each area
- Launch CASTLing and enhance CS services

Risk Management

- Check for defects after completion
- Comprehensively manage the designing documents by checking checklists for each stage of construction

Metrics & Targets

- 1,335 (54.53%) respondents answered 'Very Satisfied' in the Happy Call Service Satisfaction Survey
- 1,018 employees participated in the Quality Innovation Academy
- Operated a technical information sharing system for defect management, registering a total of 783 pieces of technical information



Local Community

Social Contribution Promotion System

Utilizing its characteristics as a construction firm and the expertise of the executives and employees as our strengths, LOTTE E&C strives to expand voluntary activities in selecting and participating in social contribution agendas needed for local communities. Based on a Social Contribution Subcommittee within the Sustainable Management Committee and Environment, Society and ESG Team in Strategic Planning, we cooperate with social contribution networks such as NGOs, and provide necessary support to implement social contribution strategies. By running 'Charlotte Voluntary Service Group' in 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. Due to the prolonged COVID-19 pandemic, the scale of our social contribution programs had to be reduced, but we have replaced them with contact-free or donation-type programs so that we can support a large number of beneficiaries without being restricted by distance. In terms of donations, we are executing donations in accordance with our internal donation regulations, and in the case of large-sized donations, we are executing them transparently through resolutions of the management committee or the BOD depending on the size of the donation.



Basic principle of Social contribution

A love-sharing company that grows together with local communities
Utilizing its characteristics as a construction firm and the expertise of its executives and employees as our strengths, LOTTE E&C makes efforts to expand voluntary activities in selecting and participating in social contribution agendas needed for local communities.

Social contribution strategies



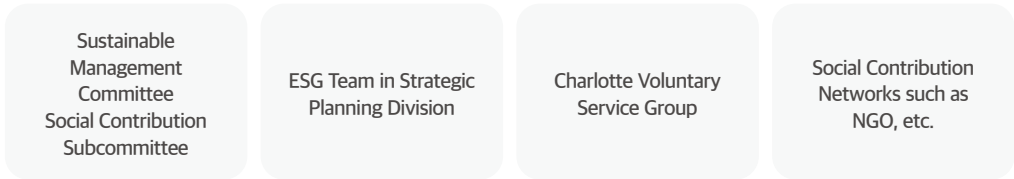
Foundation for social contribution activities

Charlotte Voluntary Service Group
Labor-management group to conduct facility improvement, educational donation, and support for cultural experiences for underprivileged people in local communities

Matching Grant System
A system where the company contributes funds in proportion to the amount raised by employees (Spent for Charlotte Voluntary Service Group activities)



Social contribution organization





Local Community

Social Contribution Activities

Sharing Briquettes of Love

Since 2011, LOTTE E&C employees have been delivering briquettes to underprivileged households in Seoul and Busan every winter. In 2022, we donated 40,000 briquettes to residents in 104 village in Nowon-gu, Seoul and in Maechukji Village in Dong-gu, Busan, with an accumulated total of 620,000. Although we could not share briquettes in person during COVID-19 era due to social distancing, it will be changed to in-person sharing, with participation of our employees and executives.



Sharing Briquettes of Love

Partnering for Social Contribution: Supporting Individuals with Limited Access to Energy ESG (Energy Sharing Good)



Babsang Community Welfare Foundation | Gi Bog Her, CEO

Can you tell us about your organization and how you have been maintaining partnership with LOTTE E&C?

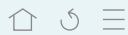
We provide various support to the individuals lacking in access to energy through 32 briquette banks nationwide, including Seoul, and two overseas briquette banks (Kyrgyzstan and Kazakhstan). We have been working with LOTTE E&C since 2011, starting with our first cooperation at Baeksa Village, and every year we support social contribution activities for the vulnerable, such as sharing love briquettes and Ramen. We are deeply committed to working together with Lotte E&C and the local community.

Can you tell us more about the social contribution activities you are organizing with LOTTE E&C?

Every winter, we collaborate with Lotte E&C to support briquette distribution activities for the energy-insecure nationwide. We support the briquette distribution activities from the beginning to the end, from distributing thousands of briquettes by handcart, delivering them up high hills with a forklift, and stacking them in an orderly manner in the warehouse. We also distribute the donations to other local briquette banks so that warm briquettes can be provided to vulnerable people in places where it is difficult to visit in person. We also provide direct support to households that may be marginalized by utilizing delivery agencies to ensure that there are no blind spots.

How have you benefited from your social contribution activities with LOTTE E&C, and what are you planning for future endeavors with LOTTE E&C?

Every year, we bring warmth to the homes of approximately 200 families during the winter months by sponsoring over 30,000 briquettes on average. We aspire to continue our compassionate support for the vulnerable in the future. Under the concept of 'Energy Sharing Good,' we are redefining the act of sharing briquettes with the acronym ESG. For those who are energy-vulnerable, briquettes are a vital energy source for survival. While they inevitably produce carbon emissions, briquettes are essential heating resources that enable the vulnerable to maintain a healthy life. As LOTTE E&C is committed to making socially beneficial contributions, we have carefully considered how to support this essential resource for the vulnerable while also collaborating on carbon reduction initiatives. In the future, we hope to integrate the 'Carbon Reduction Activities in Daily Life Campaign' with our briquette distribution efforts to assist energy users who, in their struggle for survival, are compelled to emit carbon. Through this partnership with LOTTE E&C, we aim to collectively address carbon reduction and provide support to those in need.




Local Community

Social Contribution Activities

Charlotte Voluntary Service Group

LOTTE E&C operates Charlotte Volunteer Service Group as a volunteer service organization at the head office and domestic and overseas sites. Charlotte Volunteer Service Group, one of the most representative social contribution activities led by LOTTE E&C, started with 18 teams in 2011, and as of December of 2022, 70 teams are actively carrying out voluntary service. Throughout 2022, a total of 500 employees and executives served in 120 voluntary services, which include facility improvement, environmental clean-up, cultural activities as well as contact-less food delivery services.

 Number of employees who participated in voluntary activities

500



Charlotte Voluntary Service Group improving the residential environment of the elderly living alone

Love House of Dreams and Hopes

In 2012, LOTTE E&C initiated new campaign called '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 2012, we have completed the renovation of 81 facilities (34 in Seoul and 47 in Busan) as of the end of 2022. In 2022, we conducted renovation activities at the Jeon Jin-sang Community Children's Center in Geumcheon-gu, Seoul, the Happy Community Children's Center in Gwangjin-gu, and eight residential facilities for vulnerable households in Nam-gu, Busan. In the case of the community children's center in Gwangjin-gu, we renovated the facility to accommodate 36 people by expanding the learning space from about 26 pyeong to 44 pyeong, which was previously used by 26 people. In the case of the Busan Love House, we made efforts to improve beneficiary-centered facilities by installing low-glare ceiling lights and remote controls and providing safe bath chairs for people with severe disabilities who are bedridden for long periods of time. Through social contribution activities that utilize the characteristics of the construction industry, we aim to contribute to the development of the local economy and promote mutual growth with local communities.



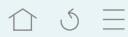
Love House in Jeon Jin-sang Community Children's Center in Geumcheon-gu, Seoul

Volunteering at Seoul National Cemetery with Families

To commemorate its 63rd anniversary, LOTTE E&C visited Seoul National Cemetery of Korea in Dongjak-gu, Seoul, together with the employees and their families, to conduct gravesite maintenance activities. A total of 934 employees and their families have participated in volunteer activities at the cemetery on 15 occasions from 2013 to 2022, and in 2022, a total of 66 people, including the families of employees, participated in the activities ahead of the Armed Forces Day in September. Starting with a worship service to honor the noble sacrifices of the fallen soldiers and patriotic spirits, we conducted cemetery maintenance activities such as cleaning wreaths and tombstones, collecting wilted flowers, and removing weeds at the 24th cemetery with which we have a sisterhood relationship. We will continue to promote cemetery maintenance activities to express our gratitude to those who have served the country and to foster a proper sense of history.



Family Volunteering Activities at Seoul National Cemetery



Local Community

Social Contribution Activities

Eco-friendly Step Donation Campaign

Since 2020, LOTTE E&C has conducted a step donation campaign using an application as a part of our contact-free social contribution activities by employees. Once all employees have the step donation app installed on their smartphones, they can see the accumulated donations in real time and their progress toward their goal. When a target number of steps is reached, a pre-determined donation is sent to the organization. In 2022, 535 employees and their families participated in the program and achieved 180 million steps, exceeding the target of 150 million steps by 16%. If the total number of steps is converted to distance, it is approximately 90,017 kilometers, which is equivalent to reducing the carbon footprint of traveling by car by 21,727 kilograms or planting up to 535 30-year-old pine trees. In addition, the donation was used to hold a 'Multicultural Summer Camp' for 32 children from 18 multicultural families to provide cultural experience opportunities for children from multicultural families who face difficulties in caring for their children during the summer vacation. We plan to continue various types of social contribution activities in line with our ESG management practices in the future.



Multicultural Summer Camp



Screen Sample of Final Report for Step Donation Campaign

Contributing Voices to Create Audiobooks of Vietnamese Traditional Fairy Tales

LOTTE E&C supports activities that help children from multicultural families develop language and learn to read. Our employees volunteered to participate in the creation of audiobooks, contributing their voices. A special Junior Board, comprised of 14 employees from Generation MZ, made thorough preparations for the recording of the audiobook, taking acting lessons for traditional fairy tales. To help children from multicultural families understand their mother's country and culture through fairy tales in an easy and fun way, we translated the Vietnamese traditional fairy tale "The Legend of Durian" into Korean and produced and delivered 1,000 children's books including audiobooks. These audiobooks can be accessed conveniently via a QR code printed in the books, which directs users to YouTube videos. We plan to continue to work with community organizations to connect with children from different cultural backgrounds.

Details of Voluntary Activities for Children from Multicultural Families

- 01 All members participated in voice acting lesson.
- 02 Practiced voice recording of Vietnamese fairy tales by each team
- 03 Rented a studio and recorded audiobooks
- 04 Produced and distributed the books (including the Youtube videos)
- 05 Promoted voluntary works through Youtube videos



Junior Board participating in production of audiobooks

Awarded a citation from the Minister of Ministry of the Interior and Safety for the 2022 Korea Volunteer Awards



LOTTE E&C was awarded the citation from the Minister of Ministry of the Interior and Safety for the 2022 Korea Volunteer Awards in recognition of its efforts to improve the environment and facilities which allowed households vulnerable to emergency disasters, such as the disabled and the elderly living alone, to quickly return to their daily lives. In addition to volunteering to improve facilities, LOTTE E&C has hosted the "Enjoying Cherry Blossom Season with LOTTE E&C" to support the leisure activities of the disabled with limited mobility, along with the scholarship contests and play culture experiences for children in childcare centers.

Customer Satisfaction

Quality Management

Quality Management Promotion System

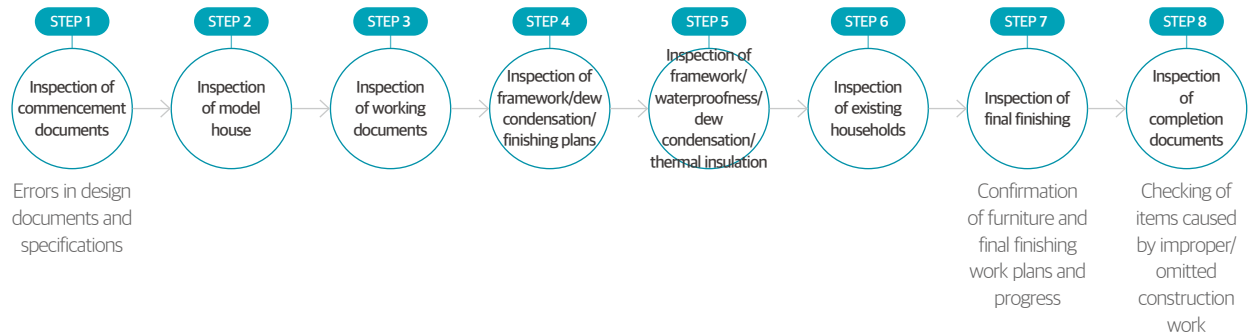
LOTTE E&C conducts quality inspections throughout the entire construction phase and offers professional management for its customers moving into newly built houses. We also operate an efficient response system by operating a systematized in-person training. The C/S department under Housing Division has a 'process to inspect comprehensive quality and to manage customer satisfaction' in place, placing the best quality and customer satisfaction as our top priority. We have been certified for our quality management system (ISO 9001) and have maintained our eligibility for renewal audits every year. We also regularly conduct internal audits of quality management to check the implementation of our quality management plan at each site. In 2022, our Design Research Institute conducted a case study on Japanese silver housing and applied some of the contents to the construction of VL LEWEST, a silver housing for premium senior living. We are also conducting a study on the development of a zero-energy integrated design model in collaboration with the Research & Development Institute for the design of zero-energy buildings, and plan to apply the research results to projects step by step.

* VL LEWEST 

Quality Inspection Process

LOTTE E&C is reinforcing its quality inspection for each construction phase as well as the inspection process on major defects. To root out chronic and repetitive defects, we have created and applied fundamental measures for improvement, and we have also increased the number of inspections we conduct.

Quality inspection process of housing construction site



2022 Quality Inspection Performance

Type	Work detail	Construction work provided	Performance
Quality Inspection	<ul style="list-style-type: none"> Inspection of model house Inspection of existing households Inspection of framework/dew condensation/finishing plans Inspection of framework/waterproofness/dew condensation/thermal insulation Inspection of final finishing 	<ul style="list-style-type: none"> Seocho-dong Complex, Changwon Yangdeok District 4, etc. Suwon Mangpo District 4 2nd, Uijeongbu Ganeung, etc. Gangneung Gyo-dong Incheon Cheongcheon, Sinbanpo 13th, etc. Incheon Juan, Uijeongbu Jungang 2, etc. 	<ul style="list-style-type: none"> 14 times 109 improvement proposals 7 times 73 improvement proposals 1 times 10 improvement proposals 15 times 190 improvement proposals 8 times 88 improvement proposals
Quality Improvement	Dissemination of defects cases	Create a list of major defect cases and countermeasures at the site managed	13 times Disseminate to all sites
Landscape Management	Landscaping maintenance work	Landscape maintenance for apartment building construction sites (2021-2022)	28 sites (Pruning/irrigation/weeding/mowing/pest control)



Customer Satisfaction

Quality Management

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, and landscape maintenance.

Inspection After Completion of Construction

Inspection of community facilities and common areas inside the complex	Inspection of landscape maintenance	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"> • Testing of air conditioning and heating in community facilities and common areas • Inspection of switch operations • Checking normal operation of electric meters • Inspection of parts vulnerable to freezing (checking of normal operation of hot-wire power and snow melting) 	<ul style="list-style-type: none"> • Inspection of dead trees and supplementary planting • Checking common areas 	<ul style="list-style-type: none"> • Inspection of distribution panels, including extra-high voltage panels, transformers, low voltage panels, and MCCB panels

Process for Integrated Management and Standardization of Design Documents

LOTTE E&C conducts 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 of each stage

Design documents	 Construction review documents Before construction review/ approval	 Business approval (change) documents Before business approval (change)/construction approval	 Commencement documents commencement/ before commencement approval	 Construction documents 60 days before construction/ commencement	 Commencement documents completion/ before completion
Improve	Correction of errors in contract documents		Correction of errors in working design documents		Not reflecting actual construction
Effects	Standardization of contract documents		Standardization of construction quality		Standardization of completion documents

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 for the sharing of technology information and know-how about defects. As of the end of 2022, a total of 783 technology information is registered in the system to be applied to sites.

Quality Innovation Education

LOTTE E&C operates an education program for engineering employees called the 'Quality Innovation Academy' to further strengthen the technical expertise of our employees in each area. In 2022, we conducted twelve sessions of virtual training and a total of 1,018 engineering employees from architecture, civil works, landscape, and machine and electricity participated.



Customer Satisfaction

Enhancing Customer Value

Launched CASTLing, a CS Service Brand

In November 2022, LOTTE E&C launched CASTLing, a customer satisfaction (CS) service brand. CASTLing represents our focus on "CS" and "A" represents the shape of a person with a crown, signifying our commitment to provide the best value to our customers. "~ing," also demonstrates our will to continuously provide positive experiences to our customers in every moment. As a CS service brand, CASTLing realizes customer satisfaction by providing various free services such as participatory cultural events in addition to cleaning to improve the environment in each unit and complex for apartment residents. Since 2021, as part of our ESG management, we have introduced small electric vacuum cleaners and used them to clean the road surface, spray water, and prevent secondary fine dust. In addition to the launch of the CASTLing brand to enhance our brand power, we will further strive to upgrade our CS services and plan and operate various free services such as cultural events, ESG activities, and environmental improvement services.



Contact-free Mobile After-sales Service Provided by CASTLing

In February 2021, LOTTE E&C developed a contact-free mobile after-sales service application to increase accessibility and convenience for the residents. While the existing method involves processing of requests through a contact window, the new mobile application allows tenants to conveniently submit AS requests and swiftly check the status of the request by attaching a photo.

Happy Call Service

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

2022 Survey on Satisfaction with Happy Call Service (Unit: %)



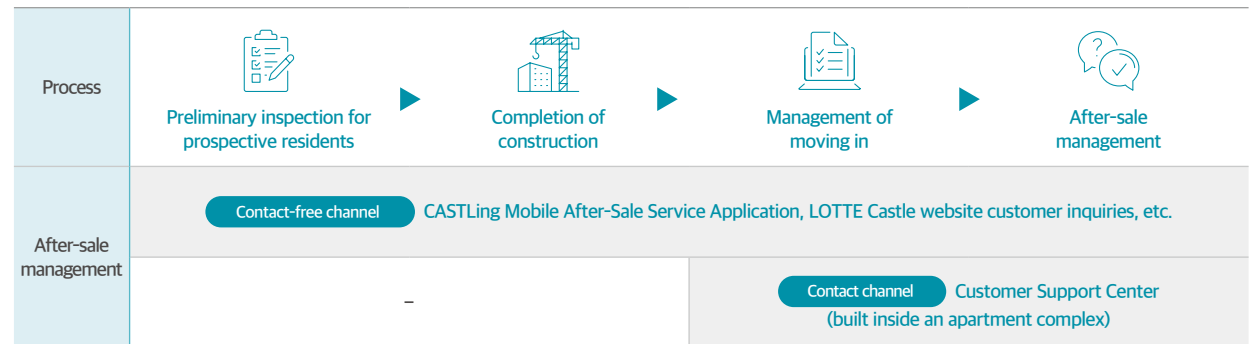
Visiting My House Day Event

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. Entering the post-Covid era, LOTTE E&C is focused on getting one step closer to our customers by preparing in-person events and offering safe and delightful experiences to customers.

Complaint Registration Process

We receive customer complaints through various channels, including a contact-free method. One example is CASTLing 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





PROSPERITY | GOVERNANCE FOCUSING ON FUNDAMENTALS

With the vision of becoming a ‘Global Leading EPC Contractor Total Service Provider,’ LOTTE E&C has been demonstrating its prowess in making a sustained growth, overcoming a myriad of crises. In the ever-changing business landscape, LOTTE E&C stands steadfast in its pursuit of enduring respectability as a lasting enterprise. To this end, we will abide by fundamental principles such as ethics and compliance management and strengthen our business model to stand strong amid the changing business environment.

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2022 KEY PERFORMANCE

<div style="border: 2px solid black; border-radius: 50%; width: 80px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> <div style="background-color: #0070c0; color: white; border-radius: 50%; padding: 10px; text-align: center;"> Ethics and anti- corruption </div> </div> <div style="background-color: #e6f2ff; padding: 10px;"> <p>Provided ethical management training to all employees</p> <ul style="list-style-type: none"> - 100% completion rate of ethics training <hr style="border-top: 1px dashed #ccc;"/> <p>Received reports on ethical management through the operation of a Cyber Ombudsman</p> <ul style="list-style-type: none"> - Addressed 232 cases pointed out on on-site audits </div>	<div style="border: 2px solid black; border-radius: 50%; width: 80px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> <div style="background-color: #0070c0; color: white; border-radius: 50%; padding: 10px; text-align: center;"> Governance </div> </div> <div style="background-color: #e6f2ff; padding: 10px;"> <p>2022 Board operation</p> <ul style="list-style-type: none"> - 20 meetings held, and 40 cases deliberated and resolved - Audits conducted 14 out of 20 times - Average BOD attendance rate of 99.2 </div>	<div style="border: 2px solid black; border-radius: 50%; width: 80px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> <div style="background-color: #0070c0; color: white; border-radius: 50%; padding: 10px; text-align: center;"> Information security </div> </div> <div style="background-color: #e6f2ff; padding: 10px;"> <p>Construction industry's first information security management system with ISMS-P certification</p> <hr style="border-top: 1px dashed #ccc;"/> <p>Results of (personal) information security training</p> <ul style="list-style-type: none"> - 4,242 employees completed the program - 457 personal information managers completed the program <hr style="border-top: 1px dashed #ccc;"/> <p>Operated Information Security Council and revised related regulations</p> <ul style="list-style-type: none"> - 1 regulation / 13 guidelines (annually) - Held Information Security Committee meeting (quarterly) - Held Working Committee meeting (quarterly) <hr style="border-top: 1px dashed #ccc;"/> <p>Engaged in 37 improvement activities to strengthen information security management</p> <hr style="border-top: 1px dashed #ccc;"/> <p>102 employees obtained professional information security management qualifications</p> </div>	<div style="border: 2px solid black; border-radius: 50%; width: 80px; height: 80px; margin: 0 auto; display: flex; align-items: center; justify-content: center; margin-bottom: 10px;"> <div style="background-color: #0070c0; color: white; border-radius: 50%; padding: 10px; text-align: center;"> Risk Management </div> </div> <div style="background-color: #e6f2ff; padding: 10px;"> <p>Risk management focused on the project investment and execution phases</p> <hr style="border-top: 1px dashed #ccc;"/> <p>Identified and reviewed risks from both financial and non-financial perspectives</p> <ul style="list-style-type: none"> - Identified systematic improvement tasks by area with a company-wide approach and operated related activities - Reflected risk management results in the company's management activities </div>
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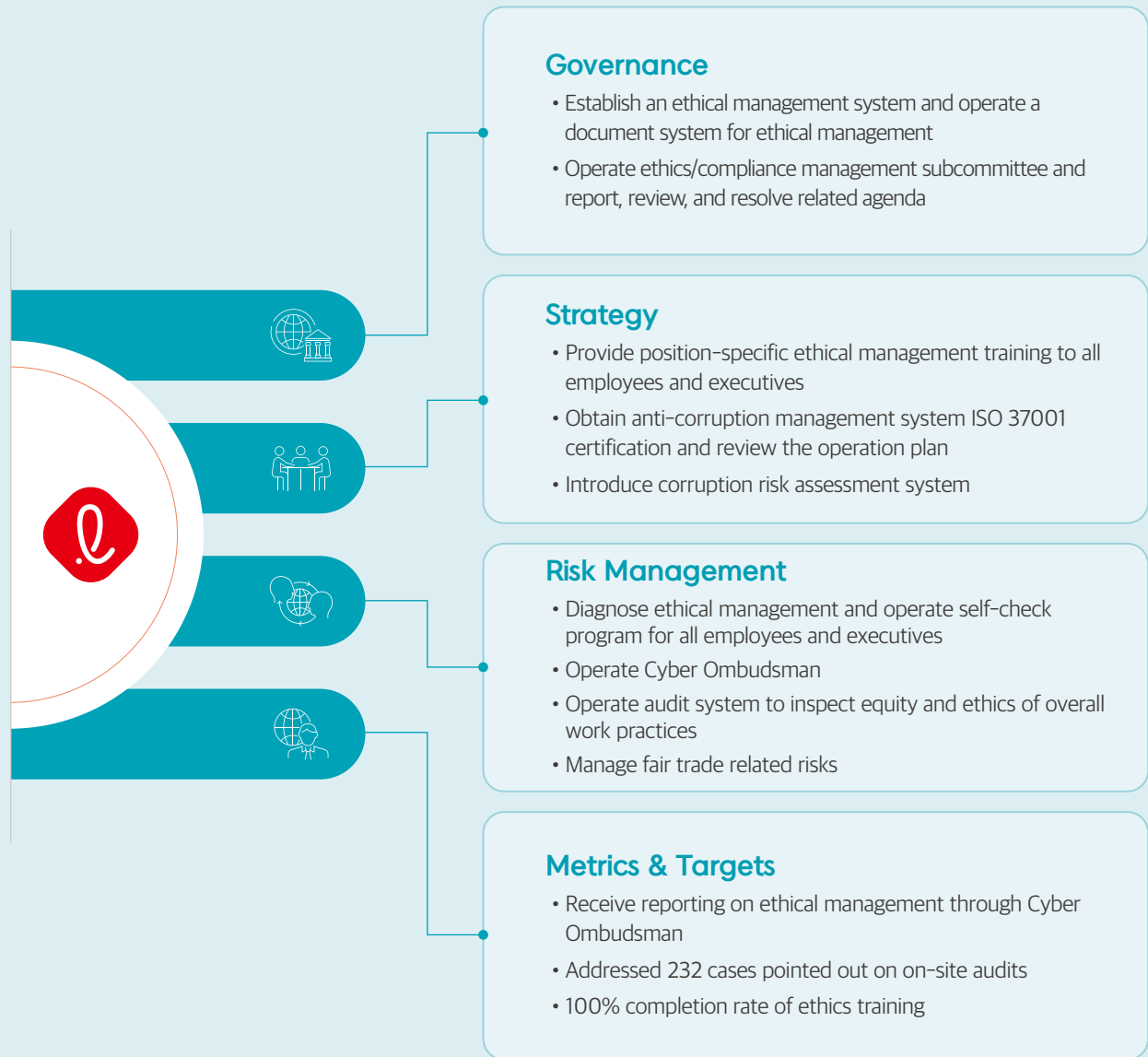
Ethics and anti-corruption

LOTTE E&C is dedicated to ongoing enhancement of its ethical standards and anti-corruption endeavors, underpinned by a range of internal regulations such as the Code of Ethics and Conduct, as well as the Anti-Corruption Management System. Our commitment extends to maintaining an ethics and compliance system that is equitable and transparent. Going forward, we will support every employee to comprehensively understand the standard for ethical evaluation and conduct, utilizing impactful ethics and compliance management approaches. We also aim to foster a culture of equity and transparency throughout the company.



- Escalating demand for ethics and compliance management from both internal and external stakeholders.
- Generating value by fostering the corporate culture centered around ethics and compliance management.

- Social/Environmental Impact ●●●●●
- Financial impact ●●●●●





Ethics and anti-corruption

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. Our strategic imperatives for ethical management encompass two key facets: the "internalization of core ethics," aimed at upholding principles and fostering equitable trust, and the "promotion of societal ethics," an ongoing endeavor to harmoniously engage with individuals, the environment, and the future. To facilitate these objectives, we have established an ethical management framework, fostering transparent communication and coexistence with both internal and external stakeholders. This framework seamlessly integrates standards of ethical conduct, systemic structures, consciousness cultivation, and implementation protocols. Annually, we assess the level of ethical management through LOTTE GROUP's proactive management system, identifying areas for improvement that subsequently inform updates to the Code of Conduct and educational initiatives. These efforts collectively drive our commitment to perpetual advancement.

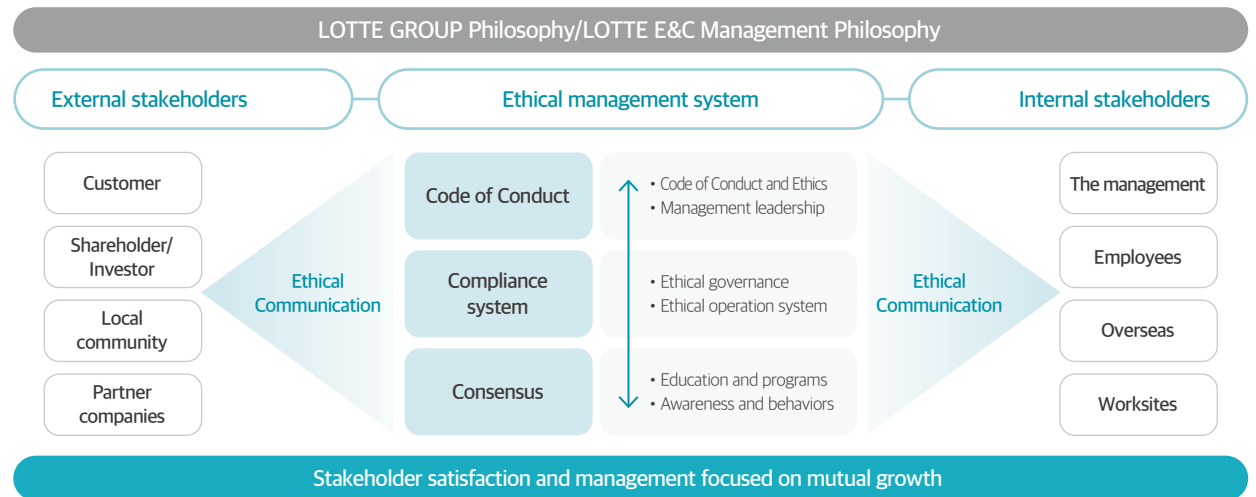
LOTTE GROUP's core values of management



Ethical Management Promotion System



Ethical management system



Ethics and anti-corruption

Ethical management

Ethical Management Policies

LOTTE E&C operates an ethical management documentation system to provide clear guidelines on ethical management to employees and other stakeholders and to encourage their implementation. The ethical management documentation system consists of ethical management regulations, guidelines for implementing regulations, ethical management strategies, and ethical management activities. Based on the five themes of LOTTE's Code of Conduct, we have established standards for value judgment and appropriate behaviors to be observed when performing our duties, as well as Code of Ethics, Code of Conduct, Behavioral Standards, and Implementation Guidelines for preventing conflicts of interest, as well, and disclose them on the ethical management website*.

* LOTTE E&C Ethical Management

Structure of ethical management documents



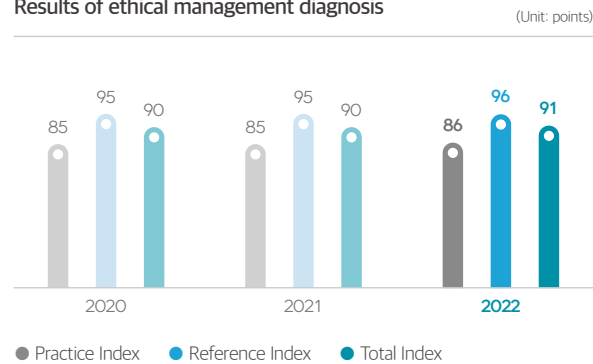
Structure of ethical management documents

THEME 1 The Trust of our Customers	THEME 2 The Trust of LOTTE Employees	THEME 3 The Trust of Our Partners	THEME 4 The Trust of Our Shareholders	THEME 5 The Trust of Society
<ul style="list-style-type: none"> Provide products and services of the highest quality Honest marketing Customer information protection Brand protection 	<ul style="list-style-type: none"> Fair opportunities and fair treatment Mutual respect among members Gender equality Safe working environment Asset protection Protection of intellectual property Prevention of information leakage 	<ul style="list-style-type: none"> Compliance with the Fair-Trade Act Respect for business partners Fair competition Legal information collection Anti-corruption 	<ul style="list-style-type: none"> Shareholder value Prevention of conflicts of interest Transparency in accounting No insider trading 	<ul style="list-style-type: none"> Environmental protection Social value creation and social contributions Respect for human rights Respect for cultural diversity Legal compliance in all countries Separation of politics and economy

Diagnosis of Ethical Management

Every year, LOTTE E&C conducts a diagnosis on ethical management status, including compliance, led by LOTTE GROUP. Based on the five themes of LOTTE's Code of Conduct, we assess our ethical management level, make needed amendments of the Code of Conduct, and develop new curriculums for ethical management training.

Results of ethical management diagnosis



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 lists, watching videos with ethical messages and solving ethical management quizzes online.



Ethical management quiz

Ethics and anti-corruption


Ethical management

Ethical Education Program

LOTTE E&C rigorously upholds ethical management principles, driven by its ambition to emerge as a premier company dedicated to achieving excellence across all domains. Starting 2015, we are conducting cyber education tailored to the characteristics of the construction industry for all executives and employees. Additionally, we are providing more specific ethical management programs for each position and job, and employees hired overseas are offered ethical education organized by overseas corporations and branch managers.

Status of ethical management training

2022.03	Ethical Management Training for New Employees (74) Ethical management training for civil engineering site managers (31)
2022.05	Ethical management training for housing construction and public service team leaders (111)
2022.06	Training on ethical management for site managers in the Civil Engineering Division (30)
2022.08	Ethical management training for new employees (68) Ethical management training for candidates for the new director of architecture (10)

 Completion rate of ethical training

100%

Reward for Best Practice in Ethical Management

Every year, LOTTE E&C selects and rewards employees and departments that excel in ethical management to raise the ethical awareness of employees and spread good corporate culture. LOTTE E&C collects cases of good practice by partner companies, customers, executives and employees, utilizing its Cyber Ombudsman system. 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 January kick-off meeting for the year 2022, LOTTE E&C recognized and rewarded two teams with excellent ethical management. Additionally, we showcased exemplary instances of best practices from four employees, acknowledging their contributions by presenting them with commemorative plaques.

Cyber Ombudsman

LOTTE E&C operates a Cyber Ombudsman system to receive inquiries on ethical management, manage and supervise cases of ethical management violations by the company and its employees, and raise issues related to ethics and compliance. In addition to employees, we also receive reports from external stakeholders such as partners and residents of LOTTE Castle, and respond to them within an average of 10 days. In 2022, we received a total of 209 reports on ethical management, and completed actions on 232 cases identified through on-site audits.

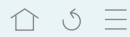
* Cyber Ombudsman 

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, operating a gift return center under the Ethics Secretariat. The principle is not to accept any forms of inappropriate gifts. In case of inevitable acceptance of the gift, the receiver is expected to return the gift to the sender or to the Ethics Secretariat. If those gifts cannot be returned, they are put up for auction, and the proceeds from the auction is spent on helping neighbors in need.



Campaign Poster to Return Holiday Gifts



Ethics and anti-corruption

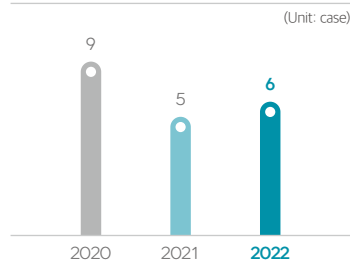
Ethical management

Enhanced Audit Activities

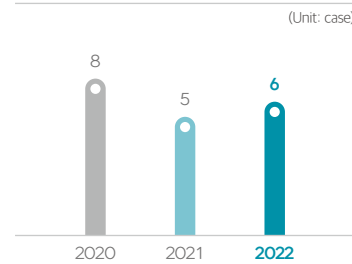
LOTTE E&C inspects the fairness and ethics in overall business by conducting different audit activities such as regular, advisory, site completion, themed, special audits and more. In addition, we conduct a preventive audit activity of monitoring the use of corporate cards to raise ethical awareness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

Ethical management performance

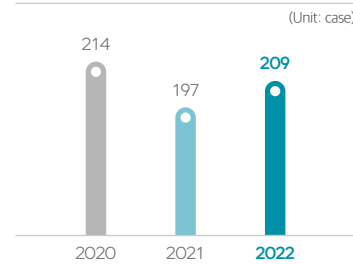
Cases of ethical management violation punished



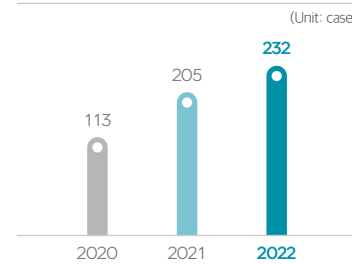
Number of violations against Code of Conduct



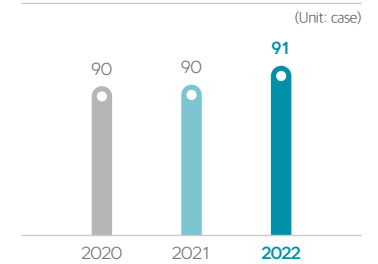
Number of cases reported in Cyber Ombudsman



Number of improved or instructed cases after audit



Ethical score



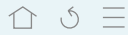
Code of Conduct for LOTTE E&C's Partner Companies

LOTTE E&C is establishing the LOTTE E&C Code of Conduct for Partners based on the Code of Conduct for Partners established by LOTTE GROUP and considering the characteristics of the construction industry. The Code is based on the UN Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights, the OECD Guidelines for Multinational Enterprises, the UN Convention on the Rights of the Child, the International Labor Organization (ILO) Core Conventions, and the Responsible Business Alliance (RBA) Code of Conduct. The Code provides recommendations for partners on environmental protection, respect for human rights, safety management, compliance and ethical management, and management systems. In cases where the Code of Conduct contradicts the legal frameworks and regulations of the countries where our operations are situated, we adhere to the more stringent standard. Through the establishment of these codes, we encourage our partners to actively engage in ESG management alongside LOTTE E&C. We strive to prevent unethical behaviors and cultivate a healthy supply chain culture by signing a pledge to comply with ethical management when signing contracts with our partners.

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.

* Code of Conduct for LOTTE E&C's Partner Companies



Ethics and anti-corruption

Compliance

Compliance Program

By introducing and operating a compliance program, LOTTE E&C strives to ensure that employees voluntarily comply with all laws and regulations related to the company's business activities and proactively respond to the risk of legal violations. We also prepare for compliance risks that may arise in all areas of business and provide a compliance manual with detailed guidelines so that employees can manage risks on their own. We report the operation plan and status of our compliance program to the BOD on a quarterly basis, and we regularly review the revision of the Code of Conduct. In addition, we are continuously improving various programs, including programs to enhance the legality of employees' work performance and prevent illegal or wrongful acts in advance.

Eight key factors of compliance program

- 01 Developing and implementing CP standards and procedures
- 02 Appointing compliance managers and officers
- 03 Willingness of and support by the CEO
- 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

Anti-corruption Management System

In October 2022, LOTTE E&C obtained the international standard ISO 37001 certification for anti-corruption management system. ISO 37001 is an international standard established by the International Organization for Standardization (ISO) in 2016 that stipulates the control of all corruption risks and anti-corruption policies that may arise in an organization. We established policies and detailed standards in May 2022, prepared risk assessment system and countermeasures, and passed the certification audit in October. In order to further enhance our anti-corruption and ethical management, we report our ISO 37001 operation plan and its status to the BOD every year, and will continue to introduce various systems to enhance trust in our corporate management.



ISO 37001 Certificate

Compliance Training

LOTTE E&C publishes CP Times that contain information on fair trade and anti-corruption as well as quiz materials to inform employees. In addition, we designated the foundation day of our company as CP Day to raise employees' awareness of compliance. In 2022, we held the 'CP Golden Bell Event' integrating Metaverse to select and reward winners. In addition, to systematically manage ISO 37001 certification, we selected corruption risk assessors from each team and internal auditors from each division and provided expert training, which will be operated annually, going forward.



CP Day

Ethics and anti-corruption

Compliance

Establishment of Corruption Risk Assessment

LOTTE E&C trains corruption risk assessors and internal auditors to conduct annual corruption risk assessments. In the year 2022, the assessment was conducted for 103 teams stationed at the headquarters, encompassing key corruption risk categories such as bribery, embezzlement, and misappropriation. In addition, for each identified type of corruption risk, stakeholders in each team analyze relevant laws and risks, and implement team-level anti-corruption activities to control risks. Departments whose risk level is assessed as "high" are required to take additional countermeasures. The results of the assessment are reported to the Head of Anti-Corruption and the BOD to strengthen risk management on corruption.


Fair Trade Risk Management

LOTTE E&C conducts an annual risk assessment to identify major risk factors related to unfair trade and unfair competition, and reflects the result in the operation of the compliance program for the following year. In the case of high-risk fair-trade areas, we monitor the settlement and work orders of all sites every month to identify risks in detail, and select four to five sites to inspect subcontract status. The identified risks are addressed right away by the person in charge, both at sites and office. In addition, we collect major cases and issues to educate employees on work precautions through monthly CP TIMES training for all employees and special training on subcontracting for all sites. We also evaluate the effectiveness of our activities every year and report them to the BOD. LOTTE E&C is continuously improving our systems such as work orders to prevent risks from occurring. The results of on-site subcontracting inspections and trainings are reflected in the key performance indicators (KPIs) of each construction division, and are also reflected in the BSC¹⁾ evaluation of each site. We also evaluate subcontracting inspections and fair-trade case management, and reward excellent subcontracting headquarters and sites semi-annually.

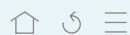
1) BSC (Balanced Score Card): A performance management system where performance indicators in four perspectives (finance, customers, internal process, learning and growth) are aligned with organization's vision and strategic objectives.

Compliance Ombudsman

LOTTE E&C's Secretariat of Compliance, devoted to compliance management, operates a compliance ombudsman system. 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 subjects of reporting include violations of the Subcontracting Act, violations of the Fair-Trade Act such as unfair joint activities or unfair trade practices, violations of the Act on the Prohibition of Unfair Solicitation and Graft, and violations of other compliance-related laws and regulations. The confidentiality of individuals reporting noncompliance is rigorously maintained, ensuring their personal information remains undisclosed. Informants are safeguarded against any potential disadvantages, and anonymous reporting is also an available option for those who prefer it. Reported matters are handled with fairness and efficiency, and the outcomes are transparently communicated back to the reporter.

* Compliance Ombudsman 





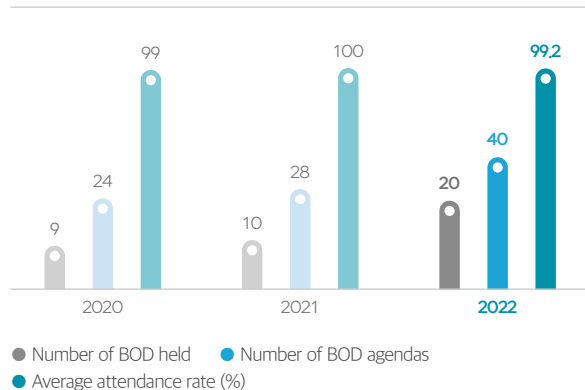
Governance

Board of Directors

Composition of Board of Directors

LOTTE E&C's Board of Directors is the highest decision-making body with voting rights on corporate management and business operations, consisting of a total of six directors. The term of office of directors is set by resolution of the general meeting of shareholders within three years. In principle, regular BOD meetings are held once a month, and extraordinary BOD meetings are held from time to time as needed. In 2022, we held a total of 20 BOD meetings, with an average attendance rate of 99.2%. The BOD also operates three subcommittees: the Management Committee, the Transparency Management Committee, and the Compensation Committee. The Management Committee is composed of three inside directors, including the CEO, and the Transparency Management Committee is composed of three or more directors, with at least two outside directors. The Compensation Committee consists of three or more directors, including at least two outside directors, and the number of outside directors must be at least two-thirds of the total number of members. The term of office of the subcommittees is set as the expiration date of the directors' term of office, and there is no separate nominating committee and audit committee.

BOD operation



BOD composition

Type	Name	Gender	First appointed	Tenure	Transaction with LOTTE E&C	Major career
Inside directors	Hyun Chul Park	Male	December 2022	December 2024	None	CEO, Chairperson of BOD ¹⁾
	Hee Cheol Seok	Male	March 2013	March 2025	None	Head of Construction Management Division
	Bu Yong Lee	Male	March 2019	March 2025	None	Head of Housing Division
	Eun Byung Park	Male	March 2023	March 2025	None	Head of Management Support Division
Outside directors	Ho Won Kim	Male	March 2020	March 2024	None	Collaboration Professor at Seoul National University
	Seong Soo Ko	Male	March 2020	March 2024	None	Professor of Real Estate Studies at Konkuk University
Auditor	Ho Seok Jeong	Male	March 2021	March 2024	None	Manager of Business Support Team, LOTTE Corporation

1) In accordance with the 'Board of Directors' Regulations,' the CEO serves as the chairman of the board.
- The 'Board of Directors' Regulations,' do not allow directors with specific conflicts of interest to exercise voting rights, thereby managing conflicts of interest.

Committees of BOD

Committee type	Management Committee	Transparency Management Committee	Compensation Committee
Purpose of establishment	Deliberating and deciding on general matters for operation	Deliberating and deciding on negotiated contracts of a certain scale or larger with affiliated persons and affiliates	Deliberating and deciding on agenda delegated from the Board, deliberating and deciding on individual remuneration and performance-based pay for registered executives and remuneration limits for non-registered executive
Composition	3 Inside directors	2 Outside directors and 1 Inside director	2 Outside directors and 1 Inside director
Name of Directors	Inside Director Hyun Chul Park (Chairperson) Inside Director Bu Yong Lee Inside Director Jae Hong Ahn	Outside Director Seong Soo Ko (Chairperson) Outside Director Ho Won Kim Inside Director Bu Yong Lee	Outside Director Ho Won Kim (Chairperson) Outside Director Seong Soo Ko Inside Director Jae Hong Ahn

· On December 9, 2022, there was a change in the Chairman of the Board of Directors (from Ha Seok-Ju to Hyun Chul Park).
· On December 18, 2022, Director Jae Hong Ahn resigned from internal affairs.

Governance

Board of Directors

Independence of Directors

LOTTE E&C's CEO serves as the Chairman of the Board in accordance with the regulations of its Board of Directors. Directors are appointed by the existing directors submitting an agenda for the appointment of director candidates to the general meeting of shareholders and passing a resolution at the general meeting. We ensure the independence of the Board members to enable them to objectively supervise the company's operations.

Expertise of Board of Directors

LOTTE E&C appoints directors with substantial expertise and qualifications in the fields of architecture, law, business strategy, human resources, and finance. There is no separate training provided for the members of the Board of Directors. To facilitate the smooth performance of outside directors' duties, a supporting team composed of three employees with an average tenure of about 14 years is in place. This team adequately explains the company's management status and agenda, shares materials in advance, responds to queries, and assists in the directors' roles. The company's annual report includes the background and scope of activities of individual directors, and the information of the supporting team that aids outside directors' duties is also disclosed.

Independence of Audit

The auditors of LOTTE E&C may attend the Board of Directors and independently supervise the work of the directors, and request departments to submit books or documents related to their tasks. They may also receive reports from the company on business matters when necessary and have access to management information as appropriate. Although we do not have a separate audit committee in place, one auditor appointed by resolution of the general meeting of shareholders performs audit work. In 2022, we conducted 14 audits out of a total of 20, and in order to help the auditors perform their duties smoothly, we have a support organization consisting of three members of the accounting team to review and report on key management status and perform other audit support tasks.

Board of Directors' Performance Evaluation and Compensation

limits set by the resolution of the annual shareholders' meeting, and directors' retirement benefits are calculated based on the monthly base salary, length of service, and payment rate in accordance with the Executive Retirement Payment Regulation, which is approved through the shareholders' meeting. Approval was obtained during the regular shareholders' meeting held in March 2022 to establish a compensation limit of KRW 12 billion. We comprehensively consider factors such as rank, tenure, position, and company contribution in accordance with resolutions of the Board of Directors when making compensation decisions, and we provide salaries and incentives accordingly. We transparently disclose the entire compensation status of the directors annually through the annual report.

Compensation of directors

(Unit: persons, KRW million)

Type	Number	Total Compensation	Per Person Average
Registered directors	6	5,584	1,368
Outside directors	2	144	72
Auditor	1	-	-

※ For non-executive directors who do not receive compensation, their numbers are included in the count of registered directors, but excluded when calculating the average compensation per person. The calculation includes the retirement benefits of registered directors who resigned in December 2022, including executive directors.

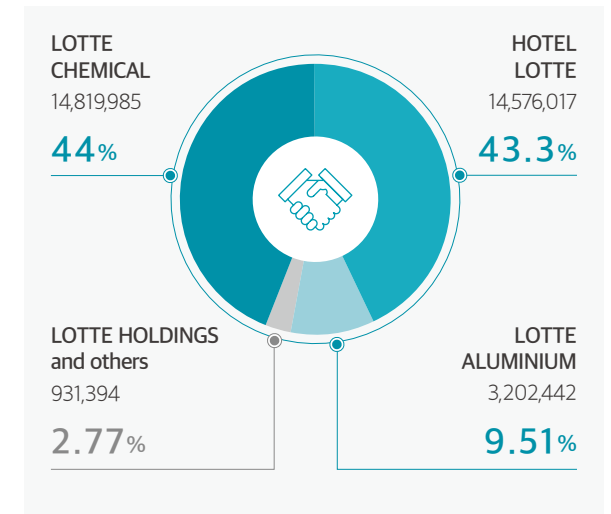
* LOTTE E&C Business Report 

Shareholders

LOTTE Chemical is the largest shareholder of LOTTE E&C, with a 44% stake as of December 31, 2022. Affiliated persons, including the largest shareholder own a 99.60% stake. The largest shareholder of LOTTE Chemical is LOTTE Corporation with a 25.59% stake.

Total shares of largest shareholder and affiliated person

(Share type: Common share)



Information Security

Information Security Management

Information Security Management System

LOTTE E&C is systematically addressing potential threats such as hacking attacks targeting businesses and cyberterrorism utilizing ransomware, striving to proactively prevent increasingly sophisticated incidents related to personal information protection. To this end, we have upgraded our ISMS certification, which we have been maintaining since 2017, to ISMS-P certification in August 2022. We are operating a monthly Information Security Protection Day, and an information security division directly under the CEO works to enhance expertise and strengthen security. Specialized Task Forces (TFs) are formed to conduct security assessments and provide information security training at both headquarters and field levels. We appoint professionals who meet the qualifications of the Chief Information Security Officer (CISO) in accordance with Article 6 (Information Security Manager) of the Information Security Organization Operation Guidelines. Information security policies and guidelines are revised at least once a year to incorporate the latest legal regulations. In 2022, one regulation and thirteen guidelines were revised, and these updates are communicated to all employees through the company portal or during information security training. Particularly, to enhance personal information management, the Information Security Manager reports monthly status to the Chief Privacy Officer (CPO) after obtaining CISO approval. Through this process, a total of 37 improvement activities were pursued in the year 2022.

Information Security Committee

LOTTE E&C has established and operates an Information Security Committee to deliberate and coordinate important matters related to information security and personal data protection in accordance with Article 4 of the Personal Information Protection Act and LOTTE GROUP's Information Protection Regulations. The Committee is composed of the Chairman, who serves as the CEO, the Vice Chairman, who serves as the head of the Strategic Planning Division, the Chief Information Security Officer (CISO), the Chief Privacy Officer (CPO), the Compliance Team Leader, designated employees appointed by the Chairman, and the head of the relevant department responsible for the agenda. The Committee meets biannually (once in Q1 '23) and the meeting can be convened additionally when issues related to information security needs to be shared or when requested by the majority of members. In 2022, discussions were held on the latest trends in information security, performance plans and results for information security, investment budgets, security adequacy review and approval, and many others. Practical reviews of related matters and the formulation of implementation plans were carried out through quarterly meetings led by the separate Information Security Operations Committee.

Regular Council on Information Security

<p>Information Security Committee Quarterly basis (Changed to quarterly basis in 2023)</p>	<p>Working Committee on Information Security Quarterly basis</p>	<p>LOTTE GROUP's Working Committee on Information Security Quarterly basis</p>	<p>Korea CISO Council Monthly basis</p>
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Acquisition of ISMS-P Certification

LOTTE E&C acquired ISMS-P certification for the first time in the construction industry in August 2022. Since 2017, LOTTE E&C has been certified for an Information Security Management System (ISMS) to safeguard business and personal information in a safe and trustworthy way. In 2022, we took one step further to obtain Personal Information & Information Security Management System (ISMS-P) certification to further advance information management systems. The certification applies to protection of employees' personal information, and information about the residents of LOTTE E&C as well as Elyes, an asset management platform for apartment sales and private rental houses. We have further updated LOTTE Castle Call Center System. We are spending more than 7% of our total IT budget in information security protection, and planning to secure infrastructure necessary for advancing the information security system.



Commemoration of ISMS-P acquisition

Information Security

Information Security Management

Guidelines for Personal Security Management

LOTTE E&C has established Personal Security Management Guidelines to prevent security incidents involving employees. These guidelines are applied to all employees of the company, including regular employees, contract workers, and on-site recruits, during recruitment, termination, and throughout their work processes. All employees are required to sign a confidentiality agreement for incumbents upon joining the company, which includes provisions such as confidentiality and non-disclosure. Confidential business information must not be disclosed under any circumstances, and any violation of this can lead to civil or criminal liability in accordance with relevant laws and regulations. Furthermore, all departing employees are required to return all company-related information except for publicly available or personally held data and are required to sign an employee security pledge for departing employees, which includes commitments to confidentiality and non-disclosure. According to Article 18 of the Personal Security Management Guidelines (Information Protection Rewards and Penalties), the company can reward departments, sites, or employees who contribute to enhancing security levels in the course of implementing information protection regulations. Conversely, for employees who violate information protection policies or procedures and negatively impact the company's image, the HR Committee may be convened for disciplinary actions. Additionally, we are strengthening management and oversight of information protection by publicly disclosing quarterly Key Performance Indicator (KPI) scores of each department based on the corporate Key Performance Indicator criteria for information protection activity. This includes issuing warning notices to departments and sites with low scores.

Internalization of Information Security Protection

Mandatory Training of Information Protection for Employees

LOTTE E&C conducts an annual education program for all workers to prevent any critical risk factors arising from major information security crisis such as personal information leakage, that can threaten the existence of the company. We also aim to raise awareness of information protection and strengthen internal security measures. Due to longstanding Covid-19 crisis and increased number of overseas employees, we carried out online training and tried to increase the course completion rate. In September 2022, for approximately two weeks, we operated an online education site using both PCs and mobile devices. Participants accessed the site individually and completed the courses. We encouraged engagement by incorporating interactive quizzes and offering modest rewards to promote participation. The curriculum covered topics such as messages from the CEO, information security issues and case studies, strengthening of information security management activities, guidance on information security systems, and personal data protection. According to survey results, the education received a satisfaction rating of 4.2 out of 5. Among all employees, 98.4% (4,242 individuals) successfully completed the program. We will enhance the education program by implementing a process where individuals who have not completed the mandatory programs on the website are required to submit documentation explaining the reasons for non-completion. Furthermore, the completion of training will be factored into the Information Security Key Performance Indicator (KPI) for each department.

Simulated Training to Strengthen Preparedness for Information Security Accidents

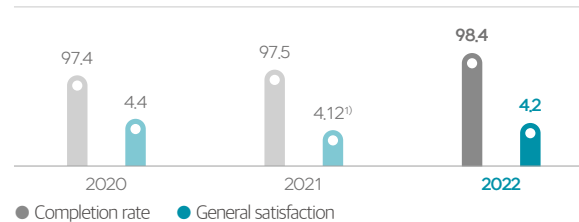
To enhance the security awareness of employees against malicious emails, LOTTE E&C conducted simulated virus training a total of eight times in 2022. For the training, mock email templates were randomly sent to our employees, and the recipients were inspected whether they have downloaded and executed the attachments. The average infection rate of the employees was 3%. Those affected by the simulation underwent additional education and were asked to submit the explanation for infection. In 2023, our goal is to maintain an infection rate of less than 2% by strengthening training for new employees and additional measures.

Simulated Hacking for Prevention of Information Security Accidents

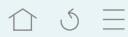
LOTTE E&C devised swift response and recovery procedures for security accidents based on its Information Security Incident Response Guidelines. To minimize the impact of security breaches, we conduct simulated hacking to assess the security and safety of our system. In 2022, in collaboration with the Information and Communication Convergence Security Division, a total of 66 apartment complexes with approximately 53,000 units were assessed for home network (wallpads) vulnerabilities and server weaknesses. In December, white hackers simulated attacks on the Elyes website and internal ERP system. Additionally, information security inspection were carried out by LOTTE GROUP to examine security subsidiaries, branches, and sites abroad. Immediate corrective measures were taken for deficiencies identified, such as firewall management.

Information Protection Education

(Unit: %, points)



1) Data revised due to changes in calculation criteria



Information Security

Internalization of Information Security Protection

Personal Information Protection Policy

When LOTTE E&C needs to collect customers' information, we request the minimum 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.

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. Semi-annual online training was conducted for employees who handle personal information and Team Leads of the Housing Division. In the first half (March), 342 individuals participated, and in the second half (July), 115 individuals completed the training, totaling 457 participants. The employees who handle personal information are required to take at least 8 hours of personal information training 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. Currently, 102 employees have obtained the qualifications.

Response to Information Security-related Risks

Preventive Measures for Customer Information Security Accidents

In 2022, LOTTE E&C conducted joint inspections, including ethical management inspection, for a total of 22 newly developed offices for house sales, rental properties, and large-scale construction sites. Special training was provided, particularly to ensure thorough management of personal information obtained from customers. Additionally, for sites and overseas branches with relatively weaker security compared to the headquarters, the security levels of individual PCs were assessed, and a solution capable of automatic one-click actions was implemented on 3,800 PCs. We continuously conduct monitoring to prevent internal information leaks and breach incidents, including customer personal information, and requests explanations for any suspicious activities or excessive actions such as document exports.

Response System for Information Security Accident

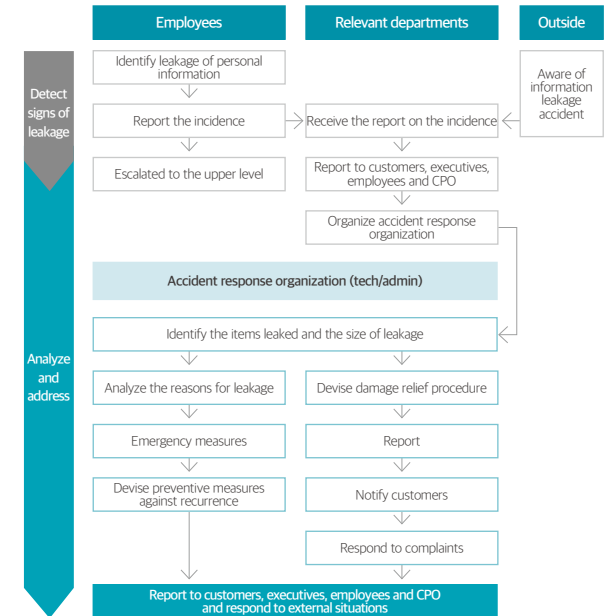
In an effort to prevent and respond to information security accidents, LOTTE E&C has adopted a response procedure for uninterrupted business according to the security guidelines of its internal information system. We conduct comprehensive training for information recovery on a quarterly basis. In 2022, the company took part in a simulation training for responding to cyber crises led by the Korea Internet & Security Agency (KISA) to inspect the response system for security violations. Furthermore, we are enhancing security by conducting simulated hacking targeting wall pads and servers in order to strengthen the security of the apartment's home network system. We are also introducing a comprehensive home network security system to ensure compliance with regulations and to prioritize the protection of personal information and privacy for apartment residents.

Operation of Accident Reporting Center

All employees of LOTTE E&C are required to follow Article 14 (Incident Detection) of the Information Security Incident Response Guidelines. If they detect an incident or suspicious activity related to a breach of security or leakage/loss of critical information assets from external sources, they must immediately report it to the Information Security Department. For cases involving irrelevant viruses or suspicious spam emails received by employees, a designated procedure is in place to report them to a dedicated spam email account. In the event of internal information leakage being discovered, the report can be submitted through LOTTE E&C's Cyber Ombudsman system. The received reports are promptly addressed in accordance with relevant regulations.

* Cyber Ombudsman

Response Procedures for Personal Information Leakage





Risk Management

Risk Management System

LOTTE E&C identifies potential risks and makes decisions after careful deliberation to manage various risks, such as delays in schedule, design risks, that can directly and indirectly affect the business. In light of the characteristics of construction business, financial risks are managed in each project investment and execution phases, and in case of non-financial risks, each working departments execute risk minimizing activities.

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

- 01 Division review
- 02 Pre-deliberation meeting on investment
- 03 Deliberation meeting on investment (in the presence of the CEO)
- 04 Report to the CEO

Risk Management in Implementing a Project

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. For projects with significant potential risks in each division, immediate measures are being taken. To ensure systematic project execution risk management, LOTTE E&C shares and makes decisions on major issues within each division through division head meetings, and reports them to the CEO.

Risk management process in implementing a project

- 01 Finalize the agenda
- 02 Meetings of head of divisions (in the presence of the CEO)
- 03 Report to the CEO

Foreign Exchange Risk Management

LOTTE E&C operates a Foreign Exchange Risk Management Committee composed of a chairman and three members to manage foreign exchange risks. The committee analyzes and reviews various foreign exchange risk management techniques to control risks related to currency fluctuations. Regular quarterly meetings are conducted, and ad-hoc meetings can be held as deemed necessary by the chairman.

Liquidity Risk Management

LOTTE E&C's funding team maintains the unused borrowing limit at an appropriate level and continually monitors liquidity predictions to ensure the ability to meet operational funding demands while managing loan limits and commitments to prevent violations. We consider factors such as funding plans, compliance with commitments, internal target financial ratios, and external regulatory and legal requirements when predicting liquidity. Additionally, surplus funds are invested in financial products such as interest checking, time deposits, money market deposits, marketable securities, and others, to ensure sufficient liquidity.

Internal Accounting Risk Management

LOTTE E&C conducts an annual evaluation of the design and operation of the internal accounting control system for the fiscal year ending December 31. We check for vulnerabilities in accordance with the best practices of the internal control accounting system and prepare a report on the evaluation of operating conditions in accordance with Chapter 5 (Application to Small and Medium-sized Enterprises) of the Best Practices. No vulnerabilities were found as a result of the evaluation by the external auditor in 2022, and we are continuously striving to ensure transparency in our internal accounting management.

Management of Non-Financial Risks

Each working-level organization of LOTTE E&C performs needed activities to minimize possible risks, and agenda of nonfinancial risks is reported to the CEO through the Sustainable Management Committee. Non-financial performance is collected and integrated by the ESG Team in Strategic Planning, and in 2023, we are taking a company-wide approach to identify systematic improvement tasks and activities for each area. We also prioritize sustainable growth and mutual growth with stakeholders and reflect this in our management.

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ESG Data Book

Economic Performance

Consolidated Financial Statement

Category	Unit	2020	2021	2022 ¹⁾
Revenue	KRW million	5,097,914	5,701,112	5,944,331
Operating income	KRW million	357,019	493,695	360,842
Profit from continuing operations	KRW million	291,167	323,714 ²⁾	172,142
Net income (Net loss)	KRW million	193,798	219,998	74,474
Earnings Per Share	KRW	6,023	6,837 ²⁾	2,311
Current assets	KRW million	3,639,026	3,854,462	6,828,602
Non-current assets	KRW million	1,528,359	1,629,669	2,750,700
Total assets	KRW million	5,167,385	5,484,131	9,579,302
Current liabilities	KRW million	2,155,621	2,167,882	5,773,955
Non-current liabilities	KRW million	614,261	702,755	1,179,769
Total liabilities	KRW million	2,769,882	2,870,637	6,953,724
Capital	KRW million	215,588	215,588	207,193
Capital surplus	KRW million	1,122,618	1,122,618	-
Other contributed equity ³⁾	KRW million	-	-	961,628
Retained earnings, etc.	KRW million	998,783	1,163,627	1,347,834
Total capital	KRW million	2,397,503	2,613,494	2,625,577
Total liabilities and capital	KRW million	5,167,385	5,484,131	9,579,302

Separate Financial Statements

Category	Unit	2020	2021	2022 ¹⁾
Revenue	KRW million	5,093,292	5,690,160	5,931,343
Operating income	KRW million	359,494	497,239	365,773
Profit from continuing operations	KRW million	290,741	323,217	169,213
Net income (Net loss)	KRW million	193,817	219,713	92,169
Earnings Per Share	KRW	6,023	6,828	2,860
Current assets	KRW million	3,414,571	3,548,386	6,610,127
Non-current assets	KRW million	1,686,349	1,831,831	2,919,718
Total assets	KRW million	5,103,920	5,380,217	9,529,845
Current liabilities	KRW million	2,148,464	2,127,304	5,766,710
Non-current liabilities	KRW million	603,762	690,626	1,178,274
Total liabilities	KRW million	2,752,226	2,817,930	6,944,984
Capital	KRW million	215,588	215,588	207,193
Capital surplus	KRW million	1,122,618	1,122,618	-
Other contributed equity ³⁾	KRW million	-	-	961,628
Retained earnings, etc.	KRW million	999,566	1,164,090	1,360,837
Total capital	KRW million	2,351,694	2,562,286²⁾	2,584,860
Total liabilities and capital	KRW million	5,103,920	5,380,217	9,529,845

* Go to the Business Report

1) K-GAAP was applied to the financial information covering the period from 2020 to 2021, and K-IFRS was applied to the period from 2022

2) Data revised due to changes in calculation criteria

3) Starting 2022, Capital Surplus is recorded as Other Paid-in Capital in accordance with K-IFRS



ESG Data Book

Economic Performance

Distribution of Economic Values

Category	Unit	2020	2021	2022
Outsourcing partners (Outsourcing expenses)	KRW million	2,454,557	3,029,704	2,826,391
Material suppliers (Material costs)	KRW million	1,325,908	1,006,772	1,016,849
Ratio of purchases paid to all partners ¹⁾	%	100	100	100
Employees (Salaries and benefits)	KRW million	326,113	362,125	381,580
Shareholders (Dividends)	KRW million	41,831	42,957	-
Government (Corporate tax)	KRW million	96,924	103,503	77,043
Local communities (Donations, charity expenses, investment)	KRW million	3,228	4,267	4,542
Creditors (Interest)	KRW million	32,930	27,765	93,375
Total Amount of Economic Performance Distributed	KRW million	4,281,491	4,577,093	4,399,780
Portion of Economic Values Held²⁾	KRW million	811,801	1,113,067	1,531,563

1) Basis for calculation: Based on the purchase cost paid to all workplaces.

2) Basis for calculation: Apply separate financial criteria

Research and Development

Category	Unit	2020	2021	2022
Patent registrations ¹⁾	Cases	3	2	2
Technology development service expenses	KRW million	20,549	16,290	20,442
Exclusive technology development expenses	KRW million	5,175	7,587	7,165
Total R&D investment(Technology development service expenses + Exclusive technology development expenses)	KRW million	25,724	23,877	27,607
Green R&D investment ²⁾	KRW million	13,077	18,878	22,103

1) As of the date when patents and green technology certifications are registered. Patents and green technology certifications: 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)), 2022 (tuned mass damper structure having sound absorbing structure for reducing floor impact sound, safety review of AI soil barrier temporary facility)

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

R&D Investment Goals

Category	Unit	2023	2024	2025
Green R&D investment goals ¹⁾	KRW million	80,000	90,000	100,000

1) Basis for calculation: Net R&D cost + R&D labor cost



ESG Data Book

Environmental Performance

Energy Consumption¹⁾

Category	Unit	2020	2021	2022
Total energy consumption	TJ	800.51 ²⁾	856.12	940.03
Energy consumption intensity	TJ/KRW billion	0.16	0.15	0.16 ³⁾
Intensity change rate	%	-	-6.25	6.7
Non-renewable energy	TJ	800.51 ²⁾	856.12	940.03
Renewable energy	TJ	0	0	0
Energy consumption by fuel type (Non-renewable energy)				
LNG	TJ	33.33	24.59	33.25
Brown coal ⁴⁾	TJ	0	0	0
Kerosene	TJ	89.83	61	88.24
Diesel	TJ	16.46	13.45	17.97
Gasoline	TJ	12.66	4.07	2.45
LPG (Vehicle)	TJ	0.69	0.39	0
LPG (Liquefied Petroleum Gas)	TJ	0.13	0.16	0.21
Total: Direct energy consumption⁵⁾	TJ	153.11	103.66	142.13
Electric power	TJ	641.16	750.38	785.89
Steam	TJ	6.25	2.10	12.01
Total: Indirect energy consumption⁶⁾	TJ	647.41	752.48	797.90
Total energy cost	KRW 100 million	117.87	133.59	165.63
Ratio of worksites disclosing energy consumption data	%	100	100	100

1) Data from domestic workplaces.

2) Data revised due to changes in calculation criteria

3) Basis for calculation: Total energy consumption (TJ) ÷ Sales (KRW billion), Apply separate financial criteria.

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

5) Basis for calculation: LNG + Brown coal + Kerosene + Diesel + Gasoline + LPG (Vehicle, Liquefied Petroleum Gas)

6) Basis for calculation: Electric power + Steam

GHG Emissions¹⁾

Category	Unit	2020	2021	2022
Total GHG emissions (Scope 1+2))	tCO ₂ eq	41,151	42,560	47,056
GHG emissions intensity	tCO ₂ eq/ KRW billion	8.07	7.47	7.93 ²⁾
Intensity change rate	%	-	-7.4	6.2
Scope 1	tCO ₂ eq	9,791	6,577	9,029
Scope 2	tCO ₂ eq	31,360	35,983	38,027
Reduction of GHG emissions ⁴⁾	tCO ₂ eq	2,968 ³⁾	4,993 ³⁾	3,146
Ratio of worksites disclosing GHG emission data (Domestic)	%	100	100	100

1) Data from domestic workplaces.

2) Basis for calculation: Total GHG emissions (tCO₂eq) ÷ Sales (KRW billion), Apply separate financial criteria.

3) Data revised due to changes in calculation criteria

4) Basis for calculation: Reduction of GHG emissions by replacing concrete curing fuel, reduction of GHG emissions by replacing LED lamps



ESG Data Book

Environmental Performance

Waste Generation¹⁾

Category	Unit	2020	2021	2022
Total waste generation	ton	466,371	589,348	629,625
Waste generation intensity	ton/KRW billion	91.48²⁾	103.37²⁾	106.15³⁾
Intensity change rate	%	-	13.0	2.7
Amount of waste generated				
Waste concrete	ton	249,303	146,616	166,928
Mixed construction waste	ton	138,565	214,598	304,817
Construction waste soil	ton	49,390	24,639	64,720
Waste asphalt concrete	ton	6,171	12,560	17,788
Wood wastes	ton	10,392	12,587	8,518
Waste synthetic resins	ton	5,629	6,189	7,608
Construction sludge	ton	5,142	169,250	57,484
Waste boards	ton	1,415	2,823	1,374
Tile/Ceramic waste	ton	13	163	379
Other wastes	ton	351	1	8
Textile wastes	ton	0	3	0
Amount of waste disposed				
Waste recycled ⁴⁾	ton	453,242	586,529	629,134
Waste recycling rate	%	97.18	99.52	99.92
Construction waste treated	ton	13,129	2,819	491
Waste incinerated	ton	1,154	904	483
Waste landfilled	ton	11,975	1,915	8
Ratio of worksites disclosing waste generation data (domestic)	%	100	100	100

1) Data from domestic workplaces.

2) Data revised due to changes in calculation criteria

3) Basis for calculation: Total waste generation (ton) ÷ Sales (KRW billion), Apply separate financial criteria.

4) Basis for calculation: In accordance with the act on promotion of recycling of construction waste.

Material Consumption¹⁾

Category	Unit	2020	2021	2022
Non-renewable raw materials				
Ready-mixed concrete	m ³	2,633,760	2,891,091	1,858,288
Cement	ton	36,876	476,804	31,113
Aggregate	m ³	93,942	266,364	209,222
Asphalt concrete	ton	93,766	57,187	55,322
Sand	m ³	7,542	12,051	8,628
Rebar	ton	416,620	481,369	146,156
Plaster board	Sheet	1,181,965	3,337,733	2,619,627
Recycled aggregate ²⁾	m ³	3,601	1,630	3,615
Ratio of recycled materials as input ³⁾	%	3.7	0.6	1.7

1) Includes activities in overseas sites.

2) Basis for calculation: Aggregate conforming to quality standards in accordance with Article 35 of Construction Waste Recycling Promotion Act through physical or chemical treatment of construction waste

3) Basis for calculation: Recycled aggregate ÷ (recycled aggregate + aggregate) × 100



ESG Data Book

Environmental Performance

Water Consumption¹⁾

Category	Unit	2020	2021	2022
Total water consumption ²⁾	Million ton	668,973	695,165	705,877
Water consumption intensity	Million ton /KRW billion	131.22 ³⁾	121.93 ³⁾	119.01 ⁴⁾
Intensity change rate	%	-	-7.1	-2.4
Urban water withdrawal	Million ton	482,224	592,354	578,322
Surface water withdrawal	Million ton	0	0	0
Underground water withdrawal	Million ton	186,749	102,811	127,555
Amount of water discharged back to intake station as similar quality with raw water	Million ton	0	0	0
Water recycled	Million ton	0	0	0
Water Recycling Rate	%	0	0	0
Ratio of worksites disclosing water consumption data	%	100	100	100

1) Data from domestic workplaces.

2) Basis for calculation: Total of water withdrawal by water intake (Amount of water intake and consumption are the same)

3) Data revised due to changes in calculation criteria

4) Basis for calculation: Total water consumption (Million ton) ÷ Sales (KRW billion), Apply separate financial criteria.

Environmental Management System

Category	Unit	2020	2021	2022
Ratio of worksites certified for EMS (Domestic)	%	100	100	100

Green Procurement

Category	Unit	2020	2021	2022
Total green procurement	KRW million	64,072	55,409	58,558
Products certified for Eco Mark	KRW million	17,599	26,756	6,824
Products certified for good recycled (GR Mark)	KRW million	4,041	2,209	1,023
Products with healthy building material (HB Mark)	KRW million	13,690	1,966	12,293
High-efficiency Energy Equipment	KRW million	2,845	5,401	3,845
Energy Efficiency Rating 1, 2	KRW million	25,851	18,946	34,573
Energy conservation	KRW million	46	130	0

Environmental education and violation of environmental regulations¹⁾

Category	Unit	2020	2021	2022
Environmental education				
Number of individuals participated in environmental education	Number of individuals	-	93	123
Total hours of environmental education provided	Hours	-	279	369
Hours of environmental education provided per person	Hours	-	3	3
Compliance with environmental regulations				
Number of dispositions of a corporate fine	Cases	-	-	-
Amount of a corporate fine	KRW million	-	-	-

1) Newly introduced in 2022



ESG Data Book

Social Performance

Employee Information¹⁾

Category	Unit	2020	2021	2022
Total number of employees	Persons	3,323	3,568	3,932
Number of female employees	Persons	291	342	410
Ratio of female employees	%	8.8	9.6	10.4
Number of male employees	Persons	3,032	3,226	3,522
Ratio of male employees	%	91.2	90.4	89.6
Number of employees (Below 30 years old)	Persons	315	331	408
Number of employees (Between 30 and 50 years old)	Persons	2,434	2,543	2,714
Number of employees (Over 50 years old)	Persons	574	694	810
Number of regular employees (All)	Persons	2,501	2,595	2,785
Ratio of regular employees (All)	%	75.3	72.7	70.8
Number of regular employees (Female)	Persons	212	244	286
Ratio of regular employees (Female)	%	6.4	6.8	7.3
Number of regular employees (Male)	Persons	2,289	2,351	2,499
Ratio of regular employees (Male)	%	68.9	65.9	63.6
Number of contractual employees (All)	Persons	822	973	1,147
Ratio of contractual employees (All)	%	24.7	27.3	29.2
Number of contractual employees (Female)	Persons	79	98	124
Ratio of contractual employees (Female)	%	2.4	2.7	3.2
Number of contractual employees (Male)	Persons	743	875	1,023
Ratio of contractual employees (Male)	%	22.4	24.5	26.0
Total number of senior management ²⁾	Persons	22	25	17
Number of C-suite executives ³⁾	Persons	46	50	47

1) As of December 31, 2022

2) Basis for calculation: Director and above

3) Basis for calculation: Total number of executives (Department head and above)

Employee Information by region¹⁾

Category	Unit	2020	2021	2022
Number of employees by region				
South Korea	Persons	2,383	2,477	2,623
Indonesia	Persons	37	37	78
Vietnam	Persons	50	56	62
Japan	Persons	1	1	1
China	Persons	13	10	6
Pakistan	Persons	2	2	1
Russia	Persons	1	1	1
Malaysia	Persons	4	5	5
Cambodia	Persons	9	2	0
Singapore	Persons	1	4	4
Philippines	Persons	0	0	3
Hungary	Persons	0	0	1
Number of contractual employees by region				
South Korea	Persons	816	970	1,034
Indonesia	Persons	4	1 ²⁾	102
Vietnam	Persons	1	2	7
Japan	Persons	0	0	0
China	Persons	0	0	0
Pakistan	Persons	0	0	0
Russia	Persons	0	0	0
Malaysia	Persons	0	0	3
Cambodia	Persons	0	0	0
Singapore	Persons	1	1	1
Philippines	Persons	0	0	0
Hungary	Persons	0	0	0

1) Number of employees in the region

2) Data revised due to changes in calculation criteria



ESG Data Book

Social Performance

Employee Information (Diversity)

Category	Unit	2020	2021	2022
Female employees				
Number of female management ¹⁾	Persons	52	62	70
Ratio of female management ²⁾	%	1.6	1.7	1.8
Number of female non-management	Persons	239	280	340
Ratio of female non-management ²⁾	%	7.2	7.8	8.6
Number of female executives	Persons	0	0	1
Ratio of female executives ³⁾	%	0	0	2.1
Number of female junior management ⁴⁾	Persons	50	63	76
Ratio of female junior management ⁵⁾	%	3.9	4.8	5.3
Disabled employees				
Number of employees with disabilities	Persons	137	147	147
Number of employees with disabilities ⁶⁾	%	4.1	4.1	3.7
Employees of national veterans				
Number of employees of national veterans	Persons	56	53	55
Ratio of employees of national veterans ⁷⁾	%	1.7	1.5	1.4

1) M grade and above for female executives and employees (Regular employees)

2) Basis for calculation: Number of female management/non-management ÷ Total number of employees × 100

3) Basis for calculation: Number of female executives ÷ Number of C-suite executives × 100

4) M grade for female executives and employees (Including professionals)

5) Basis for calculation: Number of female junior management ÷ Total number of junior managements × 100

6) Basis for calculation: Number of employees with disabilities ÷ Total number of employees × 100

7) Basis for calculation: Number of employees of national veterans ÷ Total number of employees × 100

Employee Information (Turnover)¹⁾

Category	Unit	2020	2021	2022
Total number of employees turnover	Persons	58	69	132
Number of voluntary employee turnover	Persons	58	69	132
Ratio of voluntary employee turnover	%	1.7	1.9	3.4
Number of employees turnover (Below 30 years old)	Persons	2	17	31
Ratio of employee turnover (Below 30 years old)	%	3.4	24.6	23.5
Number of employees turnover (Between 30 and 50 years old)	Persons	34	48	96
Ratio of employee turnover (Between 30 and 50 years old)	%	58.6	69.6	72.7
Number of employees turnover (Over 50 years old)	Persons	22	4	5
Ratio of employee turnover (Over 50 years old)	%	38.0	5.8	3.8
Number of employee turnover (Female)	Persons	9	9	19
Ratio of employee turnover (Female)	%	15.5	13.0	14.4
Number of employee turnover (Male)	Persons	49	60	113
Ratio of employee turnover (Male)	%	84.5	87.0	85.6
Number of employee turnover (Domestic)	Persons	58	69	132
Ratio of employee turnover (Domestic)	%	100	100	100

1) As of December 31, 2022

Employee Information (Years of service)¹⁾

Category	Unit	2020	2021	2022
Total years of service of employees	Years	11.6	11.8	11.1
Average years of service of female employees	Years	5.8	5.7	5.5
Average years of service of male employees	Years	12.1	12.4	11.8

1) Newly introduced in 2022



ESG Data Book

Social Performance

New Employees

Category	Unit	2020	2021	2022
Total number of new employees	Persons	74	196	395
Number of new employees (New)	Persons	49	110	150
Ratio of new employees (New)	%	66.2	56.1	38.0
Number of new employees (Experienced)	Persons	25	86	245
Ratio of new employees (Experienced)	%	33.8	43.9	62.0
Number of new employees (Below 30 years old)	Persons	42	80	142
Ratio of new employees (Below 30 years old)	%	56.8	40.8	35.9
Number of new employees (Between 30 and 50 years old)	Persons	31	115	252
Ratio of new employees (Between 30 and 50 years old)	%	41.9	58.7	63.8
Number of new employees (Over 50 years old)	Persons	1	1	1
Ratio of new employees (Over 50 years old)	%	1.3	0.5	0.3
Number of new employees (Female)	Persons	21	41	61
Ratio of new employees (Female)	%	28.4	20.9	15.4
Number of new employees (Male)	Persons	53	155	334
Ratio of new employees (Male)	%	71.6	79.1	84.6
Number of new employees (Domestic)	Persons	74	196	395
Ratio of new employees (Domestic)	%	100	100	100

Human Rights Education

Category	Unit	2020	2021	2022	
Training for preventing sexual harassment	Number of employees (Training subject)	Persons	3,323	3,568	3,932
	Number of employees (Training completion)	Persons	3,111	3,326	3,863
Training for raising awareness regarding the disabled	Number of employees (Training subject)	Persons	3,323	3,568	3,932
	Number of employees (Training completion)	Persons	3,121	3,323	3,851

1) Newly introduced in 2022

Grievance handling

Category	Unit	2020	2021	2022
Executives and employees				
Number of cases of discrimination and bullying ¹⁾	Cases	0	0	0
Partner companies²⁾				
Number of grievance cases related to the safety and health of partner companies	Cases	-	-	21
Number of grievance cases related to the safety and health of partner companies addressed	Cases	-	-	21
Completion rate of grievance handling related to the safety and health of partner companies	%	-	-	100

1) Grievance cases are handled through our grievance handling system and there was no case of discrimination and bullying in LOTTE E&C. The number of grievance cases reported was 19 in 2020, 19 in 2021, and 23 in 2022, and the reported cases were mainly about personal grievance or working environment.

2) Newly introduced in 2022



ESG Data Book

Social Performance

Social Contribution Performance

Category	Unit	2020	2021	2022
Total expenses for social contribution activities ¹⁾	KRW million	3,228	4,267	4,542
Number of participating employees ²⁾	Persons	988	639	500
Number of volunteering teams ³⁾	Teams	238	248	259
Employee participation rate through matching grant	%	73.2	65.7	72.1

1) Basis for calculation: Contribution (DART (Electronic Disclosure System)) + Matching Grant (Contribution by employees)

2) Charlotte Voluntary Service Group 434 people, Volunteering at Seoul National Cemetery 66 people

3) Ongoing teams: 70, Teams whose activities have been completed: 189 (as construction completed)

Supply Chain information

Category	Unit	2020	2021	2022
Total Number of Partner Companies ¹⁾	Companies	2,182	2,185	2,593
Number of Outsourcing Partners ²⁾	Companies	-	-	1,566
Number of Supplier Partners ²⁾	Companies	-	-	1,027
Number of Excellent Partners ³⁾	Companies	51	51	73
Amount of financial support executed for partner companies	KRW million	32,130	38,896	52,684

1) Domestic partner companies that engaged in trading with LOTTE E&C in 2022

2) Newly introduced in 2022

3) Excellent partner companies are selected among the partner companies that engaged in trading with LOTTE E&C in the previous year

Parental Leave and Welfare Benefits

Category	Unit	2020	2021	2022
Number of employees entitled to parental leave (Female)	Persons	42 ¹⁾	51 ¹⁾	59
Number of employees entitled to parental leave (Male)	Persons	1,169 ¹⁾	1,155 ¹⁾	1,115
Number of employees taking parental leave (Female)	Persons	25 ¹⁾	32 ¹⁾	29
Number of employees taking parental leave (Male)	Persons	271 ¹⁾	304 ¹⁾	335
Number of employees returning to work after parental leave (Female)	Persons	16	18	15
Number of employees returning to work after parental leave (Male)	Persons	94	81	80
Number of employees still on the payroll 12 months after returning from parental leave (Female)	Persons	9	16	13
Number of employees still on the payroll 12 months after returning from parental leave (Male)	Persons	86	78	69
Ratio of employees who return from parental leave	%	98.2	100	96.9
Ratio of employees still on the payroll after returning from parental leave	%	84.8	94.9	83.7
Welfare benefits	KRW million	75,023	69,713	87,460
Number of employees taking maternity leave	Persons	9	8	21

1) Data revised due to changes in calculation criteria

Retirement Pension

Category	Unit	2020	2021	2022
Amount of organization's defined benefit plan obligations	KRW 100 million	2,372	2,653	2,748
Number of subscribers (DB)	Persons	2,607	2,815	2,738
Number of subscribers (DC)	Persons	73	83	119
Number of subscribers (DB+DC) ¹⁾	Persons	2,680	2,898	2,857

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.



ESG Data Book

Social Performance

Education and Training

Category	Unit	2020	2021	2022
Total training expenses for employees	KRW million	2,480	3,042	4,533
Training expenses per individual	KRW	746,300	852,687	1,152,943
Total number of trainees for the year	Persons	3,323	3,568	3,932
Training hours per individual employee	Hours	117	120 ¹⁾	123
Training hours per individual employee (Female)	Hours	113	116	127
Training hours per individual employee (Male)	Hours	117	120	123
Ratio of employees received a regular performance and career development review ²⁾	%	100	100	100

1) Data revised due to changes in calculation criteria

2) Performance evaluation of employees in office as of September 30, 2022

Safety and Health Management

Category	Unit	2020	2021	2022
On-site safety inspections				
Total number of inspections	Cases	1,028	597	1,070
Number of on-site inspections	Cases	8	5	10
Safety training				
Number of safety training courses	Courses	7	13	14
Number of employees completed safety training courses ¹⁾	Persons	1,234	1,091	4,525
Securing of safety managers (Regular employees)	%	33.3	30.3	42.0
Ratio of employees applied to safety health system	%	100	100	100

1) Employees of partner companies included

Education of occupational health and safety¹⁾

Category	Unit	2020	2021	2022
Number of participants	Number of individuals	438,284	524,160	410,187
Total hours of education provided	Hours	763,635	899,228	679,666
Average hours of education provided per person	Hours	1.74	1.72	1.66
Rate of participation in education	%	100	100	100

1) Newly introduced in 2022



ESG Data Book

Social Performance

Occupational Deaths and Injuries

Category	Unit	2020	2021	2022
Executives and employees				
Number of deaths from occupational injuries	Cases	0	0	0
Mortality rate from occupational injuries	%	0	0	0
Number of workers under organizational control (Employees excluded)				
Number of deaths from occupational injuries (Number of critical accidents)	Cases	1	2	1
Number of deaths from occupational injuries (Female)	Cases	0	0	0
Number of deaths from occupational injuries (Male)	Cases	1	2	1
Mortality rate from occupational injuries (Per 10,000 workers) ¹⁾	‰	0.41	0.66	0.35
Total number of critical occupational injuries except for death ²⁾	Cases	126	135	168
Number of critical occupational injuries except for death (Female)	Cases	4	3	14
Number of critical occupational injuries except for death (Male)	Cases	122	132	154
Number of injuries which is required to be recorded and retained (Mortality number included)	Cases	127	137	169
Industrial accident rate ³⁾	%	0.002417	0.002389	0.003727
Lost Time Incident Rate (LTIR)	200,000 Hours	0.60	0.59	0.93
Total work hours (Workers under organizational control)	Hours	42,028,408	45,881,568	36,267,712
Total number of workers ⁴⁾	Persons	5,253,551	5,735,196	4,533,464

1) Basis for calculation: Number of full-time workers × 10,000

2) Including the number of work-related ill health

3) Basis for calculation: Number of industrial injuries ÷ the number of workers × 100

4) Number of workers printed on work log



ESG Data Book

Governance Performance

Composition of Board of Directors

Category	Unit	2020	2021	2022
Total number of directors	Persons	7	7	6
Number of inside directors	Persons	3	4	4
Ratio of inside directors	%	42.9	57.1	66.7
Number of outside directors	Persons	3	2	2
Ratio of outside directors	%	42.9	28.6	33.3
Number of non-executive directors	Persons	1	1	0
Ratio of non-executive directors	%	14.3	14.3	0
Number of directors in BOD (Female)	Persons	0	0	0
Gender ratio in BOD (Female)	%	0	0	0
Number of directors in BOD (Male)	Persons	7	7	6
Gender ratio in BOD (Male)	%	100	100	100
Number of directors by age (Below 30 years old)	Persons	0	0	0
Ratio of directors by age (Below 30 years old)	%	0	0	0
Number of directors by age (Between 30 and 50 years old)	Persons	1	1	0
Ratio of directors by age (Between 30 and 50 years old)	%	14.3	14.3	0
Number of directors by age (Over 50 years old)	Persons	6	6	6
Ratio of directors by age (Over 50 years old)	%	85.7	85.7	100
Female executive excluding largest shareholders and specially related persons	Persons	0	0	0
Number of outside directors whose attendance rate is below 75%	Persons	0	0	0

BOD Operation

Category	Unit	2020	2021	2022
Number of BOD meetings held	Times	9	10	20
Average attendance rate	%	99	100	99.2
Attendance rate of outside directors	%	100	100	100
Number of BOD agendas	Cases	24	28	40

Committee Operation

Category	Unit	2020	2021	2022
Total number of directors in compensation committee	Persons	2	3	3
Number of outside directors in compensation committee	Persons	2	2	2
Attendance rate of outside directors	%	100	100	100

Remuneration Ratio

Category	Unit	2020	2021	2022
CEO remuneration (A) ¹⁾	KRW Thousand	-	932,666	742,000
Average remuneration of executives and employees (B) ²⁾	KRW Thousand	-	91,247	86,200
Median value of remuneration of executives and employees (C) ³⁾	KRW Thousand	-	77,739	79,360
CEO remuneration against average remuneration of executives and employees (A/B)	Times	-	10.2	8.6
CEO remuneration against median value of remuneration of executives and employees (A/C)	Times	-	12.0	9.3

1) Based on data in 2022 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 2022.



ESG Data Book

Governance Performance

Ethical Management

Category	Unit	2020	2021	2022
Number of cases of unethical management practices	Cases	9	5	6
Number of cases reported through people (Ombudsman)	Cases	214	197	209
Number of improvements and guidance provided after audits	Cases	113	205	232
Assessment of ethical levels	Points	90	90	91
Number of violations against Code of Conduct	Cases	8	5	6

Anti-Corruption Policies

Category	Unit	2020	2021	2022
Number of executives and employees who were informed of the anti-corruption policies	Persons	3,323	3,568	3,932
Ratio of executives and employees who were informed of the anti-corruption policies ¹⁾	%	100	100	100
Number of partner companies who were informed of the anti-corruption policies	Companies	2,182	2,185	2,593
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 Cases and Unfair Trade Acts Identified, and Legal Actions Taken

Category	Unit	2020	2021	2022
Number of corruption cases	Cases	8	4	0
Number of corruption cases resulting in dismissal or disciplinary actions	Cases	8	4	0
Number of corruption cases in which contracts of partner companies were terminated or not renewed	Cases	0	0	0
Number of legal actions taken for unfair trade acts	Cases	0	0	0

Training on Anti-Corruption

Category	Unit	2020	2021	2022
Number of directors in BOD who was trained	Persons	7	7	6
Ratio of directors in BOD who was trained	%	100	100	100
Number of executives and employees who was trained	Persons	3,323	3,568	3,932
Ratio of executives and employees who was trained	%	100	100	100
Number of executives and employees who was trained (Regular employees)	Persons	2,501	2,595	2,785
Ratio of executives and employees who was trained (Regular employees)	%	100	100	100
Number of executives and employees who was trained (Contractual employees)	Persons	822	973	1,147
Ratio of executives and employees who was trained (Contractual employees)	%	100	100	100
Number of executives and employees who was trained by Country¹⁾				
South Korea	Persons	3,199	3,447	3,657
Indonesia	Persons	41	37	180
Vietnam	Persons	51	58	69
Japan	Persons	1	1	1
China	Persons	13	10	6
Pakistan	Persons	2	2	1
Russia	Persons	1	1	1
Malaysia	Persons	4	5	8
Cambodia	Persons	9	2	0
Singapore	Persons	2	5	5
Philippines	Persons	0	0	3
Hungary	Persons	0	0	1

1) Number of employees working in the region



GRI Standards Index

Topic	Disclosure	Page	Remarks	
<p>[Statement of use] For the period from January 1, 2022 to December 31, 2022, LOTTE E&C applies the GRI Standards to report information on its sustainable management, and includes some activities and achievements up to the first half of 2023.</p> <p>[GRI 1 used] GRI 1: Foundation 2021</p> <p>[Applicable GRI Sector Standard] Currently unavailable (as of August 2023 (publication date), the GRI Standards have not been published for the industry to which LOTTE E&C belongs)</p>				
GRI 2: General Disclosure 2021				
The organization and its reporting practices	2-1	Organizational details	5~7	
	2-2	Entities included in the organization's sustainability reporting	2	
	2-3	Reporting period, frequency and contact point	2	
	2-4	Restatements of information	-	For modified data, separate annotations have been indicated
	2-5	External assurance	128~129	
Activities and Workers	2-6	Activities, value chain and other business relationships	10~19	
	2-7	Employees	112	
	2-8	Workers who are not employees	112	Go to the Business Report p.431 LOTTE E&C Business Report
Governance	2-9	Governance structure and composition	100, 118	
	2-10	Nomination and selection of the highest governance body	21, 100	
	2-11	Chair of the highest governance body	100	
	2-12	Role of the highest governance body in overseeing the management of impacts	21, 100~101	
	2-13	Delegation of responsibility for managing impacts	21, 100~101	
	2-14	Role of the highest governance body in sustainability reporting	21	
	2-15	Conflicts of interest	100~101	
	2-16	Communication of critical concerns	24, 105	
	2-17	Collective knowledge of the highest governance body	100~101	
	2-18	Evaluation of the performance of the highest governance body	100~101	
	2-19	Remuneration policies	100~101	
2-20	Process to determine remuneration	100~101		
2-21	Annual total compensation ratio	118		



GRI Standards Index

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	2-23	Policy commitments	34~37	
	2-24	Embedding policy commitments	34~37	
	2-25	Processes to remediate negative impacts	105	
	2-26	Mechanisms for seeking advice and raising concerns	37, 46, 75, 96, 99	
	2-27	Compliance with laws and regulations	111	Go to the Business Report p.447 LOTTE E&C Business Report
	2-28	Membership associations	132	
Stakeholder engagement	2-29	Approach to stakeholder engagement	25	
	2-30	Collective bargaining agreements	82	
GRI 3: Material Topics 2021	3-1	Process to determine material topics	23	
	3-2	List of material topics	23~24	
Material Topic 1: Response to Climate Change				
GRI 3: Material Topics 2021	3-3	Management of material topics	28	
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	302-3	Energy intensity	109	
	302-4	Reduction of energy consumption	51, 111	
	302-5	Reductions in energy requirements of products and services	11, 13, 53, 58~60	
GRI 305: Emissions 2016	305-1	Direct(Scope 1) GHG emissions	33, 109	
	305-2	Energy indirect(Scope 2) GHG emissions	33, 109	
	305-4	GHG emissions intensity	33, 109	
	305-5	Reduction of GHG emissions	33, 109	
Material Topic 2: Human Rights Management				
GRI 3: Material Topics 2021	3-3	Management of material topics	34	
GRI 410: Security Practices 2016	410-1	Security personnel trained in human rights policies or procedures	37, 114	
Material Topic 3: Shared Growth with Partner Companies				
GRI 3: Material Topics 2021	3-3	Management of material topics	38	
GRI 204: Procurement Practices 2016	204-1	Proportion of spending on local suppliers	108	



GRI Standards Index

Topic		Disclosure	Page	Remarks
GRI 414: Supplier Social Assessment 2016	414-1	New suppliers that were screened using social criteria	39~46	
	414-2	Negative social impacts in the supply chain and actions taken	39~46	
Material Topic 4: Safety and Health of Employees				
GRI 3: Material Topics 2021	3-3	Management of material topics	62	
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	403-4	Worker participation, consultation, and communication on occupational health and safety	65, 72	
	403-5	Worker training on occupational health and safety	70~71, 116	
	403-6	Promotion of worker health	73	
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	74~75	
	403-8	Workers covered by an occupational health and safety management system	64~65, 116	
	403-9	Work-related injuries	117	
	403-10	Work-related ill health	117	
Material Topic 5: HR Management				
GRI 3: Material Topics 2021	3-3	Management of material topics	76	
GRI 401: Employment 2016	401-1	New employee hiring and employee turnover	78, 113~114	
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	80~82, 115	
	401-3	Parental leave	115	
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	79, 116	
	404-2	Programs for upgrading employee skills and transition assistance programs	78~79	
	404-3	Percentage of employees receiving regular performance and career development reviews	116	
GRI 405: Diversity and Equal Opportunity 2016	405-1	Diversity of governance bodies and employees	113	
GRI 406: Non-discrimination 2016	406-1	Incidents of discrimination and corrective actions taken	114	



GRI Standards Index

Topic		Disclosure	Page	Remarks
Material Topic 6: Local Community				
GRI 3: Material Topics 2021	3-3	Management of material topics	84	
GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	36	
Material Topic 7: Ethics and anti-corruption				
GRI 3: Material Topics 2021	3-3	Management of material topics	93	
GRI 205: Anti-corruption 2016	205-1	Operations assessed for risks related to corruption	98	
	205-2	Communication and training about anti-corruption policies and procedures	98~99, 119	
	205-3	Confirmed incidents of corruption and actions taken	97, 119	Go to the Business Report p.447 LOTTE E&C Business Report
GRI 206: Anti-competitive Behavior 2016	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	119	Go to the Business Report p.447 LOTTE E&C Business Report
Economic Performance				
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	107~108	
	201-2	Financial implications and other risks and opportunities due to climate change	31~32	
	201-3	Defined benefit plan obligations and other retirement plans	115	
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	85~88	
	203-2	Significant indirect economic impacts	86~87	
Environmental Performance				
GRI 301: Materials 2016	301-1	Materials used by weight or volume	53, 110	
	301-2	Recycled input materials used	110	
GRI 303: Water and Effluents 2018	303-2	Management of water discharge-related impacts	54	
	303-3	Water withdrawal	54, 111	
	303-5	Water consumption	111	
GRI 304: Biodiversity 2016	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	55	
	304-2	Significant impacts of activities, products and services on biodiversity	55	
	304-3	Habitats protected or restored	55	
	304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	55	



GRI Standards Index

Topic		Disclosure	Page	Remarks
GRI 306: Waste 2020	306-1	Waste generation and significant waste-related impacts	54	
	306-2	Management of significant waste-related impacts	54	
	306-3	Waste generated	110	
	306-4	Waste diverted from disposal	110	
	306-5	Waste directed to disposal	110	
GRI 308: Supplier Environmental Assessment 2016	308-1	New suppliers that were screened using environmental criteria	40~41	
	308-2	Negative environmental impacts in the supply chain and actions taken	40~41	
Social Performance				
GRI 402: Labor Management Relations 2016	402-1	Minimum notice periods regarding operational changes	82	
GRI 408: Child Labor 2016	408-1	Operations and suppliers at significant risk for incidents of child labor	35	
GRI 409: Forced or Compulsory Labor 2016	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	35	
GRI 411: Rights of Indigenous Peoples 2016	411-1	Incidents of violations involving rights of indigenous peoples	36	
GRI 415: Public Policy 2016	415-1	Political contributions	115	
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories	89~91	
	417-1	Requirements for product and service information and labeling	52	
	417-2	Incidents of non-compliance concerning product and service information and labeling	119	Go to the Business Report p.447 LOTTE E&C Business Report
GRI 417: Marketing and Labeling 2016	417-3	Incidents of non-compliance concerning marketing communications	119	Go to the Business Report p.447 LOTTE E&C Business Report
	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	104	



SASB Index

Topic	Code	Metric	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)
	IF-EN-160a.2	Discussion of processes to assess and manage environmental risks associated with project design, siting, and construction	We carry out preliminary environmental impact assessment to understand the potential environmental impacts that can be caused by a project and conduct continuous inspection and response measures to meet the legal requirements. In particular, we apply the eco-friendly standardization guidelines established in 2021 at the project design stage to manage environmental impacts throughout the entire process, and we have expanded the reporting scope of environmental law violations to report all administrative penalties such as warnings and improvement orders. To detect violation of environmental law occurred on-site, we conduct comprehensive evaluations and self-inspections once a year, and immediately take remedial measures for violations identified on-site.
Structural Integrity & Safety	IF-EN-250a.1	Amount of defect- and safety-related rework costs	Warranty expenses incurred in 2022 stood at KRW 4,087 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 related to defect in 2022 amount to KRW 9,970 million.
Workforce Health & Safety	IF-EN-320a.1	(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	We transparently disclose health & safety related metrics of LOTTE E&C on page 117.
Lifecycle Impacts of Buildings & Infrastructure	IF-EN-410a.1	Number of (1) commissioned projects certified to a third-party multi-attribute sustainability standard and (2) active projects seeking such certification	<ul style="list-style-type: none"> - Number of G-SEED certifications: 16 cases (14 cases from Housing, 2 cases from Architecture) - Project registered with UNFCCC CDM: 1 case, Gulpur hydroelectric project in Pakistan (Primary monitoring: '21.09~'22.02, 6 months/42,792 CER issued) - The Green and Gracious Builder Scheme, which must be obtained to engage in the construction project in Singapore, is renewed every year. (Effective date: '22.1.28~'24.12.27)
	IF-EN-410a.2	Discussion of process to incorporate operational-phase energy and water efficiency considerations into project planning and design	LOTTE E&C manages water and energy efficiency by identifying possible risks even before project implementation and conducting activities to minimize risks. In particular, we apply the Pre-Con Service (PCS) to analyze the expected energy usage of buildings from the design stage, which leads to energy savings in buildings. In addition, we apply eco-friendly technologies and construction methods to enhance building performance and create resource-efficient buildings.



SASB Index

Topic	Code	Metric	LOTTE E&C Data
Climate Impacts of Business Mix	IF-EN-410b.1	Amount of backlog for (1) hydrocarbon-related projects and (2) renewable energy projects	- The amount of backlog for hydrocarbon projects: KRW 511 billion - The total amount of backlog for renewable energy: KRW 664.3 billion
	IF-EN-410b.2	Amount of backlog cancellations associated with hydrocarbon-related projects	No cancellations associated with hydrocarbon as of 2022
	IF-EN-410b.3	Amount of backlog for non-energy projects associated with climate change mitigation	As of the end of December 2022, the amount of backlog for non-energy projects associated with climate change mitigation is KRW 21.8 billion, which are resource recirculation projects.
Business Ethics	IF-EN-510a.1	(1) Number of active projects and (2) backlog in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	No active projects from the lowest 20 countries in Transparency International's Corruption Perception Index as of the end of 2022.
	IF-EN-510a.2	Total amount of monetary losses as a result of legal proceedings associated with charges of (1) bribery or corruption and (2) anti-competitive	No monetary losses as a result of legal proceedings associated with charges of bribery or corruption and anticompetitive practices in 2022.
	IF-EN-510a.3	Description of policies and practices for prevention of (1) bribery and corruption, and (2) anti-competitive behaviour in the project bidding processes	Code of Ethics / Behavioral standards / Code of Conduct / Fair Trade Compliance Declaration Manual / Anti-Corruption Law / Compliance Management Charter / Guidelines for Ethical Management Practices / Anti-Bribery Guidelines
Activity Metrics	IF-EN-000.A	Number of active projects	As of the end of December 2022, 123 domestic projects and 9 overseas projects are underway.
	IF-EN-000.B	Number of commissioned projects	In 2022, constructions on 50 domestic sites and 2 overseas sites were completed.
	IF-EN-000.C	Total backlog	As of the end of December 2022, the total backlog stood at KRW 50.1237 trillion out of which domestic projects account for KRW 42.9531 trillion and overseas ones for KRW 7.1706 trillion.



TCFD Index

Topic	TCFD Recommendation		Page (Reference)
Governance	1a	Describe the board’s oversight of climate-related risks and opportunities.	29
	1b	Describe management’s role in assessing and managing climate-related risks and opportunities.	30
Strategy	2a	Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	31
	2b	Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy, and financial planning.	
	2c	Describe the resilience of the organization’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
Risk Management	3a	Describe the organization’s processes for identifying and assessing climate-related risks.	32
	3b	Describe the organization’s processes for managing climate-related risks.	
	3c	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization’s overall risk management.	
Metrics and Targets	4a	Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	33
	4b	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	
	4c	Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	



Independent Assurance Statement



To : The Stakeholders of Lotte Engineering & Construction Co., Ltd

Introduction and Objectives of Work

BSI Group Korea (hereinafter "the Assurer") was requested to verify Lotte E&C 2023 Sustainability Report (hereinafter "the Report"). This assurance statement applies only to the relevant information included in the scope of the assurance. Lotte Engineering & Construction is solely responsible for all information and assertion contained in the Report. The responsibility of the Assurer is to provide Lotte Engineering & Construction Management with independent assurance statement based on its expert opinions by applying the verification methodology for the specified assurance scope. It is also to provide the information to all stakeholders of Lotte Engineering & Construction.

Standards and Levels

This assurance was based on the AA1000AS (Assurance Standard) v3 (2020) Assurance Standard and confirmed that the Report was prepared in accordance with the GRI Standards, the international standards guidelines of sustainability reports. In accordance with the AA1000 AS, the assurance level was Moderate Level, and conducted against Type 1 to confirm compliance with the four principles of the AA1000 AP (AccountAbility Principles) 2018 and the Type 2 assurance that verified the quality and reliability of the information disclosed in the report. Type 2 was limitedly verified against the topic standards below, based on the data and information provided by the reporting organization.

- **GRI Topic Standards** : 204-1, 205-1~3, 206-1, 302-1, 302-3~5, 305-1~2, 305-4~5, 401-1~3, 403-1~10, 404-1~3, 405-1, 406-1, 410-1, 413-1, 414-1~2

Scope

The scope of assurance applied to the Report is as follows:

- Report contents during the period from January 1st to December 31st 2022 included in the report, some data included 2023.
- Major assesstion included in the report, such as sustainability management policies and strategies, goals, projects, and performance, and the report contents related to material issues determined as a result of materiality assessment.
- Appropriateness and consistency of processes and systems for data collection, analysis and review

The following contents were not included in the scope of assurance.

- Financial information in Appendix

- Index items related to other international standards and initiatives other than the GRI
- Other related additional information such as the website, business annual report.

Methodology

As a part of its independent assurance, the Assurer has used the methodology developed for relevant evidence collection in order to comply with the verification criteria and to reduce errors in reporting. The Assurer has performed the following activities;

- Review of the system for sustainability management strategy process and implementation
- Review of materiality issue analysis process and prioritization by reviewing materiality issue analysis process and verifying the results
- Review of 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

Limitation

The Assurer performed limited verification for a limited period based on the data provided by the reporting organization. It implies that no significant errors were found during the verification process, and that there are limitations related to the inevitable risks that may exist. The Assurer does not provide assurance for possible future impacts that cannot be predicted or verified during the verification process and any additional aspects related thereto.

Assurance Opinion

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

- The information and data included in the Report are accurate and reliable and the Assurer cannot point out any substantial aspects of material with mistake or misstatement.
- The report is prepared in accordance with the GRI Standards. (Reporting in accordance with the GRI standards)
- The assurance opinions on the four principles presented in the AA1000 AP (2018) are as follows.



Independent Assurance Statement

AA1000 AP (2018)

• Inclusivity: Stakeholder Engagement and Opinion

Lotte Engineering & Construction defined customers, partner companies, local communities, government agencies, shareholders and employees as key stakeholder groups, and operated communication channels for each stakeholder group for engagement. Lotte Engineering & Construction reflected key issues drawn through stakeholder channels in sustainability management decisions and disclosed the process in the Report.

• Materiality: Identification and reporting of material sustainability topics

Lotte Engineering & Construction established the strategy related to sustainability management and established the process to derive reporting issues. Lotte Engineering & Construction identified financial and social/environmental impacts and derived 7 material topics based on the analysis of media research, benchmarking global advanced companies in its field, and analysis of major global initiatives related to sustainability.

• Responsiveness: Responding to material sustainability topics and related impacts

Lotte Engineering & Construction established the management process for material topics determined by the materiality assessment, implemented a response plan for each topic to appropriately respond to the derived material topics that reflects the expectations of stakeholders. Lotte Engineering & Construction disclosed the process including policy, indicator, activity and response performance on material topics in the Report.

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

Lotte Engineering & Construction established the process to identify and evaluate the impact on organizations and stakeholders related to material topics. Lotte Engineering & Construction used impacts, risk and opportunity factor analysis results for key reporting issues to make decisions to develop response strategies for each issue, and disclosed the process in the Report.

Key areas for ongoing development

- It may be helpful to advance the sustainability management system by clarifying the scope and definition of the value-chain, including raw material purchases, design, supervision, and implementers, and identifying and managing sustainability issues within the value chain based on characteristics of the construction industry.
- In addition to the group's sustainability strategy and vision, Lotte Engineering & Construction internalizes the management standards and values of sustainability issues, such as the declaration of its own Charter of Human Rights Management. It may be helpful by to advance sustainability management system by specifying the major sustainability issues and goals of the construction industry included within the mid-

to long-term sustainability strategy and disclosing whether they achieve the goals.

Statement of independence and competence

The Assurer is an independent professional institution 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 Engineering & Construction. The Assurer has conducted this verification independently, and there has been no conflict of interest. All assurers who participated in the assurance have qualifications as an AA1000AS assurer, have a lot of assurance experience, and have in-depth understanding of the BSI Group's assurance standard methodology.

Evaluation against GRI 'In Accordance' Criteria

The Assurer confirmed that the Report was prepared in accordance with the GRI Standards and the disclosures related to the following Universal Standards and Topic Standards Indicators based on the data provided by Lotte Engineering & Construction, the sector standard was not applied.

[Universal Standards]

2-1 to 2-5 (The organization and its reporting practices), 2-6 to 2-8 (Activities and workers), 2-9 to 2-21 (Governance), 2-22 to 2-28 (Strategy, policies and practices), 2-29 to 2-30 (Stakeholder engagement), 3-1 to 3-3 (Material Topics Disclosures)

[Topic Standards]

201-1~3, 203-1~2, 204-1, 205-1~3, 206-1, 301-1~2, 302-1, 302-3~5, 303-2~3, 303-5, 304-1~4, 305-1~2, 305-4~5, 306-1~5, 308-1~2, 401-1~3, 402-1, 403-1~10, 404-1~3, 405-1, 406-1, 408-1, 409-1, 410-1, 411-1, 413-1, 414-1~2, 415-1, 416-1, 417-1~3, 418-1



AA1000
Licensed Report
000-4/V3-M5QLO

11th Aug 2023

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

ESG Management System Certification

정보보호 및 개인정보보호 관리체계 인증서

- 1. 인 증 번 호 : ISMS-P-KISA-2022-031
- 2. 업 체 명 : 롯데건설(주)
- 3. 대 표 자 : 하석주
- 4. 인 증 의 범 위 : 분양(롯데캐슬) 및 임대(Elyes) 시스템 운영
- 5. 유효 기 간 : 2022.08.03 ~ 2025.08.02
- 6. 심 사 수 행 기 관 : 한국정보통신진흥협회

「정보통신망 이용촉진 및 정보보호 등에 관한 법률」 제47조 제1항, 같은 법 시행령 제47조, 「개인정보 보호법」 제32조의2에 따라 위와 같이 정보보호 및 개인정보보호 관리체계를 인증합니다.

2022년 08월 03일



한국인터넷진흥원



인증번호: REM0172

Certificate of Registration

환경경영시스템 인증서

롯데건설(주)

서울특별시 서초구 잠원로14길 29

적용표준

KSI ISO 14001:2015/ISO 14001:2015

인증범위

토목, 건축, 주택, 기계, 전기, 플랜트, 산업설비, 엔지니어링, 조경, 정보통신, 소방설비, 가스설비, 환경오염방지시설 공사에 대한 설계 및 시공

위와 같이 환경경영시스템 표준에 적합함이 한국경영인증원에 의해 인증되었음을 증명함.

2022년 5월 25일

인증승인일자 : 2022. 5. 25.

인증유효일자 : 2025. 5. 24.



한국경영인증원



한국경영인증원
 서울특별시 영등포구 영인로775(문래동3가)
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 T: 02)6298-9001 / F: 02)6298-9004

- (K) 한국경영인증원은 한국인증지원센터 (KAB)로부터 환경경영체계 인증기관으로 인정을 받았습니다 (KAB-EC-17) 받았고, 이는 한국경영인증원 (KSI)로부터 인증기관으로 인정받았음을 나타내는 마크입니다.
- 인증수령범위 (KSI CODE) 28, 34/ 심사원: 손경실/ 최초인증일자: 2001. 5. 25 / 갱신승인에 따른 재발급



Korea Compliance Certification Assurance

부패방지경영시스템 인증서

인증번호 : KCCA-ABMS-087

롯데건설(주)

서울특별시 서초구 잠원로14길 29

한국컴플라이언스인증원(주)은 위 조직의 부패방지경영시스템이
아래의 인증표준 및 인증범위에 적합함을 인증합니다.

KS A ISO 37001:2016 / ISO 37001:2016

건축, 주택, 토목, 플랜트 등 공사에 대한 설계·시공 및 부가서비스

(Initial Registration Date) 최초발급일자: 2022.10.25
(Issue Date) 발급 일자: 2022.10.25
(Expire Date) 인증만료일자: 2025.10.24

Weon.koo. Lee

President



한국컴플라이언스인증원은 한국인증지원센터(KAB)로부터 부패방지경영시스템 인증기관으로 인정(인정번호 : KAB-AC-04) 받았습니
다. 한국컴플라이언스인증원은 국제인정기관협회기구(AF)의 국제다자간상호인정협정(MLA) 가입인증기관(KAB)에 의해 인정된 인증기관입니다.

KAB : www.kab.or.kr | KCCA : www.kcca.kr | E-mail : kcca@kcca.kr | Tel. 02) 6275-1700



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

ISO 45001:2018

Scope of certification

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

[Signature]
Signed on behalf of BVCH SAS UK Branch

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



0008





Awards and Memberships

Awards

Date	Description	Awarding Organization
2022-05-27	「Women's Choice Best Luxury Award」(17 consecutive years)	Ministry of Gender Equality and Family
2022-07-01	Grand Prize at the 2022 National Service Awards for the apartment category (21 consecutive years)	Korean Standards Association
2022-07-26	「Social i-Award 2022」Best YouTube channel for Brand Channel (OK LOTTE Castle)	The Korea Internet Professional Association
2022-09-28	「2022 Eco-Friendly Construction Industry Award」Awarded by the Minister of Land, Infrastructure and Transport	Economist
2022-11-22	「The 27th Daegu Metropolitan City Award」Best Landscape Award	Daegu Metropolitan City
2022-11-28	Grand Prize in the U.S. LACP Spotlight Awards for Sustainability Reporting	LACP

Memberships in Associations

Construction Health and Safety Council	Construction Safety Practitioners Council	Construction Safety Executive Council
Construction Safety Manager Committee	Construction Industry KOSHA Council	Construction Industry Safety and Health Council
Construction Outsourcing Council	Construction Society	Construction Guarantee Cooperative
Korea Construction Materials Council	Construction Association of Korea	Korea Electric Association
Maekyung SEL Club	Engineering Guarantee Insurance	Electrical Engineers Association
Korea Construction Management Association	Korea Construction Transport New - Technology Association	Korea Institute of Construction Quality
Korea Fair Competition Federation	Korea Irrigation and Drainage Commission	Korea Road Association
Korea Industrial Technology Association	Korea Listed Companies Council	Korea Facility Technology Association
Korea Fire Facility Association	Korea Software Industry Association	Korea Hydrogen Association
Korea Electric Railway Technology Association	Korea Information Security Chief Executive Officer Association	Korea General Construction Machinery Equipment Association
Korea Housing Association	Korea Intelligent Smart Building Association	Korea Iron and Steel Association
Korea Railroad Construction Association	Korea Railroad Signaling Technology Association	Korea Railroad Association
Korea Incident Response Team Association	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	Strategic Planning Division	Tae Sung Han
		Soo Bin Chae
		Min Ha Kim
Business Management	Housing Division	Dae Geun Kwon
	Architecture Division	Dong Ik Shin
	Civil Works Division	Shoi Don Park
	Plants Division	Man Jae Lee
	Overseas Business Division	Seung Yeon Hong
		Youn Soo Lee
ESG Management	Strategic Planning Division	Tae Sung Han
ESG Challenge	Research & Development Institute	Hyoung Young Ye
	Strategic Planning Division	Tae Sung Han
	Sourcing and Procurement Division	Gi Beom Nam
ESG Performance	Research & Development Institute	Jae Man Lee
		Hyun Jae Jang
		Young Joon Yoo
	Design Research Institute	Sun Min Song
		So Jung Jung
	Safety and Health Management Office	Tae Gi Kim
		Seong Min Kim
Kye Hak Nam		

Area	Organization	Name
ESG Performance	HR Department	Ji Hoon Kim
		Min Jee Kim
		Seung Bom Kim
		Ji Chul Park
	Financial Administration Department	Seo Yeon Kweon
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