2020
LOTTE CHEMICAL SUSTAINABILITY REPORT

LOTTE CHEMICAL

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Interactive PDF

This report is published in Korean and English for communication with global stakeholders in the form of an interactive PDF.

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MESSAGE FROM THE CEO

“ We will create
a **new future,**
new success story
with our stakeholders.”

Dear Stakeholders

The past year has been full of unexpected events, from the U.S.-China trade dispute, to the economic downturn caused by unprecedented global spread of COVID-19 to the onset of a downcycle due to the collapse in demand.

Despite the challenges, LOTTE Chemical gained considerable synergy through the merger with LOTTE Advanced Materials, which was undertaken as a strategy of portfolio diversification to achieve the company's vision. Thanks to the commitment and dedication of our employees, we successfully restored and restarted the Daesan Plant. We sincerely thank all our stakeholders for your continued interest and support during the past year.

LOTTE Chemical strives to achieve more than just financial performance; our goal is to also make a positive impact on our society, country, and humanity. To continue to lead the market, share success, and fulfill our social responsibilities, we are focused on following key areas in 2021:

First, we will strive to be reborn as an eco-friendly chemical company with 2021 being the very first year of "Green Promise 2030."

Under "Green Promise 2030," an eco-friendly strategy and commitment of LOTTE Group's Chemical BU, we plan to achieve KRW 6 trillion in sales in our eco-friendly business and promote carbon-neutral growth by 2030. LOTTE Chemical will expand upon the Green Promise 2030 initiative and realize sustainable, eco-friendly business growth. To this end, we will employ strategic investment and focus our capabilities on reinforcing eco-friendly business, expanding virtuous cycles of resources, addressing climate risk, and creating a green ecosystem. We will pursue environmental values in earnest with respect to ESG management, and contribute to the creation of positive social values.

Second, we will strive to build the safest workplaces and mark 2021 as the beginning of a safety-oriented company.

Health, safety, and the environment are vital fundamental principles of a chemical company. With this firm recognition in mind, we will create an operating system of superior level safety, environment, and health. Furthermore, we will actively invest in resources to become one of the safest companies in the world in 2021. We will act preemptively to prevent safety and environment-related accidents by strengthening our capabilities, investing in safety and environment facilities, and reorganizing our operating systems in our business sites. By applying reinforced regulations and systems to our domestic and global workplaces, we plan to build an environment and culture, in which safety is considered as the number one priority in all activities.

The year 2020 was the first year of the unified LOTTE Chemical following the merger with LOTTE Advanced Materials. As one strongly united entity, LOTTE Chemical will create a new future and a new success story with valued support from all of our stakeholders. We greatly appreciate your kind interest and support.

June 2021

CEO Kim Gyo-hyun

LOTTE CHEMICAL AT A GLANCE

Company Profile

A company that enhances human values

LOTTE Chemical is Korea's leading chemical company. We operate global-scale production facilities in Yeosu, Daesan, and Ulsan, where three major petrochemical complexes of Korea are located. Since our establishment in 1976, LOTTE Chemical has continually made expansions in plants and new businesses to maintain a diversified business portfolio. With the merger of LOTTE Chemical and LOTTE Advanced Materials in January 2020, we intend to increase management efficiency and synergies and further enhance corporate value in the long term. LOTTE Chemical aims to become a "Global Top 7 Chemical Company" by 2030, backed by the trust and support of stakeholders.

General

(As of December 31, 2020)

Date of Establishment	March 16, 1976
CEO	Shin Dong-bin, Kim Gyo-hyun, Lee Young-jun, Hwang Jin-koo
Headquarters	14-16F, LOTTE World Tower, 300 Olympic-ro, Songpa-gu, Seoul, Republic of Korea
Total employees	4,544
Subsidiaries	Domestic subsidiaries: 5 / Foreign subsidiaries: 24
Business areas	Basic chemicals, Monomers, Polymers, Synthetic resin, Construction materials

Sales
KRW 12.223 trillion

Operation profit
KRW 356.9 billion

Net income
KRW 175.3 billion

Credit Rating (Corporate Bond)
AA+

Vision Map

Diversification of raw materials and expansion of global businesses
- Enhance cost-competitiveness and expand global sales base by securing competitive raw materials and diversifying feedstock
- Seek M&A opportunities to continue new business expansion

Preemptive responses to changes in demand
- Develop high transparency, high impact, and high functionality polymer
- Develop lightweight materials for automobile parts
- Develop eco-friendly materials (i.e.biodegradable plastic)

Global Top 7 Chemical Company

Strengthening of core businesses
- Consolidate raw material value chains
- Enhance product competitiveness and pioneer new markets by developing high value-added grade products

Responding to future trends
- Promote R&D on future trend, including renewable, clean energy, digital transformation, aging society, increase in one-person households, and low carbonization

Global Network

Our Global Presence (Unit: ea.) (As of December 2020)

Total of 26 production bases	In 22 countries	Exporting to 120 countries	Overseas manufacturing & sales corporation	Overseas manufacturing corporations	Overseas sales corporation	Overseas branch	Overseas sales office
			18 Basic: 7 Advanced: 11	3 Basic: 2 Advanced: 1	9 Basic: 3 Advanced: 6	7 Basic: 7	22 Basic: 4 Advanced: 18

BUSINESS PORTFOLIO

Domestic Business Site

LOTTE Chemical has Seoul headquarters, Uiwang site and research centers in Seoul and Daejeon. We also have a large-scale business in the three major domestic petrochemical complexes in Yeosu, Daesan, and Ulsan. We strive to optimize process management and operation of each plant unit and secure stable production capacity through expansion of existing production facilities and construction of new plants.

Production-Capacity of Major Products

LOTTE Chemical provides specialized material solutions for product innovation in various business areas with its extensive portfolio of products ranging from polymer to monomer, advanced new materials, and megatrend products. LOTTE Chemical's products are widely applied to everyday necessities, as well as cutting-edge new materials, enriching people's lives in many respects.

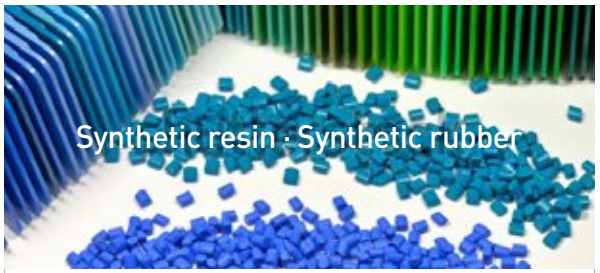
(Unit : KTA per year)

EL (Ethylene)	4,513
PL (Propylene)	1,697
SM (Styrene Monomer)	577
BD (Butadiene)	450
BZ (Benzene)	766
TL (Toluene)	339
MX (Mixed Xylene)	139
PX (Para-Xylene)	750
OX (Ortho-Xylene)	210

* No. 1 domestic production

MeX (Meta-Xylene)	360

* No. 1 domestic production



HDPE (High-density Polyethylene)	1,605

• No. 1 domestic production

LDPE/EVA (Low-density Polyethylene / Ethylene-Vinyl Acetate)	360
LLDPE (Linear Low-density Polyethylene)	490
PP (Polypropylene)	1,820
PET (Polyethylene Terephthalate)	520
ABS (Acrylonitrile-Butadiene-Styrene)	670
PC (Polycarbonate)	460

• No. 1 domestic production

S-SBR (Solution Styrene Butadiene Rubber)	100

• Produced by LOTTE Versalis Elastomers

EPDM (Ethylene Propylene Diene Monomer)	96

• Produced by LOTTE Versalis Elastomers

EPS (Expandable Polystyrene)	80
BR (Polybutadiene Rubber)	50

EG (Ethylene Glycol)	1,830

• No. 1 domestic production

EOA (Ethylene Oxide Adduct)	330

• No. 1 domestic production • Yeosu 4EOA Plant As of Jan. 2021 Commercial production (100KT)

PIA (Purified Isophthalic Acid)	520

No. 1 production worldwide

PTA (Purified Terephthalic Acid)	500

• LC PL Production

MMA (Methyl Methacrylate)	260

• Incl. LOTTE MCC production output of 201KT

PMMA (Poly Methyl Methacrylate)	110

• Produced by LOTTE MCC

GE (Glycol Ether)	50
Artificial marble	970,000 sheets
Engineered stone	440,000 sheets

* Incl subsidiaries and overseas business sites

ENHANCING BRAND VALUE

LOTTE Chemical conducts various PR activities to enhance brand value. Search for "LOTTE Chemical Ads" on YouTube or in the PR Archive menu on our website to watch promotional videos.

New Visual Motif for LOTTE Chemical

'Three Great Values' is a new brand visual identity that represents LOTTE Chemical's core management vision. 'Three Great Values' visually expresses the values pursued by LOTTE Chemical: Customer-oriented mindset, forward-thinking products and enhancement of life.

Image Advertisements

LOTTE Chemical seeks to raise brand awareness through image advertisements in newspapers and magazines. Since 2018, we have been using promotional slogans to advertise LOTTE Chemical's business and products to help increase people's understanding of the chemical industry. In particular, we created a poster in 2020 that highlighted positive impacts brought about by chemical companies.

Digital Media Advertisements

LOTTE Chemical's video advertisement, "Here We Go," conveyed the message of "a world made better through chemicals" and was played on outdoor screens and on YouTube. The YouTube ad was viewed 16 million times within three months of release and received great reviews for introducing chemical products in an easy and informative way.

Ad Using Digital Media Here We Go character

LOTTE Giants Sponsorship

Sports Marketing Sponsorship

LOTTE Chemical, along with other affiliates of LOTTE Group, conducts marketing activities using the advertisement platform of LOTTE Group's sports clubs, which have the highest level of recognition in Korea. We strive to increase awareness and brand value by sponsoring LOTTE Giants and LOTTE Golf Team that has two world-class female golfers, Kim Hyo-joo and Choi Hye-jin.

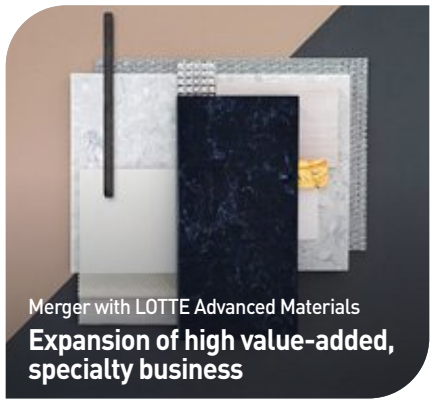
Global Exhibition Marketing

In January 2020, LOTTE Chemical attended 'KBIS 2020', which was held in Las Vegas to raise global brand awareness and target the global market. At the exhibition, we presented antibacterial artificial marble and premium engineered stone, as well as high quality architectural materials that satisfy both design and function.

* KBIS is the largest kitchen and bath industry show in the United States, in which more than 2,500 companies and more than 120,000 visitors from around the world participate every year

LOTTE Golf Team Sponsorship

2020 HIGHLIGHTS



Merger with LOTTE Advanced Materials

Expansion of high value-added, specialty business

Environmental Objectives and ESG Business Strategies

Declaration of Green Promise 2030

Evaluation of the Shared Growth Index by the Ministry of SMEs and Startups

Acquired Excellent grade

Second largest capacity worldwide

Completion of 4EOA Plant

Safety and environment as top priority

Improvement of safety system and organization declared

LOTTE Chemical Corporate Venture

Official Kick-Off of LICORN

Transparent ABS selected as Ministry of Trade, Industry and Energy's

2020 World-Class Product

First chemical company in Korea

Establishment of Carbon Capture, Utilization (CCU) technology demonstration facility

Investing in startup ventures

Creation of Innovation Fund No. 2

Certified by the FDA for the first time in Korea

PCR-PP(Post-Consumer Recycled PP)

The first fruit of Project LOOP, a virtuous cycle of plastic resources

Making eco-friendly bags and sneakers

LOTTE Chemical's transparent material

2020 Reddot Design Award Received three awards

OUR HISTORY

Since spring 1976, when LOTTE Chemical took the first step with the launch of the Yeosu Petrochemical Industrial Complex through financing from overseas, it has grown into a true global leader of the petrochemical industry. Committed to contributing to the prosperity of humankind, LOTTE Chemical continues to work towards creating a better future for all, and opening a new chapter in history, as we seek to become a Global Top 7 Chemical Company.

1976~1990

Beginnings

1976. 03.
Inaugural meeting and company establishment

1979. 06.
Acquired by LOTTE Group (privatization)

1979. 12.
Began commercial production

1982. 11.
Received 100 Mil USD Export Tower

1990~2000

Growth

1991. 05.
IPO and stock listing

1991. 06.
Constructed Daejeon R&D Center

1991. 12.
Constructed NC Plant

1995. 08.
Obtained ISO 14001 certification (environmental management system)

2000~2010

Leap forward

2003. 06.
Acquired Hyundai Petrochemical (current Daesan Plant)

2004. 07.
Acquired KP Chemical (current Ulsan Plant)

2006. 07.
Established LOTTE Chemical Trading (Shanghai) Corp.

2006. 08.
Established LOTTE MCC (joint venture)

2010. 11.
Acquired Titan Chemical Corp. in Malaysia

2011. 11.
Established Honam Mitsui Chemical Corporation

2010~

Take-off

2012. 12.
Merged with KP Chemical and changed corporate name to LOTTE Chemical (former name: Honam Petrochemical)

2014. 04.
Established Hyundai Chemical (joint venture agreement with Hyundai Oil Bank)

2015. 10.
Completed construction of gas field chemical project in Uzbekistan (current Uz-Kor Gas Chemical)

2016. 05.
Acquired Samsung Group chemical affiliates (LOTTE Fine Chemical, LOTTE Advanced Materials)

2017. 11.
Completed construction of LOTTE Versalis Elastomers

2018. 05.
Signed MOU with Hyundai Oil Bank to jointly build new heavy feed petrochemical complex (HPC)

2019. 05.
Completed construction of ethane cracker and ethylene glycol plant

2020. 01.
Merged with LOTTE Advanced Materials

2020. 02.
Established LOTTE GS Chemical Co., Ltd. (joint venture)

OUR SUSTAINABILITY JOURNEY

2007
- Established Social Contribution System

2008
- Introduced Matching Grants
- Published first sustainability report

2009
- Revised economic, safety, and health management policies
- Merged with LOTTE Daesan Petrochemical
- First entered DJSI KOREA

Dow Jones Sustainability Indexes

2010
- Endorsed Green Energy Management System (GEMS) as the first in the industry
- Incorporated Social Responsibility Investment Index of Korea Exchange
- CDP KOREA 2010 Best Company in New Sector/Leader in the Raw Materials Sector
- Awarded the best company in social contribution

2011
- Awarded Korea SR Grand Prize
- First incorporation into DJSI Asia Pacific

2012
- Changed the company name to LOTTE Chemical
- Merged with KP Chemical
- Received the Environment Minister Award at the Leading Resource Circulation Company Award

LOTTE CHEMICAL

2013~2014
- Received Excellent Corporate Governance Award by the Korea Corporate Governance Agency
- Participated in CDP
- Selected as an excellent company with the climate change competitiveness index
- Selected as a "family-friendly company"

2015
- Established LOTTE Chemical Management System (LCMS)
- Participated in the GHG emissions trading market
- Formation of Charlotte Volunteer Group

2016
- Declaration of human rights Contribution to the UN SDGs
- 1st place in LACP Top100

SUSTAINABLE DEVELOPMENT GOALS

2017
- Awarded for excellent public announcement
- Renewed ISO 14001(2004→2015) certification

International Organization for Standardization ISO 14001

2018
- 1st place in LACP Top100

2019
- Acquired ISO 37001 certification for anti-corruption management system

2020
- Received Grade A in the ESG Evaluation by Korea Corporate Governance Service (2011~2018)
- Merged with LOTTE Advanced Materials
- Established Sustainability Management Guidelines for Suppliers
- First published 2019 Mutual Growth Report
- Started Project LOOP for a virtuous cycle of plastic resources

2021
- Environmental Objectives and ESG Business Strategies Declaration of Green Promise 2030

LOTTE Chemical in Everyday Life

LOTTE Chemical is more a part of your daily life than you might think. From basic household items to cutting-edge medical and aviation materials, LOTTE Chemical's products are all around us, enhancing our quality of life.
LOTTE Chemical is with us throughout our day from morning till night, when we wrap up a busy and long day.

- Polymer
- Basic Chemicals
- Construction materials, etc.
- Monomer products
- Advanced materials products
- Megatrends

06:00 AM

Start of the Day

Time to awaken the body and mind after a long night's sleep and start the day.

1. TPE (Earphone cable)

TPE is elastic like rubber at room temperature, and deformable at high temperatures, and lightweight due to its low density. Research is actively being conducted to use it in automobile parts; TPE is also used in wires and cables.

2. EG (Clothes)

EG is the raw material of polyester, which is widely used as a synthetic fiber clothing material. In addition, EG is also used as a raw material for automobile antifreeze liquid for its low freezing point.

08:00AM

On the way to work

We can even see LOTTE Chemical's products on the way to work.

3. EPP (Helmet)

EPP is a PP compound resins with improved functions of polypropylene (PP), a representative petrochemical product. An increasing number of industries use EPP, as it is non-toxic, sturdy, and has excellent insulation.

4. PC (Sports Goggles)

PC is a high-strength, heat- and shock-resistant plastic material. In addition, it is highly transparent and non-toxic, so it is widely used for electrical/mechanical parts, optical discs, and automobile headlamps.

5. BD (Tire)

BD is a major raw material for synthetic rubber that replaces natural rubber, it is used mainly as a raw material for tires, rubber hose, etc.

6. EVA (Shoes)

EVA has characteristics of both rubber and plastic. Due to softness, shock-absorbance and thermal insulation, it is often used as shoe soles.

7. PC (Ballpoint pen)

PC is a high-strength, heat- and shock-resistant plastic material. In addition, it is highly transparent and non-toxic, so it is widely used for electrical/mechanical parts, optical discs, and automobile headlamps.

8. PP (Clear file)

PP material is heat- and shock-resistant, chemical resistant, and transparent. PP is used as raw material for various products, including automotive materials, disposable syringes, transparent containers, and non-woven fabrics for hygiene.

9. SM (Laptop)

SM uses benzene and ethylene as raw materials. It is used to make polystyrene (PS), which is widely used in toys and cushioning materials; ABS, which is widely used in automobile parts and electrical products; and paints.

10:00AM

During meetings

We use LOTTE Chemical's products in important meetings.

12:00PM

Lunch time

LOTTE Chemical provides pleasure and convenience when we take a break to recharge.

10. PET (Disposable lunch box)

PET is commonly used in food and beverage containers for its non-toxicity and transparency.

11. LDPE (Disposable paper cup)

LDPE is easy to mold, flexible, resistant to moisture and water, and has excellent transparency. It is used in agriculture, packaging films, and various kinds of wraps. The coating film applied to paper cups to prevent them from getting wet is made of LDPE.

12. TPV (Wipers)

This is a TPE material developed by applying LOTTE Chemical's proprietary technology. It has both the elasticity of rubber and the moldability of plastic. Due to its high elasticity, it can replace PVC and synthetic rubber; its low density makes it possible to make lightweight products.

13. LFT (Automobile Door)

Synthetic resin is a material reinforced with high-strength fibers, applying proprietary fiber impregnation technology. With excellent mechanical properties and heat and impact resistance, LFT replaces steel and engineering plastics in automotive interiors and exterior materials and industrial materials.

14. Compound PP (Automobile Bumper)

As a product with improved functionality compared to standard polypropylene, the composite PP has excellent heat resistance, rigidity, impact resistance, and moldability, which makes it suitable for applications in various fields, including interior and exterior materials for automobiles, electrical and electronic products, and industrial building materials. It is used to make bumpers that require lightweight and safety features possessing excellent technical functionalities as composite resin.

03:00PM

Business Meeting

LOTTE Chemical's technologies are present even while traveling to a business meeting.

07:00PM

Dinner

You will, for example, find LOTTE Chemical in useful household items when it is time to make dinner after coming home from work.

15. HDPE (Container)

A type PE, high-density polyethylene (HDPE) has excellent heat resistance, shock resistance, moldability, and cold resistance. It is used in kitchen containers, fishing nets, ropes, cable insulation, automobile fuel tanks, films, etc.

16. PMMA (Kitchen countertop)

PMMA, also known as acrylic resin, is transparent and temperature - resistant. It is used in glass, battery parts, and building materials, because it can take a wide range of colors well.

17. SM (Tablet PC)

SM uses benzene and ethylene as raw materials.
It is used to make polystyrene (PS), which is widely used in toys and cushioning materials; ABS, which is widely used in automobile parts and electrical products.

18. EPP (Synthetic leather couch)

EPP is a PP compound resins that improves the function of PP. We are expanding its application from automobile parts, including bumpers, airbag covers, instrument panels, ceiling materials, and interior materials that require safety and durability, to helmets and home appliances.

09:00PM

Taking a break after work

When arrive home after a long, busy day, you can find LOTTE Chemical's products in every corner of the house.

SUSTAINABILITY OVERVIEW

Sustainability Management Strategies

Risk Management

Response to COVID-19

Stakeholder Engagement

Materiality Assessment

Management Approach

UN SDGs

Sustainability Management Strategies

Sustainability Management System

Successful business in the future means creating values for the economy, the environment, and society. LOTTE Chemical is strengthening sustainability as a cornerstone of corporate strategy and strives for systematic integration of sustainability and business. From analysis of sustainability trends, LOTTE Chemical discovers business opportunities and derives corporate management directions that minimize risks in the value chain.

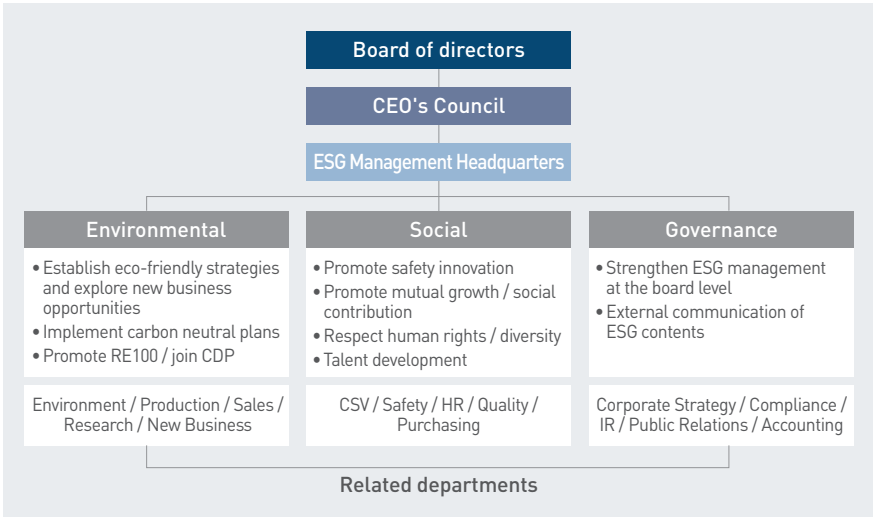
Declaration of 'Green Promise 2030'

All companies in the LOTTE Group's Chemical BU, including LOTTE Chemical, declared that 2021 will be the first year of ESG (environmental, social, governance) management, and announced 'Green Promise 2030' as its eco-friendly goal and ESG strategy. 'Green Promise 2030' includes sales of KRW 6 trillion in green business and promotion of carbon-neutral growth by 2030. The slogan, "Every Step for Green," represents our sincere promise to protect the planet and our goal of expanding our eco-friendly business paradigm and achieving sustainable business growth. LOTTE Chemical will focus on strengthening green businesses, expanding the virtuous cycle of resources, responding to climate change, and creating a green ecosystem. We will continue to communicate with customers, shareholders, and communities and strive to enhance our corporate future values to have positive impacts on society.

Sustainability Management Council

LOTTE Chemical declared 2021 as the first year of ESG management and launched its ESG Management Headquarters to establish ESG strategies and build empathy with employees. The Corporate Planning Team and each ESG secretary organization have jointly established the ESG Management Plan. The plan is being discussed at the board and management meetings, and all employees are working together to achieve the established goals.

[Sustainability Management Council Organization Chart]



Establishing a New Organization for Sustainability

New Business Development Division was established to focus on developing company-wide strategies and manage portfolios to grow into a Global Top 7 company. The Innovation Center was founded to conduct research on future business. The IR Team and the CSV Team have been reorganized to strengthen communication with shareholders and fulfill social responsibilities; the Digital Transformation Division was established to lead digital transformation; the Internal Accounting Team was reorganized to enhance the reliability of financial information. LOTTE Chemical will continue to bring about organizational changes to be able to flexibly respond to internal and external changes.

Risk Management

Operation of Integrated Risk-Management System

LOTTE Chemical secures business sustainability by establishing and operating an integrated risk management system, which allows preemptive identification, management, and inspection of various risks in the rapidly changing internal and external business environments. We have defined all possible economic, social, and environmental risks and laid the foundation for a prompt, company-wide response. The system allows us to uncover any latent internal or external risks and preemptively eliminate risks upon detection; it also ensures optimal responses by all staff members in the event of an actual risk. We support the precautionary approach outlined in Principle 15 of the Rio Declaration on Environment and Development, and apply the precautionary measures to our risk assessment and risk management system.

Risk-Management Governance

LOTTE Chemical formed an organization dedicated to risk management to identify risk factors that could arise during implementation of our business activities, and establish and manage appropriate response strategies. Based on the management's interest and commitment to risk management, we declared 2021 as the first year of ESG management and installed the ESG Management Headquarters, which monitors company-wide risk management activities and improves risk management policies in line with the overall management policies through the CEO report. We have established a company-wide risk management system in relation to environmental, social, and governance structures through appropriate division of roles among departments.

LOTTE Chemical plans to establish the ESG Committee under the company's BOD and develop a systematic response process for management of company-wide risks.

Compliance Management and Internal Control System

LOTTE Chemical has introduced a compliance management system in consideration of the business environment, in which global regulations related to compliance management are expanding, as well as the monitoring of stakeholders and exposure to compliance risks as the company continues to grow. We are promoting a transition from the improvised/reactive response system of the past to the preemptive monitoring and management of specific risks. Through the compliance management system establishment project, we have realized a support system for anti-corruption, anti-monopoly and fair trade, environment, safety and health, human resources, tax and accounting, and trade secret protection. In addition, a compliance officer is appointed to make continuous improvements to the system through internal inspections and consulting. In addition, LOTTE Chemical has designed and operates an in-house accounting management system in accordance with the internal accounting management regulations; as per Article 8, Paragraph 4 of the Act on External Audit of Stock Companies, etc. (hereinafter referred to as the 'External Audit Act'). The operation of the internal accounting management system is reported to the general shareholders' meeting, the board of directors and the audit committee every business year. Furthermore, in accordance with Article 8, Paragraph 5 of the External Audit Act, the company's audit committee members evaluate the operating status of the internal accounting management system and report it to the Board of Directors every business year; and in accordance with Article 8, Paragraph 7 of the External Audit Act, an external auditor audits the company's internal accounting management system and includes his/her opinions in the audit report.

Response by Risk Type

Our risk portfolio broadly classifies all management risks into financial and operational risks, and then subdivides them into finance, raw materials, logistics, environment, safety, and compliance risks. We apply consistent criteria for evaluation of risk portfolios across the different divisions in the company, select risk factors by type, and establish response strategies (measures) for each risk portfolio.

Category	Risk Type	Details	Countermeasures (Action Plan)
Financial Risk	Finance	• Exchange-rate risks related to global business expansion • Interest rate risks due to changes in the financial market	• Regular monitoring by related departments • Use of hedging tools such as SWAP of interest rate and exchange rate
Operational Risk	Raw materials	• Risks of not procuring raw materials in a timely manner	• Propose long-term contracts with suppliers • Diversify raw materials such as LPG and ethane • Diversify suppliers and supply regions for raw materials
	Logistics	• Transportation risk due to lack of ships and accidents	• Propose long-term contracts with suppliers • Regular monitoring by relevant departments • Introduce the postevaluation system for logistics companies
	Environment	• Risk related to violation of environmental laws and regulations • Cost-related risk due to lack of emission permits	• Reinforce the legal monitoring and compliance process • Expand investment in environmental facilities such as air-pollution prevention facilities • Reduce energy use, expand investment and secure carbon credits
	Safety	• Recovery of costs and losses in case of safety accidents	• Improve the safety system • Safety training for employees • Expand safety investment, such as improving inspection of high-risk facilities • Conduct regular safety inspections for all business sites and suppliers
	Compliance	• Risks related to violations of laws and regulations such as fair trade, anticorruption, and safety environment	• Establish compliance regulations and procedures • Continuous monitoring system • Employee training

Response to COVID-19

LOTTE Chemical has developed efficient and powerful strategies to overcome the COVID-19 pandemic. Emergency Response Headquarters is organized under the CEO as the head of the organization to implement prompt and systematic measures to respond to COVID-19. Furthermore, LOTTE Chemical is taking preemptive steps to prevent the inflow and spread of COVID-19 in the workplace. In addition to observing personal hygiene rules, such as health-checks for all visitors and wearing of masks at all times, we maintain social distancing in daily life and disinfect all spaces regularly. We have also installed partitions in cafeterias and extended the working from home policy. We are hopeful that the response strategies and initiatives taken by employees and executives will help us overcome the crisis of COVID-19 in our communities. We will continue to carry out necessary safety and health measures and fulfill our corporate social responsibilities.

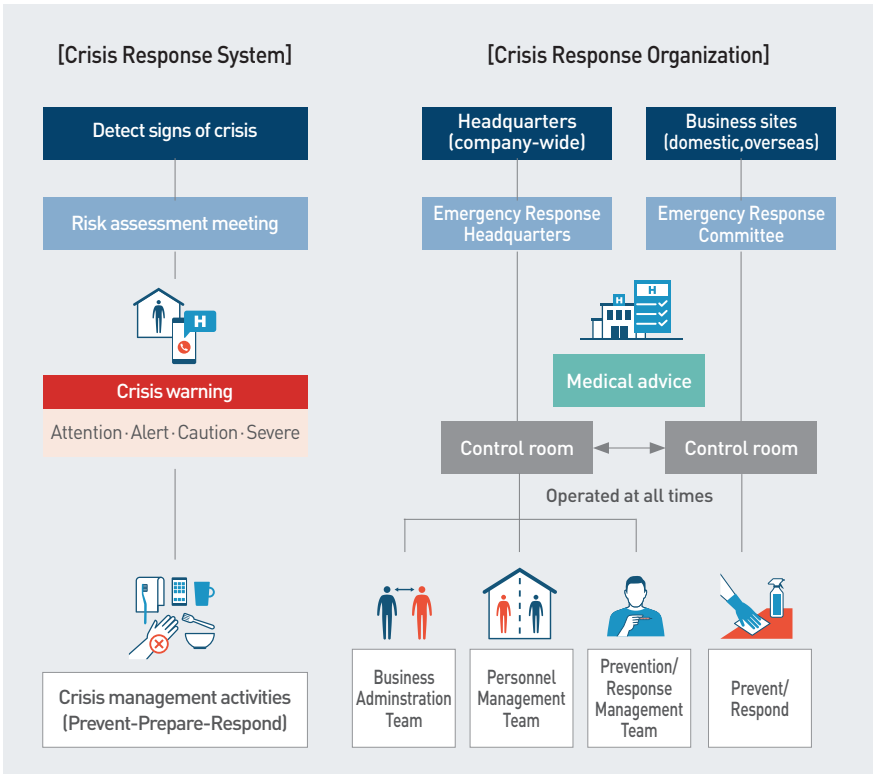
Our Commitment for COVID-19

All entrances are being monitored with thermal imaging cameras at the LOTTE World Tower, where LOTTE Chemical's headquarters is located. Entrances without thermal imaging cameras are currently blocked and not permitted for use. We have also prohibited the use of sofas and chairs in the lounge, as well. To further prevent the spread of virus, we are regulating the elevator movement between floors.

Hand sanitizers are placed in every space, and handles and elevator buttons are frequently disinfected and covered with antibacterial sheets. The "smart office" was changed back to a fixed seat system, and parking passes are provided to employees to reduce transmission from using public transportation.

We are taking the body temperature of all people entering and leaving subsidiaries and business sites and have temporarily closed public spaces.

All employees of LC USA in Houston headquarters have been working from home following the "Stay at Home" order, as the number of confirmed cases in the United States surged exponentially.



Disinfecting Yeosu Plant Office

Thermal Imaging Camera at the East Gate Entrance

Best Practices

Highly transparent medical PP material used in COVID-19 vaccine syringe

Use up every drop of vaccine!

LOTTE Chemical has been supplying medical-grade, transparent PP material to domestic and overseas manufacturers of medical supplies and vaccine syringes for successful vaccination of COVID-19. With the COVID-19 vaccinations now in full swing around the world, an LDS (Low Dead Space, Least Residual) syringe that can maximize the potential number of vaccine doses, or the Korean syringe (K-syringe), is becoming extremely popular. Our medical-grade, transparent PP material, SJ-170M and J-560M were selected for use in the LDS syringe developed by Poonglim Pharmatech, a domestic medical syringe manufacturer. LDS (Low Dead Space) syringe is a special syringe designed with little space between the piston and the needle to minimize unused vaccines. Using this type of syringe can increase 1~2 doses per bottle of COVID-19 vaccine. In particular, J-560M is made of highly transparent medical PP material that has obtained USP Class VI[1] and FDA DMF[2] certification. It is being used in medical supplies essential for prevention of COVID-19, such as diagnostic kits and syringes. LOTTE Chemical has increased production of special polypropylene materials for use in medical devices, mask filters, and antibacterial materials to meet the increasing demand.

1) USP (U.S. Pharmacopeia) Class VI: certification of a material to be used within a medical device
2) FDA DMF (Drug Master Files): submission of detailed information about pharmaceutical raw materials/containers, packaging materials/manufacturing process to be registered in the system

Response to COVID-19 Major Activities

Our Employees

Enforce social distancing in workplaces to prevent workplace infection

- Reinforced safety measures by preparing step-by-step response guidelines for each stage of COVID-19 crisis.
- Extended work-from-home policy to 30% of employees during crisis level 2~2.5, measured body temperature of employees when they came into work, and regularly disinfected the workplace.
- Allowed pregnant women and employees with underlying diseases to work from home for as long as necessary.
- Encouraged use of family care leave for employees with children as schools and daycare were postponing reopening.

Our Partner

Mutual Growth Fund of KRW 118.4 billion to support partner companies

- Provided financial assistance to partners at a lower interest rate than banks to help recovery from COVID-19.

Donation of hygiene and disinfecting supplies to partner companies

- To help slow the spread of COVID-19, approximately 23,000 face masks and 600 hand sanitizers were donated to employees of resident partners at each business site.

Local Community

Donation of COVID-19 safety supplies to firefighters in Daegu and Gyeongbuk areas

- Donated 100,000 medical gloves and 490 sanitizers for the safety of firefighters who are exposed to risk of infection during emergency treatment and patient transfer as the number of cases rapidly increased in the Daegu and Gyeongbuk area.

Blood donations

- To help overcome the difficulties in securing blood donations due to the prolonged COVID-19 crisis, employees of the Uiwang Plant and Ulsan Plant voluntarily participated in blood donation.
- The donated blood was used to overcome blood shortages in local healthcare facilities.

Global Community

Indonesia

- Donated 30,000 COVID-19 RT-PCR test kits to the Indonesian Disaster Prevention Agency (BNPB) collectively with LOTTE group affiliates and subsidiaries.

United States

- Donated protective clothing, face masks, gloves, etc., to healthcare facilities in Lake Charles, USA.
- Donated USD 100,000 to five local non-profit organizations, including the Community Foundation, to support people the unemployed due to the COVID-19 crisis.

Malaysia

- Donated portable oxygen respirators to a hospital in Kuala Lumpur.
- Donated polypropylene raw material for production of cotton swabs and face protection used during COVID-19 test.
- Donated relief food to families that have difficulty maintaining livelihoods due to restrictions in transportation.

Pakistan

- Donated Rs 30 million (KRW 220 million) to healthcare facilities in Karachi and Lahore.

Participation in the 'Thanks to' challenge to show support for the medical staff

Donation of safety supplies to firefighters in Daegu-Gyeongbuk area

Participation in blood donation

Donation of COVID-19 diagnosis kits to Indonesia

Stakeholder Engagement

Identification and Classification of Stakeholders

LOTTE Chemical is acutely aware of the importance of open communication with stakeholders hence, we are actively utilizing various channels to promote active communication. According to the legal, financial, and operational responsibilities and impact, which are the standards for stakeholder classification defined by ISO 26000, LOTTE Chemical classifies stakeholders into three groups: core, strategic, and environmental stakeholders. Executives, employees, customers, government and related institutions, shareholders, investors, partner companies, and local communities have been identified as core and strategic stakeholders. LOTTE Chemical reflects on the feedback from various stakeholders to make improvements.

[Stakeholder Mapping & Grouping]

- A group of people to whom LOTTE Chemical has legal, financial, or operational responsibilities.
- A group of people that has influence on LOTTE Chemical's performance.
- A group of people that are affected by LOTTE Chemical's performance.

Core	Strategic	Environmental
Essential for survival of the company	Essential when responding to specific issues	Stakeholders other than core and strategic
Employees, customers, shareholders, and investors	Government and related organizations, local communities, and partners	Media, NPOs, socially underprivileged, partners (industry groups), research institutes and experts

[Communication Channel Operation by Stakeholder Group]

Category	Stakeholder	Issues of interest	Communication channel	Details of activities
Internal	Employees and executives (Incl. union)	• Enhance safety and health of employees • Promote work-family balance	• Employee council (quarterly) • Labor management council (quarterly) • Grievance committee (at all times) • Intranet (at all times) • HR policy briefing sessions (at all times) • Company magazine (monthly)	• Promote work-life balance • Job competency strengthening programs • Employee welfare and benefit program • Workplace environment improvement activities
External	Customers	• Product quality • Product reliability • R&D	• In-person visits (at all times) • Customer satisfaction surveys (annual) • Customer invitation program (at least once per year) • VOC resolution process (at all times)	• Operate customer service digital platform (MaaS) • Respond to claims related to product quality and logistics/transportation • Conduct annual customer satisfaction survey • Develop new products
	Government and related organizations	• Compliance with environmental and safety laws	• Government hearings (at all times) • Forums (at all times) • Meetings (at all times)	• Participate in national projects • Joint Cooperation Programs
	Shareholders and investors	• Financial performance • Stability in governance	• Regular shareholders' meeting (once a year) • Extraordinary shareholders' meeting (as needed) • Disclosure (at all times) • Investment information website (at all times) • Ethical management website (at all times)	• External directors • Operation of subcommittees within the board of directors • Transparent disclosure
	Partners	• Communication with partners • Mutual Growth	• Meetings with partners (2-3 times per year) • Technical cooperation programs with SMEs (at all times) • Mutual Growth Academy (at all times) • CEO visits to partner companies (at all times)	• Mutual Growth Fund • Technical support to research center • Training employees of partner companies • Visits to partner companies • Publication of Mutual Growth Report
	Local Communities	• CSR activities	• Sisterhood ties (at all times) • Meetings with local residents (at all times) • Environmental clean-up (at all times) • Charlotte Volunteer Group (at all times)	• CSR Activities

Materiality Assessment

Materiality Assessment Process

LOTTE Chemical conducted materiality assessments for systematic selection and management of sustainability-related issues and identification of topics recognized as important by stakeholders. The materiality assessments were conducted based on a sustainability context, materiality, completeness, and stakeholder Inclusiveness, as recommended by the GRI Standards and ISO 26000.
Stakeholders' major areas of interest derived through materiality assessment were selected as material issues, based on which the contents of the report were organized.

[Materiality Assessment Process]

STEP 1 Identification

Identification of sustainability management issues through analysis of internal and external environments

- **Analysis of global criteria and evaluation factors:** Review reporting requirements of related standards, including GRI Standards, ISO 26000, UNGC, DJSI, SASB, MSCI, and KCGS.
- **Media research:** Analyze articles to understand how LOTTE Chemical is perceived from external parties.
- **Benchmarking:** Understand material issues of domestic and overseas competitors.

STEP 2 Prioritization

Prioritize issues through materiality assessment

- **Evaluation of Relevance:** Select 23 material issues by evaluating the relevance to sustainability issues identified through analysis of internal and external environments.
- **Evaluation of Significance:** Select 14 material issues from online stakeholder survey conducted from Feb 23 ~ Mar 4, 2021.

STEP 3 Validation

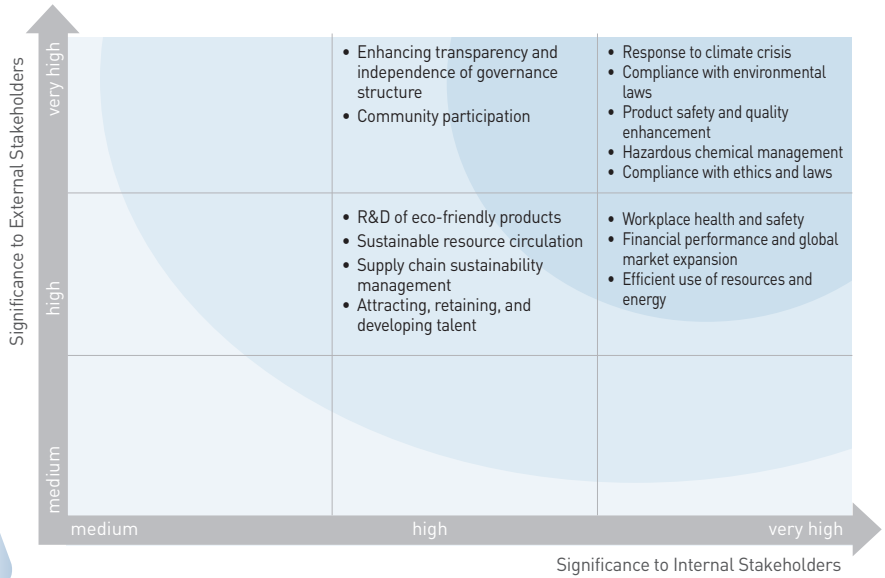
Verification of Validity

- Hold board meetings and TF meetings to review whether the 14 issues are important to LOTTE Chemical's sustainability management.
- Determine scope, boundary, and period for reporting of material issues.

Materiality Assessment Results

From the stakeholders' evaluation of the important sustainability issues, a total of 14 issues were selected based on the priority, including six in the environment, three in the economy, and five in the social area. In 2020, employees and stakeholders selected the following issues as important topics for the sustainable management of LOTTE Chemical: ethics and compliance; product safety and quality enhancement; hazardous chemical management; and workplace health and safety management. The economic issues ranked lower than the previous year, while the importance of environmental issues grew higher.

[Materiality Assessment Matrix]



Category	Issue	GRI Standards Topic	Topic boundary	Reporting boundary	Page
Environment	Compliance with environmental laws	GRI 307 Environmental Compliance	Internal	Internal	60
Social	Product safety and quality enhancement	GRI 416 Customer Health and Safety	Internal	Internal	58-59
Environment	Hazardous chemical management	-	Internal	Internal	59-60
Economy	Compliance with ethics and laws	GRI 205 Anti-corruption	Internal/ External	Internal/ External	82-85
Social	Workplace health and safety	GRI 403 Occupational Health and Safety	Internal/ External	Internal/ External	65-69
Environment	R&D of eco-friendly products	-	Internal	Internal	52-55
Environment	Response to climate crisis	GRI 305 Emissions	Internal	Internal	44-47
Environment	Sustainable resource circulation	GRI 306 Effluents and Waste	Internal/ External	Internal	39-41
Social	Supply chain sustainability management	-	Internal/ External	Internal	74-75
Economy	Financial performance and global market expansion	-	Internal	Internal	32-35
Economy	Enhancement of transparency and independence of governance structure	-	Internal	Internal	80-82
Social	Attracting, retaining, and developing talent	GRI 401 Employment	Internal	Internal	61
		GRI 404 Training and Education			62-64
Environment	Efficient use of resources and energy	GRI 302 Energy	Internal	Internal	48-49
Social	Community participation	GRI 413 Local Communities	Internal/ External	Internal/ External	75-79

Management Approach

Material Topic	Context	Our Approach	Key Performance	Next Plans
Ethical Management and Compliance 	We must make ethical/compliance management a part of our culture to be able to lead the market in an awful, fair manner, share success, and play an active role in resolving social problems. With the tightening requirements for corporate ethics and compliance, it is becoming more important for companies to develop a global-level ethics/compliance system to fulfill corporate social responsibilities and secure trust of stakeholders.	Under the direct supervision of the CEO, the Management Improvement Team and Compliance Team have been endeavoring to establish systems and infrastructure required to achieve an ethics/compliance management culture. We use the ethics/compliance management system to evaluate risks for the entire business, preemptively review areas with high risks, and conduct internal control activities on a regular basis. We also offer online and offline training for employees to instill a culture of ethics/compliance management.	• Completed post and extended audit for ISO 37001 certification • Compiled subcontract management tips into a guideline; revised Fair Trade Compliance Manual (CP) • Diagnosed internal transaction risk and conducted guideline consulting • Completed processing of 2 unethical management cases • Conducted ethics and compliance training	• Improve work process to be more transparent and efficient • Continue implementation of ethics and compliance training • Extend the compliance system to partners and subsidiaries • Continuous monitoring of relevant laws and regulations
Product Safety and Quality Enhancement 	Public interest in product and consumer safety is also increasing as a result of tightening regulations on product safety at home and abroad. The company's competitiveness is in fulfilling corporate social responsibilities and providing high-quality products that customers can use with confidence.	In order to ensure and enhance safety and quality of products, LOTTE Chemical's product environment experts monitor domestic and international laws and policies through integrated chemical substance management systems (LCMS, EHS, MSDS system) in real time. We strengthen the capabilities of product experts and provide customers with information related to use and storage of products.	• Substituted raw materials with non-toxic, flame retardant substances according to the notification of toxic substances by the Ministry of Environment • Maintained product quality while minimizing harmful substance by changing BOM	• Monitor changes in domestic and overseas policies/regulation concerning hazardous chemical • Establish mid- to long-term plan for chemical substance management
Hazardous Chemical Management 	Chemicals can bring great benefit to society; however, the hazards of substances require constant attention and can raise concerns. Chemical companies should thus endeavor to ensure safer and better-quality products through a systematic hazard assessment (enforcement of the Act on Registration and Evaluation, etc., of Chemicals) and a thorough management system.	LOTTE Chemical has established and is operating a global level chemical substance management system. The system helps manage the inflow and use of 20,000 raw and subsidiary materials and products in real time and reports related information to the government. We are minimizing the risk of hazardous chemicals by strictly managing the purchasing and sales channels of hazardous chemicals under regulation.	• Identified and registered substances subject to domestic and overseas chemical substance registration • Completed pre-registration for Turkey-REACH	• Complete registration for 1,000 tons of chemicals in 2021 per the Act on Registration and Evaluation, etc. of Chemicals • Refine chemical substance management system and make continuous improvement to MSDS system
Workplace Health and Safety Management 	A serious accident not only results in corporate loss, but also in social costs and the loss of stakeholder trust. We must therefore be able to respond promptly to increasingly tightening workplace safety regulations by focusing on accident prevention measures for the safety and health of everyone in our job sites.	We focus on improving safety technology, safety management, and safety culture to achieve zero accidents, zero process problems, and zero human errors. We are also planning on implementing collaborative tasks in the short term and internalization tasks in the long term. We are concentrating on internalizing health and safety culture to raise the awareness of all our employees and partners to the level of global standard.	• Promoted safety and health audit • Enhanced the safety culture: improved the grade (transition → mature) • Obtained safety certification for excellent safety management (a total of 11 certifications from 2018 to 2020)	• Implement priority tasks for safety innovation • Enhance EHS management information system

Management Approach

Material Topic	Context	Our Approach	Key Performance	Next Plans
R&D of Eco-Friendly Products	Most plastic products from petroleum are not free of environmental problems. To address this issue, the use of bioplastics and renewable resources is being emphasized worldwide. Companies should strive to minimize environmental risks in the entire manufacturing process and promote research and development of ecofriendly products to further strengthen the foundation for sustainable growth.	In connection with LOTTE Chemical's 'Green Promise 2030', the R&D Center is actively promoting the Green 5Re (Recycle, Reduce, Reuse, Replace, Redesign) strategy. We have an eco-friendly research organization dedicated to developing the technology to convert waste plastic into raw materials and recyclable plastic materials. In addition, we are researching carbon dioxide capture technology and utilization of hydrogen energy to further contribute to creation of a green ecosystem.	• Developed FDA-certified recycled PP (PCR-PP) material • CO_2(carbon dioxide) capture/ carbonation process development • Technology development for waste plastic recycling	• Sales of 1 million tons of Recycled-products • R&D on hydrogen production and utilization technology of by-product hydrogen • Promotion of green research center
Response to Climate Crisis	Climate change has a great impact on our lives environmentally, socially, and economically. Accordingly, addressing climate risks has become an essential aspect in corporate management. Climate risks not only imply regulations, but they are also important factors that influence investors and customers' decisions. It is crucial for companies to reduce GHG emissions and find new growth engines in response to the new paradigm of the low-carbon economy.	In response to climate change, LOTTE Chemical's Environment Management Team strategically manages the energy consumption at each business site. By setting energy-reduction targets for each plant on an annual basis and establishing response policies that match the characteristics of each business site, we are actively promoting energy conservation in the field.	• Refined web-based greenhouse gas energy management system • Incorporated energy diagnosis and diagnosis results into the design (improved efficiency)	• Achieve carbon neutral growth by 2030 • Develop plan to meet RE100 (Renewable Energy 100) • Increase use of renewable energy
Sustainable resource circulation	The intensifying problem of plastic waste around the globe calls for development of a "virtuous cycle of resources." As a leading plastic raw material manufacturing company, LOTTE Chemical takes the lead in recycling waste plastics, creating high value-added resources from waste, and establishing a circular economy system.	We are implementing 5Re strategies to achieve a virtuous cycle of waste plastics and create added value to plastic waste. We prioritize conservation of resources and environment. We are actively promoting mechanical recycling of plastics to help establish the foundation for a virtuous circulation value chain of domestic waste plastics.	• Waste PET bottle collection campaign • Successfully converted waste PET bottles into raw materials to make ecofriendly products • Transformed and improved the awareness of the virtuous cycle of resources in local communities (Seongnam City)	• Termination of the first regional cluster • Start of the second regional cluster • Establish virtuous circulation system for domestic waste plastics and foster/support virtuous resource circulation businesses
Supply chain sustainability management	Mutual growth and cooperation with partner companies are being emphasized as a new paradigm in corporate management. LOTTE Chemical's competitiveness lies in the success of partner companies who are vital players in production and supply of our products. Accordingly, strengthening the competitiveness of the supply chain and the foundation for sustainable growth through active communication with suppliers are important factors in creating a sustainable ecosystem.	In order to develop a sustainable supply chain, we are implementing various measures to strengthen business relations, promote shared growth, and improve communication. In addition, our supply-chain management policy addresses various issues, such as quality, safety, eco-friendliness, and preventive measures, on multiple levels, so the issues of an individual supplier do not become a risk factor for the entire supply chain.	• Funded KRW 123.8 billion for mutual growth programs for 230 companies to enhance supply chain competitiveness • First publication of the Mutual Growth Report • Donated KRW 320 million as mutual growth fund	• Support enhancement of supply chain competitiveness and expansion of management systems for business partners • Enhancement of facility investment and technology development by expanding financial support

Management Approach

Material Topic	Context	Our Approach	Key Performance	Next Plans
Financial performance and global market expansion 	As the global economy is threatened by uncertainties and unfavorable events, corporations must prepare for a new future. Taking strategic approaches and making continuous efforts to advance into new businesses and markets will help companies secure financial performance for sustainable business operation and become successful in the global market beyond the domestic market.	LOTTE Chemical has established a new process that helps link company-wide strategies to strategies at the business division level. One of our main strategies is to diversify raw materials to strengthen current business competitiveness. In addition, we will be expanding eco-friendly/mobility businesses to discover and develop new growth engines. We are seeking opportunities to advance into other business areas through M&As and by establishing an organization dedicated to new business development.	• Entered the battery materials market (eco-friendly business) • Secured new global compounding bases for automobile material production (India, Indonesia, Vietnam, etc.)	• Expansion of global bases • Developing differentiated solution materials and eco-friendly/mobility businesses • Active consideration of global M&A
Enhancement of transparency and independence of governance structure 	With the recent increase in social interest in corporate governance and as a result of the reinforced governancere lated laws and regulations, companies are required to disclose more information related to the scope of specific activities and expertise and independence of corporate governance. Companies must therefore strive to meet stakeholders' expectations, gain trust, and pursue balanced interests through transparent governance structures.	To further ensure transparency and independence of the governance structure, we are actively listening to and reflecting on related laws and various stakeholders' opinions when reviewing qualification of director candidates. More than half of the board members are outside directors and all committee chairs within the board are outside directors. To promote diversity, a female outside director has been appointed as well.	• Average attendance rate of directors: 94% (based on 9 directors in office as of December 2020) • Strengthened reporting system: visits to business sites, briefings, and reports on current issues	• Separate election of audit committee members (outside director) • Continue to improve reporting system: visits to business sites and prompt reporting of major issues
Attracting, retaining, and developing talent 	Understanding that people are at the heart of a company's sustainable growth, a company's investment in securing and nurturing talents should be one of the core strategies. Global companies emphasize talent management not only in relation to strengthening corporate competitiveness and creating jobs, but also in relation to corporate social responsibility.	We utilize various online/offline channels to improve our hiring process and background verification process when recruiting talents to find suitable candidates for the organization/job. We have introduced a new HR system to implement preparatory training of next generation leaders. In addition, we are operating a feedback/coaching-centered evaluation system to ensure fair compensation based on performance.	• Introduced AI competency test for certain jobs • Revamped performance evaluation system and establishment of system	• Reinforcement of talent acquisition and talent verification • Establishment of nurturing evaluation system • Expansion of the core talent program • Implementation of corporate culture improvement activities
Efficient use of resources and energy 	Energy consumption in workplaces is one of the main causes of greenhouse gases and climate change. Therefore, it is the company's duty to consider efficient use of resources and energy as key tasks and to meet the stakeholder expectations regarding responses to climate change.	To achieve carbon-neutral growth and develop a green ecosystem, which are two of the four axes of the "Green Promise 2030," we have set detailed goals of freezing greenhouse gas emissions at the level of 2019, and reducing emissions of harmful substances by 50% by 2030. We are considering various measures to reduce the amount of resources used and increase efficiency.	• Conducted energy saving diagnosis through process optimization • Completed the 2nd update of the GHG energy management system	• Sequentially apply energy saving diagnosis to all processes • Develop a company-wide project on reduction of environmentally harmful substances
Community participation 	As a member of the local community, companies are also expected to create social values beyond financial value. Companies must promote mutual growth with the local community by sharing profit and promote long-term and consistent social contribution activities in line with corporate strategies.	LOTTE Chemical is striving to fulfill its social responsibilities and grow with the local communities. LOTTE Chemical has come up with region-specific programs for each business site, centered on the three themes of environment, women & children, and community, in line with the recent CSR activities focusing on addressing mid- to long-term social issues.	• Plastic recycling campaign (Ddabunhaeng) • Bobath Children's Hospital (rehabilitation) mom-easy music play • COVID-19 relief support	• Continue social contribution activities • Continue domestic and global COVID-19 relief programs

UN SDGs

Adopted by the UN General Assembly in September 2015 as a follow-up goal to the Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) are the global goals to be pursued by the international community and the UN from 2016 to 2030. The SDGs were established under the principle of "No One Left Behind", the role of corporations in achieving the ideal of pursuing a healthier and better life for humanity has become essential. LOTTE Chemical wholeheartedly accepts the Sustainable Development Goals and endeavors to implement them through company-wide projects.

Since 2016, LOTTE Chemical has been focusing on the SDGs directly related to its business and attempting to expand the scope while improving the implementation. In 2020, LOTTE Chemical focused on achieving carbon neutrality and a virtuous cycle of resources. With Project LOOP, we played an active part in "establishing sustainable production and consumption culture" (Goal 12) and with the 'Green Promise 2030' initiative, we implemented emergency measures against climate change and its impacts (Goal 13). We believe that our efforts will make a difference for the entire planet.

OUR IMPACT ON THE SDGs

Specific Goals and Direction

SDG Targets

Ensure quality training and promote lifelong learning opportunities for all
- 4.4 Ensure inclusive and equitable training and education; promote lifelong learning opportunities
- 4.5 Ensure access to education and vocational training for the vulnerable

Achieve gender equality, empower all women and girls
- 5.1 Eliminate all forms of discrimination against women and children
- 5.5 Encourage women's participation and ensure women leadership in the politics, economy, and public sector

Ensure sustainable energy for all
- 7.3 Double the global energy efficiency improvement rate

Sustainable economic growth, full employment, and quality employment promotion
- 8.3 Promote the establishment and growth of small businesses and SMEs

Establish sustainable production and consumption culture
- 12.4 Eco-friendly management and reduction of chemicals and hazardous waste
- 12.5 Reduce waste through recycling and reuse

Implement emergency measures against climate change and its impacts
- 13.1 Strengthen resilience and adaptation capacity to climate-related risks and natural disasters

Our Approach

In order to fulfill our social responsibilities and grow with local communities, LOTTE Chemical carries out social contribution programs for the educational independence of the vulnerable. We donate science books to local schools in Daejeon every year and provide scholarships, school uniform subsidies, and school trip expenses for the students from socially disadvantaged groups.

Our policies for work-family balance and career advancement of women include a mandatory childcare leave system for female employees, infertility leave and infertility treatment expense support program, and female leadership training programs.

By setting an annual energy reduction target for each plant and establishing policies that suit the characteristics of each business site, we have successfully implemented energy conservation measures. Furthermore, we are considering the introduction of an AI-based FEMS system for efficient workplace energy management and are converting our research centers into eco-friendly buildings using renewable energies.

We are promoting the establishment of a sustainable supply chain through mutual growth and win-win partnerships with our partners. We are implementing various measures to strengthen business relations, facilitate mutual growth, and improve communication.

We are implementing the 5Re strategies to achieve a virtuous cycle of waste plastics and create added value. In addition, we started "Project LOOP," in which we localize the entire recycling process from PET bottle collection to production of green products using the recycled PET bottles as raw materials to achieve a virtuous circulation system for waste plastics.

In order to manage complex data on GHG and energy and to improve work efficiency, we have upgraded the web-based GHG energy management system.
We are conducting energy diagnosis to optimize the process, with help of specialized companies, and reflecting the diagnosis results in the design of our facilities to improve overall efficiency. We hope to apply the process to all production plants.

Key Performance

Scholarships
Unit: KRW million

202

Female managers
Unit: %

13.4

Energy consumption reduction
Unit: TJ

982

Mutual growth fund
Unit: KRW billion
(Total funds raised: KRW 135 billion)

118.4

Recycled waste plastic
Unit: kg(786,022 PET bottles)

21,549

GHG Emissions
Unit: KT

5,570

SUSTAINABILITY FOCUS

TOPIC 1. GLOBAL BUSINESS

TOPIC 2. SAFE WORK ENVIRONMENT

TOPIC 3. PROJECT LOOP

TOPIC 1.

GLOBAL BUSINESS

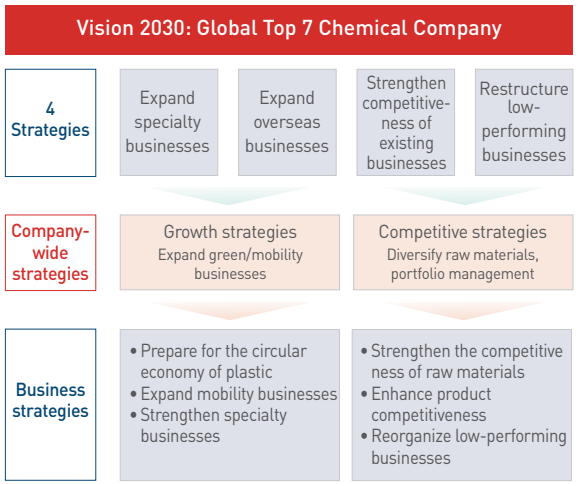
"Global Top 7 Chemical Company" is a slogan that shows LOTTE Chemical's determination to become a market leader and provide the best solutions in the chemical field. We strive to become a global player that leads market changes by ensuring transparency and raw-material competitiveness, developing world-class technology, and producing quality products in line with global technology trends and marketing.

Louisiana Plant in the USA

Global Businesses Strategy

Since the establishment of Vision 2030 in 2019, LOTTE Chemical has employed four main strategies to respond preemptively to various sustainability issues. In 2020, we launched a new process that allows for a coordinated development of sustainable strategies across different departments, through which we hope to bring about positive impacts on society and the environment.

[Vision and Strategy]



The pressures on the petrochemical industry are increasing due to the recent expansion of economic volatility in the chemical industry, tightening environmental regulations that demand eco-friendly business, and increasing uncertainties caused by COVID-19. LOTTE Chemical is thus reinforcing existing businesses and reviewing new business opportunities to secure profit models and discover new growth engines for the sustainable future of the company.

Global Business Efforts

To achieve Vision 2030, LOTTE Chemical is diversifying raw materials in domestic and overseas businesses and expanding product portfolios to strengthen the competitiveness of its existing businesses.

Strengthening raw-material competitiveness

Expansion of the ethane cracker plant in the United States

LOTTE Chemical was the first Korean petrochemical company to build a shale gas-based ethane cracker and ethylene glycol production facility in the United States. The ethane cracker plant in Louisiana, USA, started full-scale commercial production in 2019. Using less naphtha and more gas as raw materials, the plant helps diversify raw materials/production bases/selling regions and strengthen global competitiveness. Furthermore, LOTTE Chemical is reviewing the feasibility of ethane cracker plant expansion and construction of HDPE production facilities that will use the produced ethylene. The construction and expansion of plants will allow us to adjust the ratio of naphtha to shale gas (6:4) and become more resilient to the fluctuations in global oil prices and product market conditions.

Increasing ratio of LPG raw materials in naphtha cracker plants in Yeosu and Daesan

With the expansion of ethane crackers, it has become necessary for the petrochemical companies, which used to produce through naphtha cracking in the past, to use naphtha-LPG mixture as raw materials. LOTTE Chemical has reviewed the technology line and finished basic design needed to increase the proportion of LPG in naphtha crackers in Daesan and Yeosu. By diversifying raw materials, companies can increase resilience and maximize profit. LPG is an eco-friendly fuel that does not emit carbon monoxide and generates significantly less fine dust, such as nitrogen oxides, compared to naphtha. Therefore, we expect to be able to reduce pollutant emissions and help improve the air quality in Korea. LOTTE Chemical is taking necessary measures to equip the Daesan Plant and Yeosu Plant to achieve the 30% LPG and 50% LPG in raw materials, respectively, by 2022. After that, we will increase the LPG ratio in Daesan Plant and the new plant in Indonesia to 50%.

Heavy Feed Naphtha Cracking Facility Joint Project

LOTTE Chemical and Hyundai Oilbank have joined forces to produce petrochemical products using crude oil refining by-products. Heavy oil refers to a by-product or residue from refining gasoline and diesel from crude oil. It has been used to fuel ships, but demand is rapidly decreasing as the International Maritime Organization (IMO) reduced the sulfur content of ship fuel oil from 3.5% to 0.5% in January 2020. By using this heavy oil, which has become difficult to consume, as raw material for crackers, LOTTE Chemical hopes to improve cost competitiveness compared to when using naphtha. Currently, the project is scheduled to be completed in 2021.

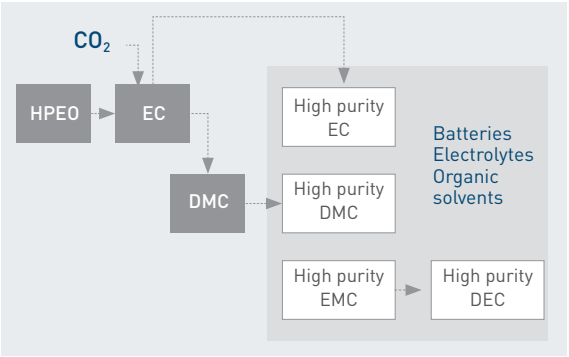
Hyundai Chemical

Increase product competitiveness (portfolio expansion)

Organic solvent business for lithium battery electrolyte through expansion of EO derivatives

We are promoting the diversification of EO derivatives by building HPEO and 4EOA plants. Using HPEO as raw materials, we are producing EC/DMC to enter the battery electrolyte market. This not only shows LOTTE Chemical's advancement into the rapidly growing industry of electric vehicle battery material business, but also our commitment to eco-friendly business for carbon neutrality since greenhouse gas (CO_2) is consumed during the manufacturing process. As most of the domestic battery electrolyte companies currently rely on Chinese imports, LOTTE Chemical's expansion seems opportune. Considering the prospects of competitors, we expect possible expansion to China and Eastern Europe as well.

[Organic solvent manufacturing process for battery electrolytes]



Advancing into Eco-Friendly Business

As a mid- to long-term strategy to achieve Vision 2030, LOTTE Chemical has identified eco-friendly business as its top growth strategy. This includes development and production of green raw materials/materials, in addition to finding new eco-friendly applications for the existing products. We are actively considering new markets to broaden our portfolio in the field of green mobility.

Expanding Compounding Overseas Business Sites

LOTTE Chemical continues to implement strategies to expand compounding overseas business sites in order to make preemptive advancement into areas like automobile business, where high growth is expected. Expansion of overseas business sites is important not only in terms of sales network, but also in terms of improving global balance of supply and demand. Furthermore, it reflects LOTTE Chemical's commitment for global shared growth, as this will help developing countries to advance and create a green society.

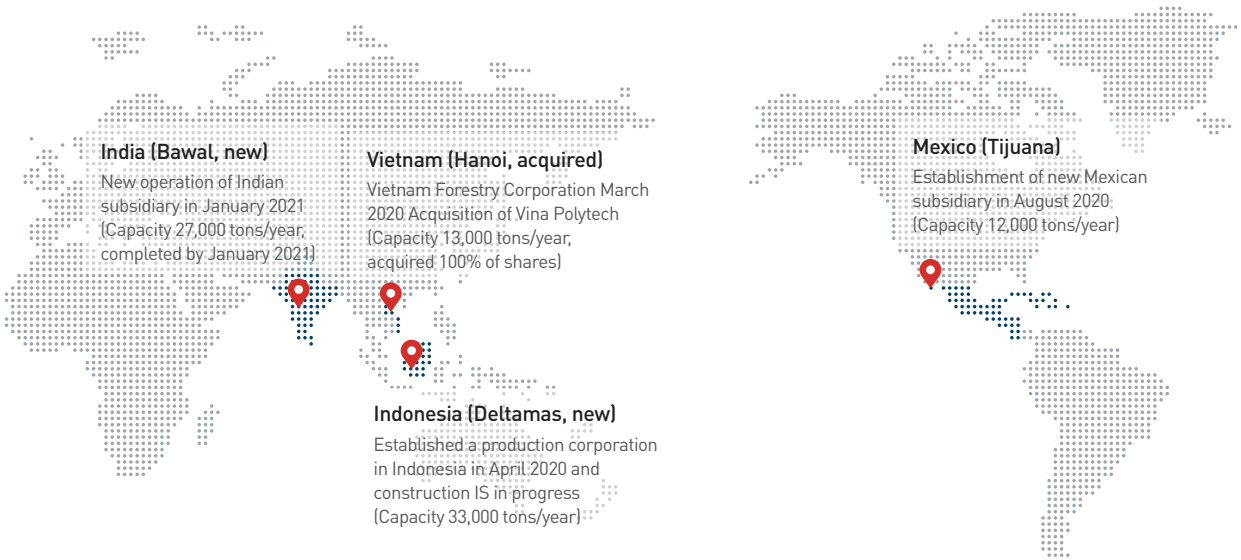
India Compound Corporation

Objective	To secure a manufacturing base to advance into the market in India
Location	Bawal Industrial Complex near Delhi, North India
Capa.	27,000 tons of PC/ABS compound / per year
Fund	KRW 25 billion (building/ equipment KRW 17.6 billion, land KRW 7.4 billion)

Indonesia Compound Corporation

Objective	To secure manufacturing base to advance into the Indonesian automobile market
Location	Indonesia Delta Mas Industrial Complex
Capa.	33,000 tons of compound PP, PC/ABS compound / per year
Fund	KRW 53.5 billion (building/ equipment KRW 42.8 billion, land KRW 10.7 billion)

[Compounding Overseas Business Sites]

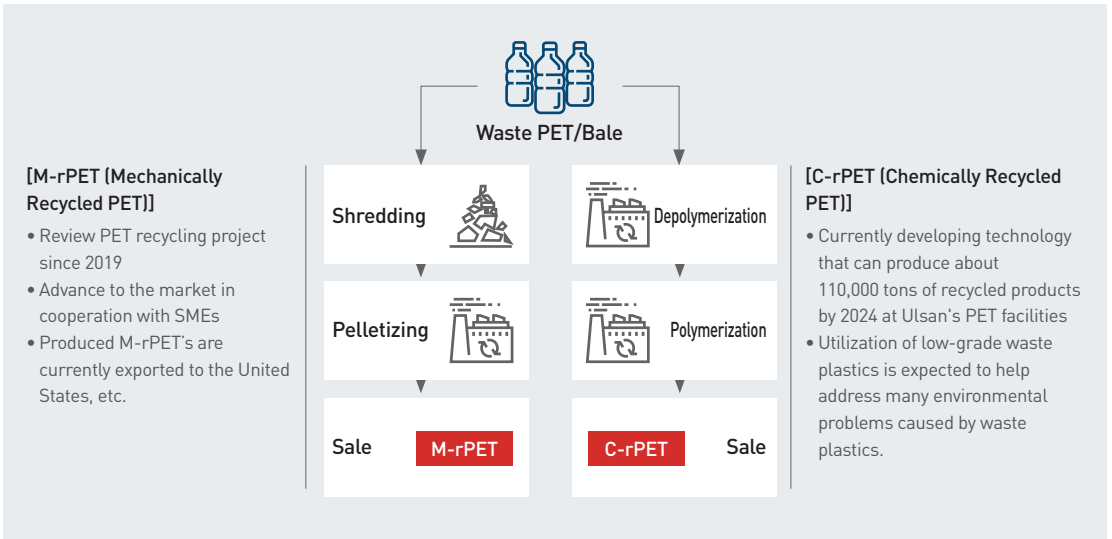


Preparing for Circular Economy of Resources

Plastic Cycle Business

As a representative manufacturer of plastic products, LOTTE Chemical has been striving to establish a plastics recycling ecosystem as part of our CSV effort. As a result, in 2020, we developed the first FDA-certified recycled PP material in Korea. With the goal of expanding PCR (Post Consumer Recycled) plastic products we are contributing to the virtuous resource recycling economy by, for example, producing rABS and rPC which utilize waste ABS and PC. To further our pursuit of creating sustainable eco-friendly values for the LOTTE group, we will be playing an active role in establishing eco-friendly, cooperative measures for other affiliates.

[PET Recycling Process]

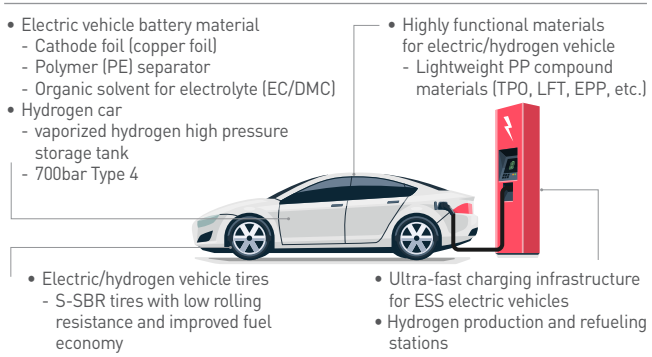


[Eco-Friendly Cooperation Plan for Affiliates of LOTTE Group]

Expanding Mobility Business

As a first step for new business expansion, we have contrived new strategies and a dedicated organization to lead the business portfolio In & Out and M&A. In consideration of our capabilities across the value chain, we are promoting/reviewing markets that can create synergy with our current business areas. Furthermore, we continue to seek domestic/overseas specialty companies for acquisitions to rapidly advance into new fields.

[Green future mobility businesses being reviewed/promoted by LOTTE Chemical (including subsidiaries and affiliates)]



Global Business Innovation

Development of Antiviral Material

LOTTE Chemical developed the world's first antiviral material that obtained international certification (ISO 21702) for Influenza A in response to the worldwide outbreak of COVID-19 in 2020. Through joint research with Korea University Medical Center, which conducts extensive research on the COVID-19 virus, we are proactively developing new plastics materials with a wide range of antiviral properties, including those for COVID-19 virus.

Transparent ABS material, selected as 2020 World-Class Product by the Ministry of Trade, Industry and Energy

Transparent ABS material is being used in various home appliances, including washers and vacuum cleaners, as it enables users to see what is inside. We recently saw an increase in consumer demand in electronics due to restrictions on external activities from COVID-19. As such, we expect more growth in the future. In addition, we developed a product-line applicable to food containers and obtained certification from the United States International Sanitation and Safety Agency (NSF).

TOPIC 2.

SAFE WORK ENVIRONMENT

Daesan Plant

Fire accident at Daesan Plant

On March 4, 2020, at around 3 a.m., there was a fire accident in the compressor building of the Daesan NCC plant. In the accident, two employees of our company and 23 local residents and employees of neighboring companies were injured.

Accident Response Activities

Immediately after the accident, we held an official press conference and sincerely apologized for the accident. We promised a thorough investigation on the cause of the accident and prompt restoration to life before the accident to the affected community. In order to do so, we formed an accident investigation TF team to estimate personal and material damage. In particular, our in-house psychological counselors provided counseling to those who were psychologically affected.
LOTTE Chemical made every effort to normalize the Daesan Plant. All departments, including public affairs, purchasing, safety, and communication, provided necessary support for accident recovery in their respective areas. After nine months of restoration work, commercial production safely resumed on December 30, 2020 with permission from the relevant agencies (Ministry of Employment and Labor, Seosan City Hall, Gas Safety Corporation).

Accident Follow-Up

To prevent the recurrence of such accidents, we have replaced all expansion joints, which were identified to be the part of the accident, with piping. During this process, we consulted the Licensor and external organizations to analyze vibration and stress in the pipes and confirmed overall safety of the system.
Additionally, we reinforced firefighting equipment. The manual water spraying system was upgraded so that it is operated automatically upon detection of fire or can be remotely operated from the field or control room. The existing gas detectors were restored and additional ones were installed to be able to detect gas leaks faster. Supplementary indoor fire hydrants and chemical foam fire hydrants were also installed to ensure more prompt responses in the event of similar accidents.
A total of 3,116 reports of damage were received as a result of the accident. Before compensation by the insurance companies, LOTTE Chemical's TF team, composed of professional counselors and recovery support personnel, provided counseling to the residents, operated a damage report desk, and assisted with damage claims and receiving compensation.

301days

Time it took to return to normal life before the accident at Daesan Plant

Early morning on March 4

The Daesan Plant, which has been growing with the local community for more than 20 years, was closed down.
It caused great damage to the local residents and we lost the trust of stakeholders, customers, and shareholders.
All our employees in Daesan, as well as in Seoul headquarters, Yeosu, and Ulsan, went through the recovery process with great empathy.
LOTTE Chemical persevered through the distrust and misunderstandings of the community and residents, and undertook restitution one step at a time.

December 30

The Daesan Plant was restored.
Owing to the efforts and devotion of our employees, partners, and employees, we resumed production.
However, we completely understand that this is not the end.
Restarting the plant was only one of the promises that we made.
We have to work to regain the trust of stakeholders, residents, and shareholders, and we have to do better than before.

We will all go beyond practicing safety and environmental measures and make them parts of our culture and daily routine.


Fire


Accident Investigation TF


Operation of a damage report desk


Plant recovery work


Counseling for local residents

Four Key Safety and Environment Measures

1. Investing in Safe Environment

- Invest KRW 500 billion over the next three years on the safety and environment areas.
- Strengthen the ability to respond to safety and environmental risks; improve DT (Digital Transformation)-based processes and systems for safety work management and facility maintenance.

2. Training Safety and Environment Experts

- Double the number of safety and environment experts within three years
- Operate external expert advisory groups focused on process, equipment, and safety

3. Improving safety environment system

- Job sites with major accidents/disasters will not be recognized despite their performance
- Provide extended support for business partners to improve safety and environment management system

4. Enhancement of internal capability of safety and environment management

- Require field executives to acquire safety and environment qualifications
- Provide safety manager training for business partners

Inspection before operation of NCC plant

Haehyungyeongjang

解弦更張

There is a saying that goes "Tightening the loosened strings on geomungo".

Building a Safe Workplace

Haehyungyeongjang(解弦更張)

We have introduced a Safety Team, Environment Team, and Inspection Team from the former Safety and Environment Team. Each team implements its own measures to train experts to further strengthen the safety management system. In order to prevent industrial accidents that may occur during the restoration of the NC factory, our company has dispatched Safety Team and watchmen from supporting departments to the field and reinforced rigorous safety management. The construction company hired for restoration work operated a separate safety monitoring team to identify on-site risks and continuously made improvements to prevent safety accidents. In order to raise workers' safety awareness during the restoration work and ensure safe completion of work, we awarded excellent safety awards every day, by conducting a safety campaign, and distributed promotional materials and safety equipment.

Horizontal Deployment across All Affiliates in the Chemical BU

LOTTE Chemical shared 66 provisions (based on the Occupational Safety and Health Act) from the special inspector report for the NC plant fire accident with domestic affiliates (seven companies including LOTTE Fine Chemicals and LOTTE Versalis) and established/implemented our own inspection plan. Each affiliate took improvement measures according to their short-, mid- and long-term plans. By doing so, we expect to reduce risks and create synergy for safe plant operation.

NCC compressor after completion of recovery

TOPIC 3.

PROJECT LOOP

'Project LOOP' signing ceremony

Project LOOP for Virtuous Cycle of Plastic Waste

It is no exaggeration to say that 70% of the goods we use are made of plastic, which means that we are currently living in the age of plastics. With recent intensification of plastic waste problems, environmental pollution from plastic waste has become a social issue, as well as an environmental issue. Efforts to slow down rapidly exacerbating plastic pollution have resulted in campaigns like the Zero Plastic Campaign. However, according to Trucost, a global environmental data analysis company, the cost to replace plastic with glass or wood is about 3.8 times higher. This means that considering the overall cost and environmental impact, recycling should be considered as much as reducing plastic consumption.

The goal of Project LOOP is to develop a circular eco-system for plastic by finding ways to dispose of clean plastic waste, make raw materials from plastic waste, and reuse the products. Project LOOP began in early March 2020 after LOTTE Chemical signed an agreement with IMPACT SQUARE, SuperBin, Kumho Fiber Industries, Korea Textile Development Institute, LAR, Project Beyond, and Revelop. Project LOOP started as an experiment of using only domestic resources and domestic plastic waste. In Korea, it is not easy to remove labels on PET bottles and the disposed bottles are often dirty. Since the recycling process was inconvenient, we have been importing high-quality plastic waste from Japan and other countries. Therefore, the biggest initial goal of Project LOOP was to collect domestic PET bottles in clean condition, recycle them into raw materials, and close the loop of circulation for commercialization.

‘Recycle Used PET Bottles’Campaign to Celebrate Environment Day

The first step to creating a virtuous circulation system for plastic waste is the collection of clean used PET bottles. This is to produce diverse and high-quality recycled products. To do so, consumers should always remove the label on the used PET bottle prior to disposal. They should always rinse the used PET bottle under running water and wash away any dirt or foreign substances. To reinforce this awareness, we did a ‘Recycle Used PET Bottles’ Campaign around the Nephron collector at LOTTE World Mall on Environment Day, June 5, 2020.

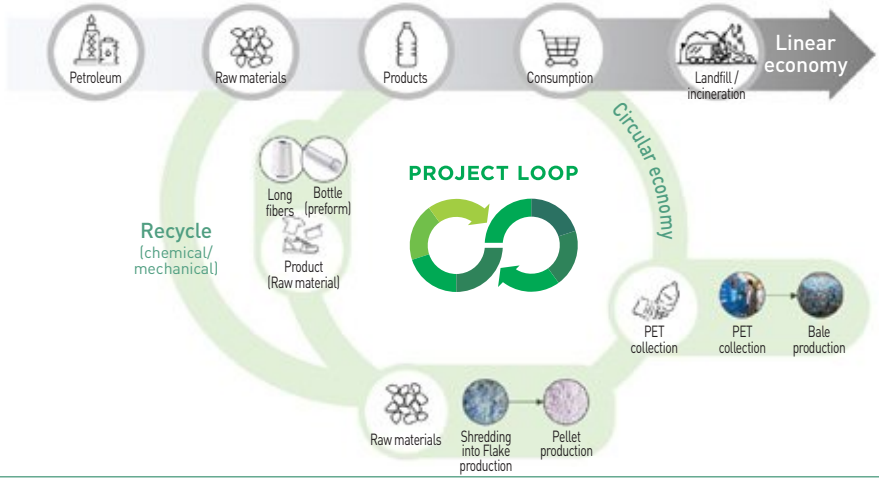
We distributed bottled water to visitors at LOTTE World Mall and showed them how to use the Nephron collector. We raised awareness by showing what can be produced when plastic is recycled through the proper process. During this two-day campaign, a total of 500 people had a chance to learn about the importance and method of proper waste sorting/recycling. We believe that this was a successful first attempt at establishing a virtuous cycle of plastic waste.

Recycle Used PET Bottles Campaign to Celebrate Environment Day

Used PET Collector <Nephron>

CASE STUDY: Used Plastic Virtuous Circulation

Currently, plastics are being consumed in a linear economy, in which a process of plastic extraction from petroleum, conversion to raw materials, commercialization, consumption, and disposal by landfill and incineration happens in a linear fashion. The linear economy stops when resources are consumed and disposed of. Therefore, we must develop a circular economy, in which waste is recycled and reused as resources. Project LOOP intends to create a virtuous circulation system for waste plastics for circular economy by recycling waste plastics and converting them back into raw materials.



Creation of the First Regional Cluster

Through Project LOOP, we learned that domestic plastic waste can be converted into raw materials. In order to develop a virtuous circulation system for plastic waste for Seongnam City, we formed the first regional cluster and started operating a Seongnam Recycling Shop called “re100 (recycling 100%)” jointly with the city of Seongnam and the Seongnam Korean Federation For Environmental Movement. This is the first case in which private, public, and corporate organizations have joined forces to resolve environmental problems.

To address problems in the current waste-sorting process, in which PET bottles get mixed with other plastics and used PET bottles are collected in a dirty state, LOTTE Chemical has created a new collection box that separates transparent PET bottles, labels, and lids. A total of 70 PET bottle sorting stations were installed in Cheongsol Village, Seongnam and six collection boxes were installed in each of six locations of re100 shops throughout Sujeong-gu and Jungwon-gu. PET bottles collected from these locations would go through a raw materialization process, made into clean products, and distributed through an SNS event. We will continue our efforts to introduce a virtuous circulation system of plastic waste in more regions and share our best practices of waste sorting.

Top) Seongnam City Regional Cluster Agreement Ceremony
Bottom) Used PET Bottles Collection in Regional Cluster

Launching Green Products, first fruits of Project LOOP

Since January 2020, LOTTE Chemical has taken various measures to establish a circular economy system for waste plastics, and as a result, we were able to launch our first eco-friendly product in December 2020. Used PET bottles collected at six Nephron collectors in Jamsil were used to make sneakers, reusable bags, and other bags in collaboration with LAR, a social venture company that produces eco-friendly products. Six 500ml PET bottles are needed to make shoelaces and mesh materials for a pair of sneakers; ten 500ml bottles are needed to make one reusable bag; and thirty 500ml bottles are needed to make one bag. LOTTE Chemical will continue to provide guidance on proper consumption of resources for the circular economy to create and realize social values for our society.

Top) Project LOOP Product - Sneakers
Bottom) Project LOOP Product - Reusable Bag

Stakeholder Interview

In order to fulfill corporate social responsibilities and become a sustainable company, LOTTE Chemical should feel the responsibility to remedy secondary and tertiary environmental damages caused by consumption and processing of LOTTE Chemical's products. In other words, it is time that LOTTE Chemical turns away from the linear economy-based business, in which it has made great progress, and starts commercializing material recycling for circular economy. Through Project LOOP, LOTTE Chemical has shown its potential in the circular economy. LOTTE Chemical's efforts to foster Project LOOP as a sustainable business are viewed as an innovative attempt for a chemicals business. In the process of continuously testing and promoting projects for the circular economy, collaboration with environmental startups and schools can create greater synergies and a sustainable future for the petrochemical industry.

SuperBin
Kim Jeong-bin CEO

ESG PERFORMANCE

ENVIRONMENTAL

Environmental Management System
Environmental Impact Minimization
Research and Development

SOCIETY

Customer Value Creation Management
Human Resources Management
Mutual Growth Management
Community Participation

GOVERNANCE

Governance Structure
Compliance
Ethical Management
Information Security

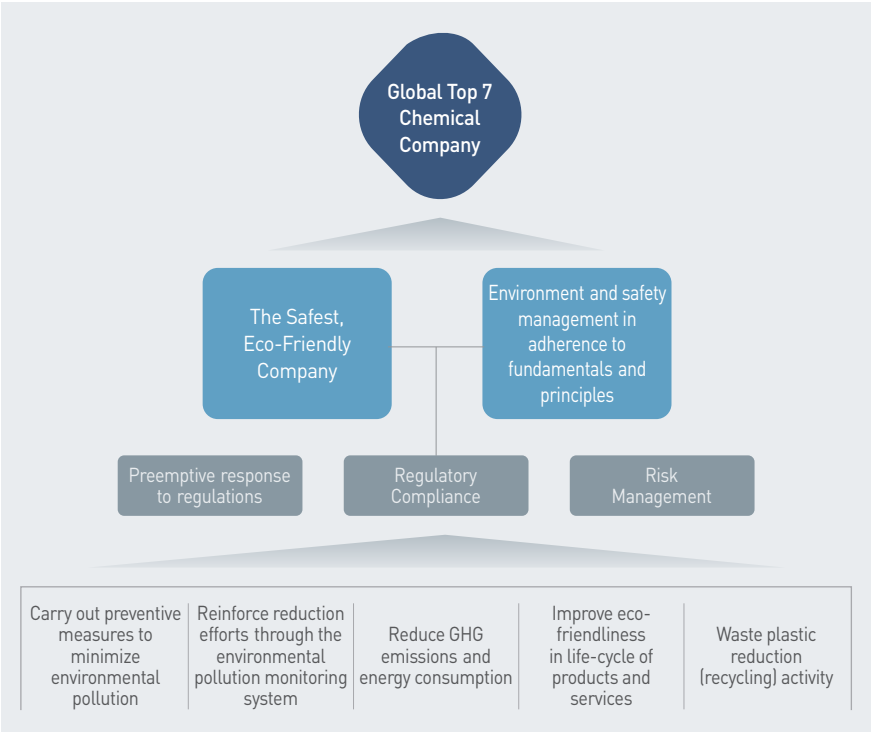
Environmental Management System

Environmentally Friendly Policies and Systems

Environmentally Friendly Policies and Response System

Countries around the world are tightening environmental regulations and requiring active corporate participation in eco-friendly policies and response to climate change. Hence, it has become essential for corporations to analyze these global environmental trends and risks and establish preemptive response systems. LOTTE Chemical introduced a green management system to show its commitment to reducing the emission and safe disposal of pollutants. We place the highest priority in investment for environmental and safety policies and put the environment before the growth of the company. We are implementing company-wide environmental measures by analyzing the timing and impact of eco-friendly business application in consideration of global trends, laws, and regulations.

[Eco-Friendly Strategies and Environmental Policies]



Establishment and operation of environmental management governance

LOTTE Chemical endeavors to fulfill its mission for the environment and protect the environment for the prosperous life of mankind. We share the ESG vision of the LOTTE Group, which calls for active reflection of environmental values, social values, and governance in all business activities at home and abroad, as a sustainable leader of the 21st century. LOTTE Chemical operates the Safety & Environment Division, an executive organization under the direct management of the CEO, to monitor the safety and environmental impacts of our products. We have instituted a company-wide environmental management by maintaining internal and external business channels with various stakeholders. The Safety & Environment Division operates Environment Management Team to oversee the environmental impact and maintain internal and external business channels. The Executive Council makes decisions on the company's environmental management strategies, goals, and policies, and receives regular reports on the achievement of environmental goals, activities, and performances. Among these, important issues are being discussed at the board meetings.

Environment Management System Certification

LOTTE Chemical has established an integrated system for management of environment, safety and health, and quality to create synergies in various aspects. We actively participate in external certification and deliberation processes related to the environment to secure a ground for promoting global eco-friendly management. LOTTE Chemical have also amended various standards and reestablished the system. For more efficient collaboration and workflow between business sites, we have unified the standards and are encouraging use of the same standards. We hope that this will allow us to develop a system that meets the global standards. All of LOTTE Chemical's business sites have been certified with ISO 14001 standards (seven locations, 100%). We have established a lifecycle evaluation system and applied the system to produce ecofriendly buoys from EPP, which received an environmental label in 2019. In March 2021, we acquired the environmental labeling for Bio-PET products for using bio-derived materials as raw materials for the first time in Korea. Moreover, we were the first to receive UL EPD certification for using recycled PCs as raw materials to make PC compound products. The lifecycle evaluation process will be applied to other products in the future.

Environmental Management System Certificate

Bio-PET Environmental Labeling Certificate

GC-1214 UL EPD Certificate

Response to Climate Change

Climate Change Governance

Heavy reliance on fossil fuels like petroleum has exposed chemical companies to the risks of the climate change crisis, including global warming and environmental pollution. Addressing the climate change issue is one of the major tasks for a sustainable future. LOTTE Chemical recognizes its responsibility in reducing greenhouse gas emissions to make the transition to a low-carbon economy. LOTTE Chemical seeks to break away from the existing framework of the chemical industry and initiate the response to climate change. We will fulfill our social responsibilities by actively participating in the global initiatives and the government policies toward carbon neutrality to keep the global temperature rise below 2℃.

Understanding the necessity of responding to the climate crisis at the management level, general directors and the representative directors of each business unit of LOTTE Chemical are discussing the topic at biweekly executive meetings. At the meeting, executives and directors review LOTTE Chemical's climate crisis response strategies, company-wide risk management, and GHG reduction levels, in addition to the activities being carried out for Green Promise 2030.

Participation in Green Promise 2030 and response to climate change are part of the key performance indicators (KPIs) of key members including the CEO. The results are to be reflected in the evaluation and compensation. We launched the Safety and Environment Award on the founding anniversary in March 2021, and awarded prizes to departments and individuals that showed excellent performance in environment and safety management activities.

Climate Change Strategies

LOTTE Chemical defines natural disasters caused by abnormal climate change, such as typhoons and torrential rains, as mid-, and short-term risks, and operates an emergency response system to prevent accidents from these risks and minimize damage in case of occurrence.

With the government's announcement of '2050 Carbon Neutral Strategy' and the third planning period (2021~2025) for the Emissions Trading System, the price of greenhouse gas credit is expected to rise in the mid- to long-term.

This interest in climate change is expected to have a significant impact on our business, strategy, and financial plans, as the mid- to long-term impact will also affect our customers and global investors. Green Promise 2030 was declared to show LOTTE Chemical's commitment to sustainable growth and sense of responsibility for the environmental impacts we pose as a chemical company in relation to climate change. Through Green Promise 2030, which consists of response to climate change (2030 carbon-neutral growth, 2050 carbon-neutral), creation of green ecosystem (50% reduction of environmentally hazardous substances), eco-friendly business (sales of KRW 6 trillion), and virtuous resource circulation (sales of 1 million tons of recycled products), we will continue to expand our green business paradigm and achieve sustainable growth.

Management of Climate Change Risks

LOTTE Chemical's Environment Management Team conducts periodic monitoring of related laws and major stakeholder trends, to be able to preemptively respond to related climate risks. We publish internal newsletters and conduct regular workshops with managers at each business site to raise awareness of climate change risks.

In addition, to check the financial and strategic impact of climate issues, we analyze and develop countermeasures for the risks, including 1) Physical risk (heavy rain, typhoon, drought due to climate change, 2) Regulatory change risk (regulatory policy such as GHG emissions trading system, increase in emission trading prices, etc.), and 3) Energy paradigm change risk (reduction in demand for fossil fuel, changes in consumer/investor behaviors, etc.). The established climate change response strategies are then reported to the management, who make the decisions about implementation.

Climate Change Indicators and Reduction Targets

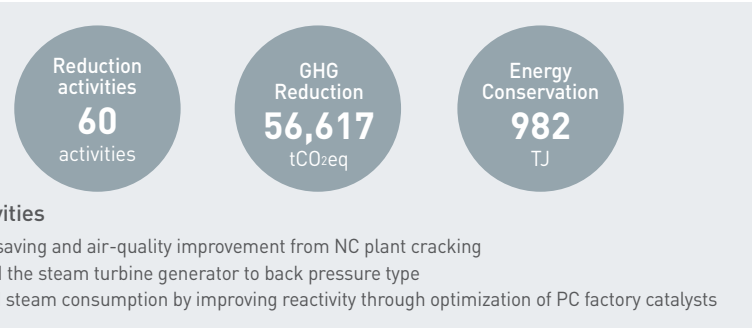
The Green Promise 2030 initiative includes LOTTE Chemical's goals to overcome the climate crisis and reduce carbon emissions, including carbon-neutral growth by 2030 as the very first task. Although expansion of the business might mean an increase of carbon dioxide emissions, LOTTE Chemical plans to maintain emission levels at the level of 2019 (Scope 1 and 2) in 2030. To preemptively respond to the movement of global customers' use of renewable energies, we plan to set up our own plan in line with RE100 (Renewable Energy 100) and expand the ratio of renewable energy use. In addition, we are putting efforts to identify causes of carbon dioxide emissions and reduce the amount generated by employees (commute, business trips, etc.). By converting company vehicles to electric/hydrogen vehicles and installing more charging stations in the workplace, we expect to reduce Scope 3 emissions.

LOTTE Chemical plans to reduce carbon emissions by 17% (132 million tons) based on BAU by 2025 based on 680 million tons in 2019, and by 23% (176 million tons) based on BAU by 2030 to achieve carbon-neutral by 2030. Our ultimate target is net carbon emissions of 0 tons (Net Zero) by 2050.

Reductions of GHG Emissions

Since the Paris Climate Agreement in 2015, all countries have agreed to establish a greenhouse-gas reduction plan by 2030 and are striving to reduce the absolute amount of greenhouse-gas emissions. LOTTE Chemical actively participates in the government's GHG-reduction policies and implements various measures to minimize the impact on climate change. We are developing new GHG-reduction technologies to reduce energy consumption and GHG emissions, which are being applied to improve energy efficiencies at our facilities and business sites.

[GHG-Reduction Activities & Performance in 2020]



Key activities

- Energy-saving and air-quality improvement from NC plant cracking
- Changed the steam turbine generator to back pressure type
- Reduced steam consumption by improving reactivity through optimization of PC factory catalysts

GHG-Emissions Trading

With the transition to the green era domestically and internationally in recent years, many countries and corporations are setting ecofriendly targets. In order to achieve carbon-neutral growth by 2030, LOTTE Chemical developed a company-wide mid- to long-term plan prior to the 3rd emission trading term (2021-2025). LOTTE Chemical promotes efficient use of resources and energy management to prevent risks in the business environment related to compliance and climate crisis. Considering climate change as a major issue in our management activities, we will continue to carry out the relevant strategies in line with the efforts of the international community.

Scope 3 GHG Management

LOTTE Chemical currently outsources processing work to nine domestic companies, with total emissions amounting to approximately 56,703 tons. LOTTE Chemical and partner companies are working together to reduce GHG and energy for mutual growth and sustainable partnerships. In order to reduce the impact on climate change from the transportation sector, LOTTE Chemical set a mid-to long-term goal of replacing all company-owned/leased vehicles with electric vehicles or similar. We have signed K-EV 100 Initiative (Ministry of Environment) in April 2021 and are considering participation in the global EV100 initiative.

100% conversion of pollution-free vehicles declaration ceremony

100% conversion of pollution-free vehicles certificate

Case Study

LOTTE Chemical · Samsung Engineering Green partnership for expansion of carbon-neutral and eco-friendly business

In April 2021, LOTTE Chemical entered into a cooperative partnership with Samsung Engineering, a global plant company, to strategically share expertise and experience assets in its own field for implementation of carbon-neutral strategies. LOTTE Chemical will provide information related to energy conservation in domestic and overseas business sites, reduction of greenhouse gases and environmentally hazardous substances, development and utilization of carbon capture technology, and joint participation in green hydrogen business and technology licensing. The partnership between two companies with expertise and influence in their respective specialty fields is expected to bring synergy effects to the green business. By establishing a detailed and feasible carbon net-zero roadmap, we will improve the future value of the company and positive values for the society.

MOU signing ceremony for establishing partnership for carbon neutral and eco-friendly business

The Safest, Eco-Friendly Company

Case Study

CO_2 Membrane Capture

In March 2020, LOTTE Chemical installed pilot CO_2 membrane capture* equipment in Yeosu Plant 1. This equipment captures more than 90% of CO_2 from the exhaust gas discharged from the NC plant stack. The captured CO_2 undergoes a pretreatment process of dust, NOx, moisture removal, then a separation process using a gas membrane. This is the first case of CO_2 reduction by a Korean petrochemical company. The separated CO_2 is purchased by manufacturers of liquefied carbon dioxide, or used as raw materials for polycarbonate products by LOTTE Chemical after undergoing the purification process. Commercialization of CO_2 capture will not only reduce CO_2 emissions and emission-trading costs, but also help achieve self-regulating supply and demand and generate sales profits. Through the temporary operation of the pilot facility for about one year, we have achieved process optimization and developed a commercialization process capable of capturing more than 60,000 tons of CO_2 per year by 2023. We expect that, upon expansion to the Daesan and Ulsan Plants, we will be able to achieve the 2030 carbon-neutral growth target.

* CO_2 Membrane Capture: Green technology, in which CO_2 is separated by using the difference in the permeation rate of gases. It is more than 70% efficient in terms of space utilization, hence suitable for the petrochemical industry, which suffers from spatial limitation.

Pilot facility of CO_2 Membrane Capture

NC Exhaust Gas Feed Piping

Environmental Impact Minimization

Efficient use of resources and energy

Stable procurement of raw materials through RPA (Robotic Process Automation)

Following the advancement of IT technology and increased use of AI technology in administration and management at the workplace, LOTTE Chemical is promoting automation of the entire process based on the business scenario through application of RPA in material acquisition of regularly-purchased items to minimize human error and improve productivity. Since the development of the RPA system in late 2019, we have been minimizing risk of errors from automation and standardizing the work process. The introduction of a sustainable and stable RPA system has realized an optimized work environment that achieves maximum productivity in the minimum amount of time. We have automated 10-30% of all procurement tasks with the RPA, which enabled us to focus on raw materials that require special management.

Management of material procurement risks

Due to the nature of the business, certain suppliers of raw and subsidiary materials are preferred by a certain licensor. To be able to minimize use of a single supplier and establish stable Supply-Chain Management (SCM), we continue to expand our networks and promote localization. As much as 61% of all purchases in 2017 comprised purchases from single suppliers. This number was reduced to 53% in 2020, as we reduced costs and realized a stable supply of materials.

Procurement of Eco-Friendly Raw Materials: Guidelines for Green Purchasing

We have established green-purchasing guidelines that consider the eco-friendliness of suppliers and materials from the initial stage of purchase. We apply these guidelines to every purchase to minimize the impact on the environment and to ensure efficient and sustainable use of resources. The Green Purchasing guidelines apply to office supplies, raw and subsidiary materials used in production, and the materials used by domestic and overseas suppliers during production and packaging. In addition, we have formed special partnerships with suppliers to ensure observation of environmental policies in all stages of material acquisition. We are doing our best to fulfill our social responsibilities and comply with laws and regulations to preserve the environment and natural resources.

Our purchasing team evaluates the eco-friendliness of the product in accordance with the Green Purchase Guidelines at the time of purchase, purchases the products that comply with the guidelines, and works with the Environment Management Team to review hazards. The Purchasing Team evaluates the green purchasing performance on a regular basis (once a year), and reports the results in the annual sustainability report.

[Eco-Friendly Items]

1) Products environmentally certified under laws and regulations related to environmental technology development and support
2) Products certified for recycling under laws and regulations related to resource conservation and the promotion of recycling
3) Products certified for energy efficiency levels 1 and 2 under laws and regulations on energy saving
4) Items with reduced amounts of harmful substances such as lead, mercury, cadmium, chrome, PCB (polychlorinated biphenyl), asbestos, etc.
5) Items reduce waste through lighter-weight packaging units, refills, reverse vending, etc.
6) Other items recognized as environmentally sound, such as flame retardant items, recycled goods made with discarded raw materials, items with overseas environmental labels, etc.
7) Products which, when applied to the same uses, achieve a relative reduction in environmental pollution and reduce energy consumption
8) Products that reduce emissions of environmental pollutants through reuse, etc.

[Evaluation of Eco-Friendliness]

1) The team leaders of the Procurement/Purchasing Team, the Environment Management Team, and the team using the purchased item shall develop and maintain an evaluation system for the eco-friendliness of suppliers and materials.
2) The eco-friendliness evaluation of materials shall give priority to chemical substances.
3) The final results of the eco-friendliness evaluation shall be kept on file according to the guideline, and after notifying the relevant supplier, the purchase shall be made according to the company's purchasing procedure.

Energy Management System

We have completed the second update of the Greenhouse Gas & Energy Management System (GEMS*) in 2020, which was first introduced in 2010 and had the first update in 2013. GEMS is used to analyze and respond to risks related to climate change. It is a comprehensive control system that analyzes and manages data on the amount of greenhouse gas generated in each plant and sets feasible reduction goals. The update included system integration for all business sites of LOTTE Advanced Materials and web-based GHG emission management and expenditure calculation for optimal cost management.

* GEMS: an online monitoring system developed for comprehensive control of GHG reduction target management and performance evaluation, energy and inventory data integration, and performance management.

Energy Conservation Activities

To respond to climate change, LOTTE Chemical strategically manages energy consumption at each business site. By setting annual energy-reduction targets for each plant and establishing measures that reflect the characteristics of each business site, we are actively attempting to conserve energy in the field.

We are using solar power in some business sites and also considering the introduction of an AI-based FEMS system for more efficient workplace energy management. In addition, we plan to convert our research centers into eco-friendly buildings using renewable energies. We are conducting an energy diagnosis of the Yeosu Plant with a special agency, with a plan of conducting the same for all our domestic plants in the future. This energy diagnosis takes a modeling-based integrated approach for a comprehensive solution of GHG/energy reduction, yield improvement, and operation improvement. Lastly, we are participating in a pilot project of a voluntary energy efficiency target system (April 2021) by the government to achieve systemic energy reduction.

Expand By-Product Recycling

Steam, hydrogen, and gas, among various by-products generated from production, are being collected separately for recycling. The collected by-products are sold to external parties or used as raw materials and fuel energy for production.

[By-Product Recycling Examples]

Hydrogen	SOURCES	Production Process at NC and SM plants
	Yeosu Plant	Used as raw material or fuel for BTX, PE, PP plants, etc.
	Daesan Plant	Used as raw material or fuel for BTX, PE, PP plants, etc.; surplus hydrogen is sold to nearby companies
Steam	SOURCES	Waste heat recovery of PC MVR, EO Reactor, NC Heater, etc.
	Yeosu & Daesan Plant	All by-product steam consumed by plants
Methane	SOURCES	Production Processes at NC plant
	Yeosu Plant	Used on-site as raw material or fuel, some sold to local companies
	Daesan Plant	All by-product steam consumed by plants as raw materials
Gas By-Products	SOURCES	Production processes or wastewater treatment
	Ulsan Plant	All by-product steam consumed by plants as raw materials

Environment Management

Water Resource Management

Management of risks related to water resource

Global warming is escalating the water-shortage problem around the world. Large fluctuations in regional/seasonal precipitation in Korea have been causing frequent droughts in recent years. Efforts to tackle the climate crisis must include water resource management, because securing water resources is essential to maintaining the quality of life for all humans on the planet. LOTTE Chemical's business sites are not generally located in areas where water shortage or water quality is a problem, but we fully understand that water shortage is an important issue in some parts of the world, and may become worse over time.

LOTTE Chemical is aware of the importance of proper water resource management, especially because petrochemical companies consume a lot of water. We identify and predict water resource-related risks and secure stable water resources through systematic management. We use at least two water intake sources* for stable supply of industrial water and prepare for emergencies with internal storage tanks. In addition, we detect abnormal use of water resources and water leakage due to pipe damage in real time through RTDB (Real Time Database).

* Redundant water source: Yeosu-Juam Dam, Sueo Dam / Daesan-Lake Daeho, Lake Asan / Ulsan-Daeam Dam, Nakdong River

Water Use and Recycling

Recognizing the seriousness of the global water problem, we concentrate on efficient use of water resources. LOTTE Chemical continues to implement measures to reduce the amount of wastewater and the amount of water intake. We analyze the degree of pollution of wastewater to evaluate the possibility of reuse as process water, washing water, firefighting water, etc. We are striving to minimize energy spent on water treatment by reducing water use through an efficient water resource management system and using only the needed amount of treated water.

With the goal of reducing the amount of water use and wastewater to 50% of what was in 2019 by 2030, we have established various process improvement plans. In particular, LOTTE Chemical developed and commercialized membranes to treat and reuse water, industrial water, and wastewater. This submerged-type membrane is particularly effective in wastewater treatment and is Management of risks related to water resource.

Wastewater and Water Pollution Management

LOTTE Chemical operates its own wastewater treatment plant to minimize pollutant emissions. In Daesan Plant, where wastewater is treated directly at the site, wastewater is discharged at the level of 20~30% of legally allowed amount, strictly following an internal standard that is more severe than that of the government. In Yeosu and Ulsan plants, where wastewater is treated at the wastewater treatment plant within the complex, efforts are being made to ensure that the water flowing into the wastewater treatment plant is treated to the final allowable level required by the relevant discharge standard. All these efforts have been successful and ensured that no hazardous substances were leaked into the soil or seawater during the reporting period.

Air Pollution Management

In Korea, many people suffer from fine dust due to geography and industrial structure. Understanding the seriousness of the problem and the need for improvement, LOTTE Chemical is doing its best to reduce emission of substances that cause fine dust (nitrogen oxide, sulfur oxide, dust, etc.). We have voluntarily signed an agreement with the government to reduce the amount of fine dust and are investing in facilities to reduce emissions of various pollutants.

We are also working to reduce and manage various air pollutants, other those causing the fine dust problem. For systematic air quality management, we have extended the Tele-Monitoring System (TMS) and reinforced regular air monitoring. Lastly, emissions of harmful air pollutants are strictly controlled through LDAR (Leak Detection And Repair) and regular inspections.

For sustainable management, LOTTE Chemical has independently designated nine air pollutants, and set a goal of reducing emissions by 50% of 2019-levels by 2030. We will be developing detailed short-, mid- and long-term plans and conducting annual performance evaluation to achieve significant reduction of the air pollutants.

Preventing Soil Pollution

We have established guidelines to prevent soil pollution from chemical substances during the production and transportation process. We used impermeable concrete for our facility floors, where there is a possibility of soil contamination. In some facilities, an additional environmental work permit is obtained before and after work to prevent soil contamination. Furthermore, we conduct regular soil contamination tests to check the impact on the soil around the business site.

Waste Management

LOTTE Chemical is minimizing the amount of waste generated through intensive waste management. We are promoting green management through thorough waste sorting and maximizing recycling. We have introduced a real-name system for waste disposal to raise employee awareness on waste generation and waste sorting. The system allows us to track and manage waste generation by source and volume.

The data is then used to make improvements and reduce waste generation. We regularly conduct waste analysis to understand the impact of the waste on the surrounding environment. Our waste storage facilities are managed strictly to prevent environmental impacts caused by waste. The stored waste is transported by the disposal company by legally designated company vehicles; the entire process is recorded, managed, and monitored through the government system. LOTTE Chemical's major business sites, as of April 2021, have contracts with 152 waste-processing companies, who dispose waste in accordance with government procedures and methods.

We will continue to minimize the amount of waste generation through additional process improvement and investment in ecofriendly equipment/facility, while also endeavoring to increase the rate of waste conversion to resources.

Eco-Friendly Business Activities

Green Investment

LOTTE Chemical established annual environmental investment plans to minimize emission of pollutants and conserve the surrounding environment. In 2020, we invested about KRW 85 billion in environmental facilities to detect/monitor/reduce pollutant emission.

Green Promise 2030 is LOTTE Chemical's commitment to environmental investment and carbon-neutral growth, including sales of KRW 6 trillion in the green businesses by 2030.

Environmental Education

LOTTE Chemical not only supports legal environmental education for systematic environmental management, but also provides regular training of environmental specialists. Every year, we provide training to enhance our employees' expertise, ensure voluntary compliance with environmental regulation, and encourage taking initiative in preventing environmental pollution.

For instance, in accordance with the Chemical Substances Control Act, we train managers, handlers, and workers that deal with hazardous chemicals. Through internal meetings and operation of councils, we also share the contents of training with internal stakeholders, including partners, etc.

Stakeholder Interview

One of the biggest issues of modern chemical companies is related to the environmental pollution caused by excessive plastic waste. It would be wise to find business opportunities from the risk and pursue them strategically. In this context, LOTTE Chemical should take systematic approaches to establish a virtuous cycle of plastics to create social/environmental values and ensure business sustainability.

Project LOOP, currently being promoted by LOTTE Chemical, is meaningful not only as the first attempt to apply the entire PET recycling process in Korea, but also as a 'collective impact' case that suggested cooperation of multiple parties. LOTTE Chemical will be able to stand out among its global competitors if it continues to put effort into minimizing its environmental impact.

IMPACT SQUARE
Dho Hyun-myung CEO

Environmental Impact Assessment

LOTTE Chemical complies with environmental regulations, conducts thorough internal monitoring to prevent any violation, and supports and performs various inspections. All business sites conduct annual environmental impact assessments and compliance assessments in accordance with the requirements of ISO 14001. The results are reported to the management at the management review every year. The activities on the PDCA cycle can be confirmed through third party assurance and ISO 14001 certification.

In addition, the Environment Management Team at the headquarters has organized its own inspection team to enforce compliance with relevant regulations and conduct regular inspections in all business sites.

[No. of employees who have completed environmental training]

(Unit: persons)

Category	2018	2019	2020
Yeosu Plant (Basic Chemicals)	545	219	552
Yeosu Plant (Advanced Materials)	380	65	380
Daesan Plant	347	29	370
Ulsan Plant	163	172	105

Best Practices

Development of Korea's first FDA-certified PCR-PP (recycled polypropylene) material

LOTTE Chemical collects plastic waste from consumers and converts them into usable raw materials for PCR-PP (Post-Consumer Recycled Polypropylene) products, which are used to make cosmetic containers, etc. This is a representative example that shows LOTTE Chemical's effort to reduce plastic waste and establish a virtuous cycle of resources.

LOTTE Chemical's PCR-PP is produced through a process that meets FDA safety standards, which guarantee consistent quality. The application of PCR-PP material will be expanded domestically and internationally, to be used in cosmetics containers, household containers, and food containers.

As plastic waste becomes a serious social issue around the world, many countries mandate use of recycled plastics as raw materials by law. To establish a virtuous plastic circulation system, LOTTE Chemical is promoting Project LOOP company-wide and developing recycled plastic materials, such as rPET, rABS, and rPC, in addition to PCR-PP, to extend the life cycle of plastic and develop sustainable packaging. In addition, we are spurring the development of new manufacturing processes to overcome the limitations of mechanical recycling technology.

Eco-friendly EPP buoy that protects the sea from marine pollution

Styrofoam Buoy

White buoys on the sea are usually made of Styrofoam. These buoys, upon external impact, crush into fragments or so-called microplastics, which are harmful to human health and are the main culprit of marine pollution. The floating plastics in the ocean are serious threats to marine life.

Styrofoam Buoy

Birth of green buoy that protects the sea

In the seaweed farms off the coast of Mokpo, Sinan, Haenam and Goheung in Jeollanam-do there are green buoys developed by LOTTE Chemical. LOTTE Chemical developed green buoys and started supplying them to laver farms, seaweed farms, and oyster farms since 2020. Styrofoam buoys used in most farms are light, inexpensive, and easily crushed by wind and waves, generating enormous marine debris, which are serious threats to the health of those who consume seafood.

Green buoys developed by LOTTE Chemical have improved strength compared to the polypropylene (EPP) and have similar prices as the existing buoys. More importantly, it can be collected, recycled, and re-used to make buoy after about five years of use, so the amount of marine waste and microplastics can be reduced in the long run. In addition, we plan to develop anti-fungal EPP material to prevent barnacle or marine plants from getting stuck and commercialize the anti-fungal EPP to make general expansion in the market. LOTTE Chemical's EPP marine buoy manufacturing technology uses modified PE blending and ethylene polymerization, which is recognized for its novelty, technicality, profitability, and commonality. It has received a new technology certification awarded by the Ministry of Oceans and Fisheries in 2020.

New Technology Certificate

EPP Buoy

Research and Development

LOTTE Chemical R&D Center

Center Overview

LOTTE Chemical boasts the top R&D capabilities in the petrochemical industry. LOTTE Chemical's R&D capabilities come from its research center, which is at the heart of the company's technological innovation. In order to maintain a competitive advantage in the market, the R&D Center endeavors to develop source technologies and high value-added products. Moreover, the center conducts research on new megatrend fields, such as hydrogen energy, C1 chemistry, and bio, to discover new growth engines of the company. The R&D Center has set a solid vision for continuous growth, leading the advance toward a becoming a global top 7 chemical company.

[R&D Center Vision]

Direction of R&D Strategy

In addition to the main products of existing petrochemical materials, LOTTE Chemical's R&D Center conducts research and development on diverse, high-value-added products as demanded by the market and customers. It will create the company's future growth force by developing highly competitive products in terms of price and quality. In addition, we are conducting research on more diverse products and underlying technologies to respond to various environmental issues. Through collaboration with group affiliates and stakeholders, we are spurring research on eco-friendly and recyclable products and technologies that are easily accessible in our daily lives. Utilizing digital technology, we are able to conduct fast and accurate R&D, thereby reducing development costs and time spent on trial and error. We are continuously exploring new research topics from different perspectives using the global open innovation platform, in house ventures, and internal innovation groups. Lastly, we are strengthening the links with industry, academia, and research institutes to implement a multi-track, rapid development strategy that utilizes the latest green technologies and talents.

[R&D Investment]

(Unit: 1 million KRW, %)

Category	2018	2019	2020
R&D Expense	92,367	84,575	80,029
R&D Expense / Sales Ratio	0.57	0.56	0.65

Main Role of the R&D Center

To become a global top 7 chemical company, the R&D Center develops proprietary technologies and differentiated products and strengthens the competitiveness of existing businesses. It prepares the foundation for sustainable growth by focusing on product development and discovering new future growth engines. Our research areas in basic chemicals include polyolefin resins and catalysts, olefin/aromatic-based specialty products, new functional materials, monomers, and megatrends, the driving forces for future growth. In addition, we have extended product development and technical support for overseas subsidiaries in China, Southeast Asia, the United States, etc., to nurture future oriented global research institutes. Through various research and development projects, we are expanding industrial applications from polyolefin resins, which are typical plastic polymer resins, to new materials. In the Advanced Materials business, we provide specialized material solutions to various business areas, including interior and exterior materials for home appliances and IT devices, cutting-edge materials for architecture, medical devices, and automobiles, by developing high-functional synthetic resin products and architectural interior materials based on accumulated research experience and technology. In addition, we are developing water treatment membrane technology as a next-generation growth engine and expanding our market share in domestic and overseas sewage facilities. The Innovation Center analyzes future trends, discovers, and verifies new business opportunities, and discovers new growth engines for the future. We analyze global markets and trends to explore new business opportunities. Using diversified open innovation channels, we discover and verify new businesses and provide solutions for sustainable growth of LOTTE Chemical.

[Main Role of the R&D Center]

Make customers' lives more convenient

Through research and development into a wide range of products, from daily necessities to industry, medical products, and cutting-edge materials, we aim to enrich people's everyday lives.

Strengthen industry infrastructure

We are actively engaged in research to improve performance and develop new materials, which are utilized in various businesses, including automobile parts and electronics.

Create added value

We deliver products that meet customer needs and create added values by developing new applications and providing technological support.

Develop green technology

We actively seek to create shared value, through which both businesses and society can grow together, by advancing into green business.

[Main Research Areas]

Category	Products/Areas	Description (Summary)
Polyolefin	HDPE, LDPE, LLDPE, EVA, PP	We are conducting research on Polyolefin resin, a representative plastic polymer resin widely used in automobiles, home appliances, film, packaging, and household goods.
Monomer	EO, EG, PIA	In terms of monomer research, we are focusing on developing new products and new processes in the fields of olefin, aromatics and EO derivatives.
Functional materials	ABS, ASA, LFT, HMSPP, TPO, EPP, TPV	Based on the reactive extrusion process technology, polymer composite manufacturing technology and foam technology, we are developing performance materials that have additional functions.
Engineering plastic	PET, PC, PC Compound	We are developing engineering plastic material with sufficient heat resistance and impact resistance to be used as a substitute for metal.
Catalyst and process	Catalyst and process optimization	In terms of catalysts, we are researching Ziegler-Natta catalysts for PO-use, metallocene catalysts and catalysts for EP materials. For process research, we are looking to improve process efficiency based on planning and analysis, as well as research on new processes.
Megatrend	Water treatment business, discovering new businesses	To strengthen our core businesses and to discover new opportunities, we are conducting research into promising future sectors related to new technologies and the Digital Transformation.

IP Management Strategies

We are implementing a collaborative R&D patent strategy through idea generation, patent analysis, and preemptive IP (intellectual property) risk support. In particular, we carry out IP-R&D to identify patent-related risks in advance and formulate a patent portfolio strategy to attack competitors' patents and protect our patent competitiveness. In the future, we plan to implement IP strategies linked to business/R&D strategies by providing R&D Insight based on DT (Digital Transformation) and new business proposals through analysis of patents, papers, and market information.

IP Management

We are proceeding with patent applications for technologies that have business feasibility and potential for commercialization, and we are also using our know-how to manage technologies that require confidentiality. In addition, the person in charge of intellectual property provides close technical support throughout the patent application process (pre-application / application / registration). In the patent workshop prior to the application submission, we review the possibility of patent registration through idea creation and invention consultation; the patentability is reviewed through prior technology research.

[IP Status]

(Unit: Cases)

Category	Domestic			Overseas		
	Patent	Trade mark	Sub total	Patent	Trade mark	Sub total
Application	471	39	510	465	36	501
Registration	1,713	99	1,812	1,483	398	1,881
Total	2,184	138	2,322	1,948	434	2,382

Best Practices

Development of antiviral plastic materials

On October 28, 2020, the Advanced Materials Business Division of LOTTE Chemical signed a business agreement with Korea University Medicine for the development of antiviral materials that are safe from viruses, including COVID-19 virus and bacteria.
It has acquired the world's first SIAA certification (ISO21702) in the field of synthetic resin materials for its antiviral performance against influenza A virus.
Through joint research with Korea University Medicine, we will be commercializing this synthetic resin material with enhanced antiviral performance against COVID-19 virus by the end of next year.
If the commercialization is successful, it will enable numerous applications, including ones related to automobiles, home appliances, and films. We will continue to develop differentiated material solutions for the COVID era.

2020 Key R&D Performances

LOTTE Chemical strives to maintain its superior technology and quality in the global market while continuing to discover new growth businesses. LOTTE Chemical has successfully developed high value-added products and high-performance automobile products, which received various certifications and awards for using ecofriendly, high-tech new materials.

Develop high appearance PC*/ABS** material for TV

- Meet the needs for differentiating material quality due to changes in TV design trends
- Produce thin, sturdy, and flexible material with excellent finish to realize the desired design
- High impact, high rigidity, and high flame retardant characteristics
- Received the IR52 Jang Yeong-sil Award (March 2021)

* PC: Polycarbonate
** ABS: Acrylonitrile Butadiene Styrene

HDPE for Secondary Battery Membrane

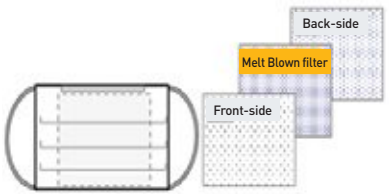
- Expand portfolio through development of new HDPE products for high energy density / high stability lithium secondary battery membrane
- Promote sustainable market expansion through optimized membrane products that meet the global market requirements.

Develop eco-friendly, transparent ABS material

- Collect plastic waste and reuse as raw materials through chemical recycling
- Reduce waste and develop high-quality products by using new transparent ABS technology
- Reduce waste and use in the exterior of home appliances with excellent product quality and transparency

Melt-Blown PP Material for Face Masks

- Develop fluid PP material for mask filters for the post-COVID era
- Effective blocking of viruses in daily life by using ultra-fine fibers
- Successfully produce and enter market with 5-star products in terms of the Melt Index
- Expand sales of hygiene products and compound materials for vehicles



Develop unpainted materials for automobiles

- Increased demand for high-gloss exterior materials due as the auto parts became larger and more three-dimensional in design
- Developed materials with excellent surface scratch resistance, coloring, weather resistance, and impact resistance with proprietary technology
- Eco-friendly and cost-effective because the finishing quality does not require any post processing

Develop low VOC** complex PP for automotive HVAC* module

- Developed auto parts material with excellent low VOC characteristics
- Leading technology in the global market with strengthened competitiveness

* HVAC: Heating, Ventilation, & Air Conditioning technology
** VOC : Volatile Organic Compound

Develop water treatment membrane with low energy consumption

- The high energy efficiency of membrane products reduces the operation and management cost of advanced membrane filtration facilities
- Excellent resistance to chemical and contamination for long term use; helps maintain the water quality when used in water purification, sewage/wastewater treatment and reuse

LOTTE Chemical R&D Center

Best Practices

Establishment of "small success" in industrial ecosystem

In January 2020, LOTTE Chemical organized an innovation center to support "small success" of startups and venture companies with promising technologies in Korea. In addition, LOTTE Chemical and LOTTE Accelerator jointly raised KRW 5 billion for LOTTE Chemical Innovation Fund No. 1. In 2020, we funded the growth of six startups that possess promising technologies in the field of new chemical materials / environment. We plan to expand strategic collaboration and create synergy with these startups. To further promote mutual growth and sustainable partnership with SMEs, we plan to gradually expand the scale of the fund and continue to discover startups with promising future technologies by reviewing the connection and suitability in consideration of eco-friendly goals and implementation tasks of Green Promise 2030.

※ LOTTE Chemical Innovation Center
The Innovation Center was established in January 2020 in preparation for the era of Volatility, Uncertainty, Complexity, Ambiguity (VUCA). The center is in charge of responding to major issues arising in the business environment from changes in the paradigms of society / market / technology, including mobility and environmental issues like green technology and autonomous driving. It will also take initiatives in discovering and supporting new promising business opportunities.

Best Practices

Development of flame-resistant insulation material

We have developed a semi-non-combustible urethane insulation material, polyol, which can reduce the spread of fire in case of fire. Developing on the heat resistance of PIA (Purified Isophthalic Acid) that withstands high temperatures, the flame resistant characteristic of existing urethane insulation material was improved in PIA-added polyol. Furthermore, its safety and functionality are verified as it was certified for non-detection of formaldehyde, which is a hazardous substance, by a nationally recognized test and inspection research institute, and for the suitability as semi-non-combustible insulation materials by the Korea Conformity Laboratories.

This is a best practice that shows development of new use for PIA, LOTTE Chemical's global No. 1 product, advancement into a new market, and production of eco-friendly and safe products to customers. We will continue to conduct R&D on high value-added materials to expand the application of existing materials and improve added value.


PIA, PIA-based polyol, urethane insulation

Customer Value Creation Management

Enhancing Customer Satisfaction

Strengthening Product Quality and Safety

Customer Satisfaction Strategies

As the market environment becomes more competitive and customers' needs diversify, companies are improving customer satisfaction by enhancing the quality of products, services, and customer service. The customer-oriented management system is also directly connected to the improvement of a company's competitiveness.

Our top priority at LOTTE Chemical is realizing value for our customers. To achieve this goal, we provide products and services that meet the customer's needs, listen to every feedback from customers with sincerity and empathy, and carry out various activities to improve our service. LOTTE Chemical will continue to develop products with best quality through multi-faceted communication activities and by grasping market trends and customer needs.

Manage customer satisfaction

LOTTE Chemical is realizing customer values by strengthening customer support and customer communication channels, enhancing brand image, and carrying out activities to improve customer satisfaction. Our proactive response to customer expectations for our products and services maximizes customer satisfaction and gains customer trust. LOTTE Chemical conducts annual customer satisfaction surveys of domestic customers who purchase our products, regarding specifics of the product life cycle, such as raw material quality, packaging, delivery, sales activities, post-management, and price. The opinions of customers collected are forwarded to the relevant departments to be actively reflected in the process of improving product quality in the future. As a result, the customer satisfaction survey results showed continuous improvement, with a score of 93.4 points in 2020.

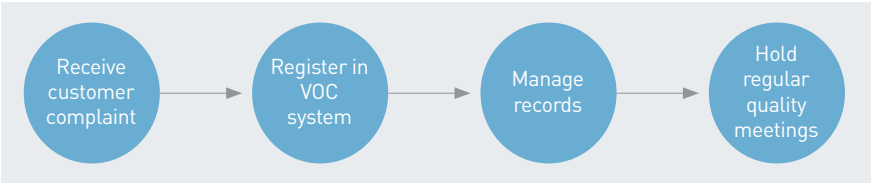
[2020 Customer satisfaction survey]

Survey period	Survey target	Survey method	Survey items
March 13 ~ April 15, 2021 (30 days)	130 client companies (response rate 85%)	Online survey	Customer support, order, logistics, quality, sales, packaging

Operation of VOC system

LOTTE Chemical operates an organization dedicated to processing VOC (Voice of Customer) and systematically manages the entire process of resolving customer complaints. Customer feedback collected during the process is processed by relevant departments for prompt resolution and analyzed to prevent the recurrence. At regular quality meetings, LOTTE Chemical not only develops ex post facto measures, but also discusses preemptive measures against potential dissatisfaction factors.

[VOC Resolution Process]



Strengthen Customer Communication

We regularly conduct customer technical support activities and hold open house events for customers, as an effort to improve communication. This energy diagnosis takes a modeling-based integrated approach for a comprehensive solution of GHG/energy reduction, yield improvement, and operation improvement. Lastly, we are participating in a pilot project of a voluntary energy efficiency target system (April, 2021) by the government to further our efforts in bringing systemic energy reduction.

CEO-level		Employee-level
• Invite 63 client companies • Respond to each organization through small-scale events	&	• Provide the formation and train next generation leaders (PEs) by providing meeting places, etc. (43 companies participated from 2017 to 2020) • Continue offering Polymer School

Sending face masks to domestic and overseas customers to help overcome COVID-19

In 2020, the rapid spread of COVID-19 caused a shortage of face masks worldwide. LOTTE Chemical provided 85,000 and 50,000 emergency relief face masks to 500 major domestic customers and 36 overseas customers in 12 countries that were experiencing difficulties in procuring disinfectants to help protect their health and slow the spread of COVID-19.

Letter of Appreciation from Overseas Customers for Supplying Pandemic Relief Goods

Maintenance Technology Support for Customers

LOTTE Chemical produces and supplies raw materials to the automobile, electrical and electronic, and plastic processing industries. This means that our customers are diverse, ranging from large companies that manufacture automobiles, textiles, medical devices, etc., to small and medium-sized companies that manufacture plastic injections, molded products, etc. In order to meet the needs of these diverse customer groups, LOTTE Chemical provides optimized customer service in consideration of each customer's industrial characteristics and business conditions.

Since 2014, LOTTE Chemical has been implementing a year-round support system of safety inspections and maintenance technologies through our professional manpower and environmental safety technology. We provide the best solution for specific problems that customers are faced with, including recommendation of inspection and diagnosis of main equipment, replacement of consumables, and transfer of equipment management know-how. As a result, customers can improve their maintenance capability and the safety of the business environment, which ultimately helps increase customer satisfaction. We will continue to promote substantive inspections and improvement support activities for customers and reinforce mutual technical exchanges.

Category	Support Method	Support Range	Support Details
Maintenance technology support for customers	On-site support of 3~5 people from Yeosu/Daesan/ Ulsan Plant	Overall inspection and partial maintenance of machinery/relay equipment/ environment/safety	A total of 213 companies from 2014 to 2020 (including customized support)

[Maintenance Technology Support for Customers]

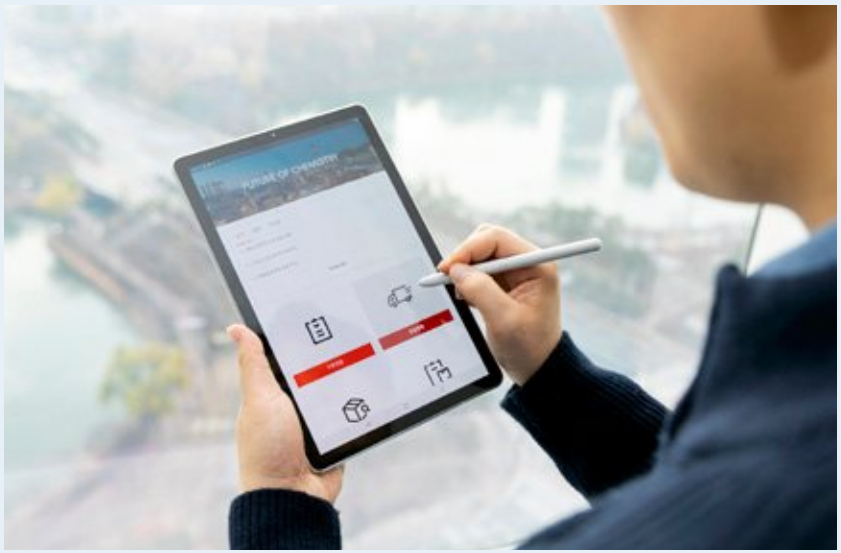
Case Study

Building industry's first customer service digital platform, MaaS

In response to the growing emphasis on communication with customers, LOTTE Chemical has built a customer service platform MaaS (Material as a Service) and provides customers with differentiated service value. MaaS is a digital platform, where customers, who have purchased LOTTE Chemical products, can check order status, shipping information, etc. on PC and mobile app on smartphone. Being able to see the real-time shipping status from time of order to arrival on MaaS allows customers to manage their inventory efficiently. On MaaS, customers can look up LOTTE Chemical products quickly and easily for the intended use and application and chat with sales representatives to ask inquiries in real time.

Since October 2020, we have been providing the service to domestic customers who purchase PE (Polyethylene) and PP (Polypropylene), more than 1,000 customers currently use the service.

We will improve the service by reflecting on the feedback from customers, partner companies, sales representatives, etc. to further stabilize the platform and extend to customers who purchase other products. We will develop a new platform to discover new business opportunities based on the accumulated data and expand sales activities based on big data infrastructure.



MaaS Platform Main Page

Enhancing Product Quality and Safety

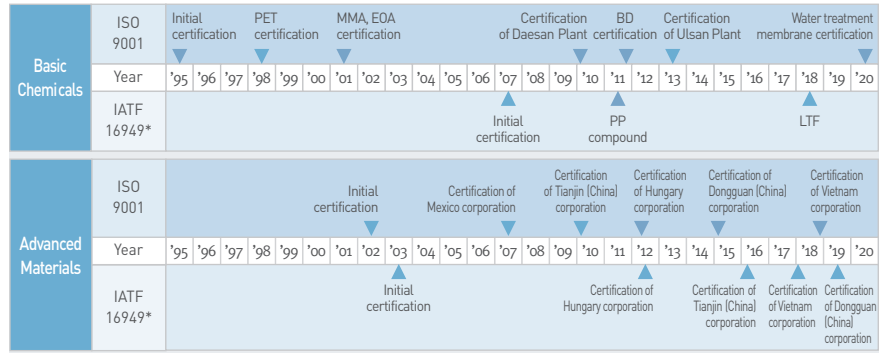
Enhancing Product Quality

Quality Management Policies

LOTTE Chemical has established a quality management system that meets the needs of customers, and the requirements of international quality standards (ISO 9001). We continuously set higher goals and make improvements to our quality management system to deliver the best value that exceeds customers' expectations.

[Quality Management System]

[Quality Management Roadmap]

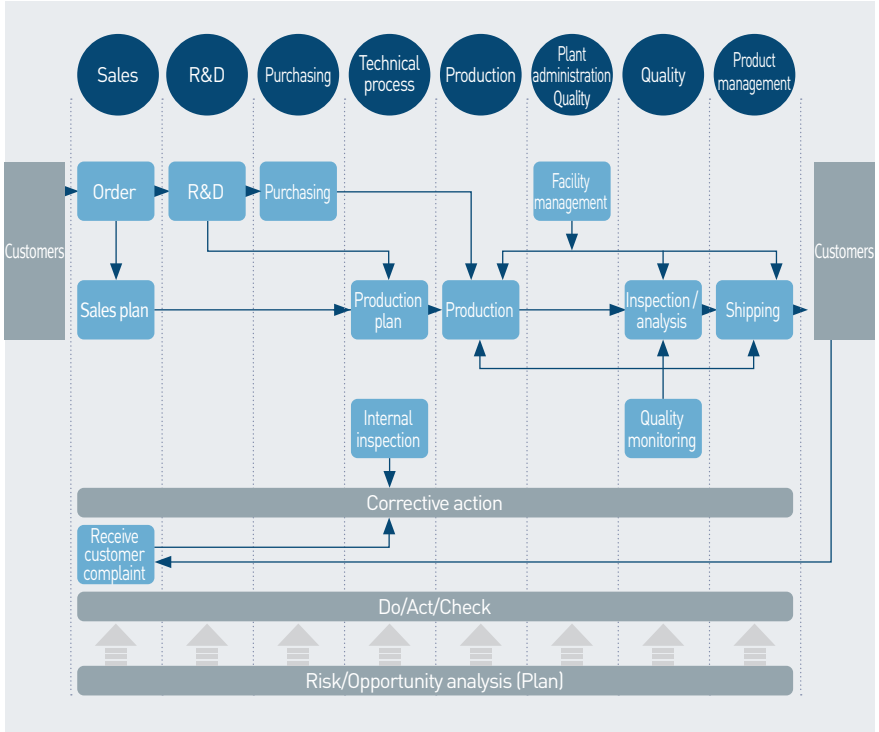


* IATF 16949: A quality-management system for automotive and related industries; includes customer requirements, application of advanced technologies, and product-safety assurance process.

Quality Assurance Process

LOTTE Chemical's factory-produced products are monitored in real-time for quality control through an integrated IT system. By utilizing Enterprise Resource Planning (ERP), which allows systematic management from the procurement of raw materials to inspection, production, and sales, LOTTE Chemical improves management efficiency and quality of products.

[Quality Assurance System]



Enhancing Product Safety

Product Safety System

LOTTE Chemical carries out CSR activities expected from a global top 7 chemical company. We promote balanced expansion of existing and new businesses through development of high value-added products and green materials, while also responding to future trends. In order to determine the direction and scope of environmentally friendly product design, we continuously monitor regulatory trends at home and abroad. We ensure compliance with control of hazardous substances and regulated substances before sales and purchase of products. We evaluate the use of substances that have been investigated to be harmful to the human body and the environment from a customer's perspective, and employ even stricter control measures than required by legal standards.

In accordance with the government's "Committee on Carbon Neutrality 2050", various strategies are being promoted including the Green 5Re Strategy, which is Recycle (conversion of waste into resources), Reduce (reduction of usage), Reuse (applicable to products that can be used repeatedly), Replace (replacement with eco-friendly materials), and Redesign (Recycle + Design; creation of new use and value). The environmental friendliness and safety of our products is ensured through implementation of 5Re.

Product Safety Improvement & Performance

LOTTE Chemical assesses the life-cycle of products from purchase of raw materials to sales in order to guarantee environmental friendliness. Using the LCMS*, we strictly manage compliance with regulations in advance. We take various approaches and regularly interact with employees in development, purchasing, quality, and sales departments to discuss matters related to product management and customer feedback. In accordance with the toxic substances regulations of the Ministry of Environment (National Institute of Environmental Research), some flame retardant products are now considered as toxic, requiring relevant licenses and certification to ensure customer safety. The development, purchasing, and sales teams collaborated to develop alternative materials and replaced hazardous substances in all our products.

As a part of eco-friendly audit activities, we ensure that our partners are compliant with the EU REACH SVHC**, RoHS***, conflict minerals, etc. LOTTE Chemical also provides the same compliance certificate to customers. These certificates are available in the LCMS and can be issued immediately upon customer request through the system. During the reporting period, no incidents have occurred in violation of laws and/or voluntary regulations in regard to health and safety of products and services.

* LCMS: LOTTE Chemical Management System

** SVHC (Substances of Very High Concern) : 215 substances designated by the ECHA as highly hazardous material.

*** RoHS: Directive on the restriction of the use of hazardous substances in electrical and electronic equipment

Strengthening Management of Chemical Substances

LOTTE Chemical has established the LOTTE Chemical Substance Management System (LCMS) in order to ensure compliance with domestic regulations, as well as global regulations that are becoming increasingly strict. The LCMS allows LOTTE Chemical to manage the flow and usage of 20,000 raw materials and chemical products in real time. We also conduct thorough inspection on storage and transportation of chemicals and report relevant information to the government. In particular, the purchasing and sales channels of the regulated hazardous chemicals are being managed extensively to minimize related risks. In addition, Material Safety Data Sheets (MSDS) are compiled in various languages and distributed to global employees and customers to provide detailed information on possible hazards, emergency responses, and handling methods. We are upgrading the system in accordance with the reinforced Occupational Safety and Health Act (enforced as of Jan. 16, 2021), so we can provide the latest information about hazards and risks in line with the new regulations for MSDS (expected to be completed by June 2021).

In addition, we are striving to enhance accident prevention equipment to minimize damage from leakage in hazardous chemicals from our business sites. Hazardous chemical storage facilities are surrounded by protective walls and made of impermeable floor material. We ensure that all leaked hazardous chemicals are transferred to a wastewater treatment plant. Weekly inspections are conducted on facilities storing or transporting harmful chemicals. In addition, fire extinguishers, gas masks, protective gloves, protective boots, and safety masks are being stocked in appropriate places to enable prevention and immediate responses to accidents. As a result of these efforts, there has not been a single accident related to hazardous chemical leakage during the reporting period. In pursuit of citizens' rights to information, LOTTE Chemical faithfully discloses the results of emission surveys, chemical substance statistics surveys, toxic substance performance reports, etc., as required by the chemical substance investigations and reports from the Ministry of Environment and the Ministry of Employment and Labor.

Response to Regulations on Control of Chemical Substances

Since 2015, we have been reinforcing chemical substance management in accordance with the Act on registration, evaluation, etc. of chemicals and Chemical Substances Control Act.

In 2018, we completed registration of 21 substances out of 510 substances subject to registration in accordance with the Act on registration, evaluation, etc. of chemicals and Chemical Substances Control Act. For about 50 substances, joint registration is currently in progress. The joint registration is promoted through a consortium composed of representative companies of the petrochemical industry.

In addition, we are endeavoring to ensure compliance with various foreign regulations including EU-REACH, Turkey-REACH, UK-REACH, and BIS of India.

For internal control, we have established the LOTTE Chemical Substance Management System (LCMS), which manages substance regulation and flow of chemical substances to prevent accidents and violations.

Human Resources Management

Human Rights and Diversity

Human Rights Management

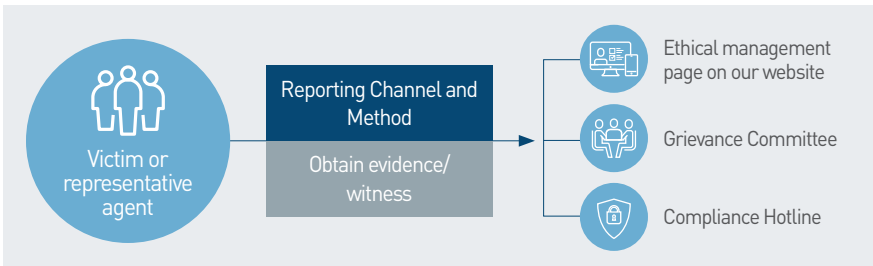
Human Rights Policy

Interest in human rights management is growing with the rapid expansion of economic and political influence of corporations and the widespread emphasis on non-financial factors, such as environmental, social and governance (ESG), in investment decisions. The international community including the UN and OECD, call for extended corporate responsibility to encompass not only the human rights of individuals but also of the supply chains. In addition, companies are being asked to establish systems and policies that ensure prevention of human rights violations, as well as remedial countermeasures in case of violations. As the demands for proper protection and respect for humans increase around the world, LOTTE Chemical publicly pledged its commitment to the protection of dignity and values of stakeholders. LOTTE Chemical strives to prevent human rights violations in all aspects of business operation with utmost diligence. More details about LOTTE Chemical's human rights policy are provided in the CEO's statement on page p.101.

Internalization of Human Rights Management Culture

To avoid risks related to human rights violation in advance and increase the awareness of executives and employees, LOTTE Chemical identifies and provides training on areas where human rights violations may occur. In 2020, we provided company-wide online training courses on workplace bullying, sexual harassment, and improving awareness for the people with disability. New employees also receive the same training upon joining the company. LOTTE Chemical has established a remedial procedure so that the victims of human rights violations are protected of their identity and can safely return to the community. Our procedure ensures that the human rights violations are thoroughly investigated, upon the receipt of the report through the reporting channel, and the victims' rights are restored through appropriate resolution.

[Human Rights Violation Reporting Channel and Operating Process]



Respect for Diversity

Open Recruitment with Respect for Diversity

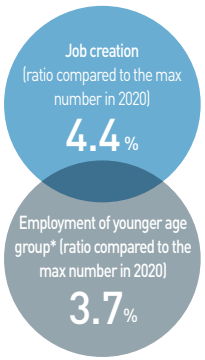
LOTTE Chemical values future possibilities more than the present; we thus continue to extend employment opportunities to achieve stable employment and grow together with our employees. Our recruitment procedure is fair and transparent and ensures that there is no discrimination on the basis of gender, academic background, disability, regional and national origins, etc. We recruit global talents who are passionate for their own growth and compassionate toward society.

We have developed processes for recruitment of new employees, mid- to senior level managers, people with disability, veterans, etc. Since the establishment of the new HR organization within the R&D Center in 2015, we have been recruiting through industry academia collaboration programs and industry-academia scholarship programs. To minimize the risk of COVID-19 infection, we conducted online interviews for new employee recruitment in 2020.

Creating Jobs for Socially Underprivileged

In order to fulfill corporate social responsibility, we have been working to create jobs for the socially underprivileged. For example, LOTTE Chemical gives preference to people with disability and veteran applicants during screening and hires them on a year-round basis. These efforts have resulted in reaching the mandatory employment rate for the disabled for 2019 and 2020. We hire and support rehabilitation of disabled athletes, including those in rowing and boccia, through cooperation with Korea Employment Agency for Persons with Disabilities and the city hall, and we have also been creating jobs for the local community and remote work for the disabled.

LOTTE Chemical will continue to fulfill its social responsibility and strive to meet the government's employment policy through more diverse recruitment programs.



* Younger age group:
34 years of age or younger

Hiring and Nurturing Talented Female Employees

LOTTE Chemical is implementing policies to enable female employees to balance work and family while making career advancement. We operate training programs to foster female leadership in the organization.

Forum for Female Talent

LOTTE Group hosts the WOW (Way of Women) forum for female employees every year in order to raise awareness of female human resource development and to form a corporate culture that recognizes diversity beyond the frame of gender/generation. At the forum, female employees share their stories, share ideas about fostering more female talent, attend lectures on strengthening female leadership, and form networks amongst themselves.

Mentoring System for Female Leadership

LOTTE Chemical provides mentoring to female team leaders and team leader candidates to support their growth and enhance competitiveness. For a duration of 3~6 months, female executives are paired up with female team leaders and team leader candidates, to participate in online/offline mentoring and workshops on the subject of career advancement.

Mandatory Childcare Leave for Female Employees

LOTTE Group introduced a mandatory childcare leave system in 2012, in which childcare leave automatically starts following the maternity leave. The maximum duration of female employee's childcare leave was extended to two years to create a more favorable working environment for female employees with children.

Infertility Leave and Support for Infertility Treatment Expenses

To help alleviate the financial burden and stress of employees who are struggling with infertility, LOTTE Chemical has introduced a six-month infertility leave in 2018 along with financial support for infertility procedures. Our policies help ensure that female employees do not experience career interruption and are able to promote work and family balance.

Fair Evaluation and Compensation

Fair Evaluation

LOTTE Chemical operates a fair performance evaluation system to motivate and encourage proactive self-development of employees. We help employees develop their abilities and careers by providing regular performance assessments and substantive feedback. LOTTE Chemical's employee evaluation consists of MBO (Management By Objectives) performance evaluation and competency evaluation. For objective evaluation, we have established KPIs (Key Performance Indicators) in accordance with the relevant standards. By constantly managing the performance and providing feedback, the system allows the organization and individuals to efficiently manage achievement of goals. The results are also being used for coaching and mentoring of employees. Competency evaluation is divided into common competencies and job competencies, and evaluates the potential qualities and abilities of the employee. The results are used to further develop the employee's competencies.

The 360 Review, newly introduced in 2020, has added peer evaluation and subordinate evaluation to self-assessment and top-down evaluation. It helps evaluate the interaction and collaboration of the employee from various perspectives. The opinions collected through 360-degree evaluation are used to improve the reliability and objectivity of the evaluation.

Feedback is an essential process to increase acceptance of the results and improve the communication between the evaluator and the person being evaluated. LOTTE Chemical's feedback system adopts a face-to-face feedback method, in which the department head directly delivers the evaluation result and evaluation report, which contains feedback from all evaluators. Hence, employees are provided with objective reviews of their competency level and work performance, along with suggestions for future career development and job performance improvement.

Reasonable Compensation

LOTTE Chemical operates an evaluation/compensation system, which ensures that employees are compensated based on their performance.

Linking performance evaluation results to annual salary increase rates, bonuses, and incentives allows the company to not only provide proper compensation based on performance, but also recognize and compensate outstanding performers to motivate other employees. As such, LOTTE Chemical provides varied compensation according to organizational/individual performance, job and position, without discrimination based on gender and/or age.

Human Resource Development

Human Resources Development System

Desired Qualities of Employees

In line with LOTTE Group's vision of "Lifetime Value Creator," LOTTE Chemical recruits talents with the following qualities to pursue and create new future values together:

One who is not afraid of failure

We look for people who are not afraid of new and difficult tasks and who have determination to push through. We value proactive individuals who pursue the possibility of success instead of fearing failure and seeking the safety of inaction

One who constantly strives to improve his or her capabilities

We look for individuals who are focused on training themselves and honing their abilities for consistent growth. Those with talent but without willingness to put effort cannot win against those who prepare themselves and put in their 100% effort. We would like to hire individuals who are diligent and patient in their pursuit of building the foundation for greater advancement.

One who understands the value of cooperation and coexistence

Our assets are those who respect diversity and who can work in collaboration with colleagues. Understanding different perspectives while having a balanced perspective is difficult but essential. LOTTE Chemical seeks young individuals who understand the value of cooperation and conformity.

Recruiting Talents

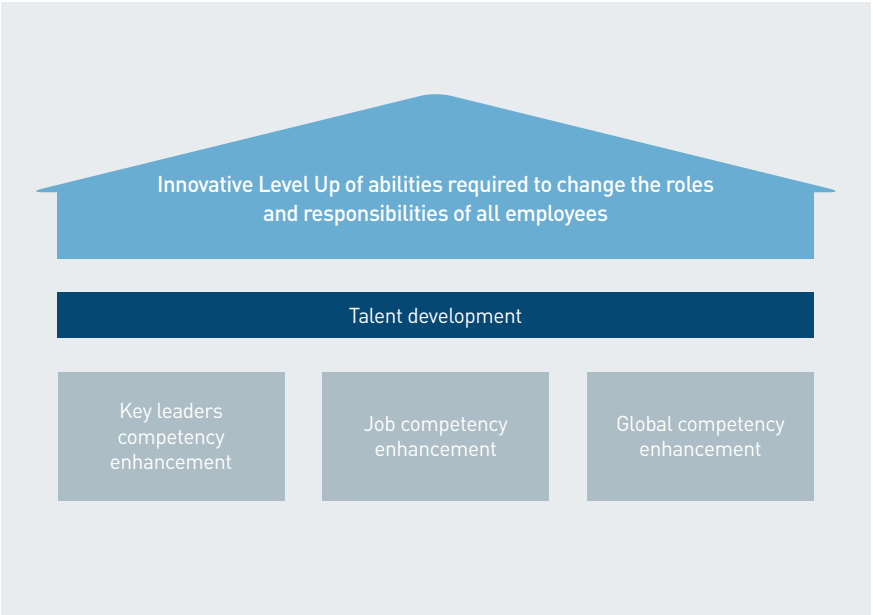
We promote fair hiring processes for employment of excellent human resources in response to changes in the business environment and hiring paradigm.

We continue to improve communication to reflect the needs of our business sites and promote employment of special R&D personnel through industry-academia scholarships in cooperation with the HR team of the R&D Center. For some positions, we have introduced the AI aptitude test to find the right match. Even during the pandemic of COVID-19, we have taken various measures to conduct recruiting activities, including online recruitment expositions.

Human Resource Development Strategies

We are improving the job / leadership competencies of our employees through three succession plans: fostering next-generation leaders, strengthening job competencies by job group, and strengthening global competencies.

[Human Resource Development Strategies]



Talent Development Program

Training by position and job

Degree support system (academic training)

In order to nurture talented employees who will lead future new growth businesses, we select researchers with excellent technical and development capabilities annually and support the educational expenses needed to obtain master's/doctoral degrees from prestigious science and engineering universities. Through this, we are cultivating job experts with field experience and academic competence.

Enhancing R&D capabilities

To strengthen the competency of researchers who can immediately become a valuable workforce, we provide special training in key areas of each business sector. Our in-house experts of each field teach courses that can be immediately applied to the field. In the second half of 2020, we conducted training on polymers, extrusion/injection machines, and analyzers, which were taken by a total of 228 employees. We will be inviting faculty members from prestigious engineering and science universities to give technical seminars where employees can learn about the latest technology trends and strengthen their technical capabilities as researchers.

Training and Meetings for Field Professionals

We operate a vocational training school to reinforce early development of job competency of future employees before they start working as field professionals. The school provides theoretical and practical training on environment and safety, factory operation, and process. In addition, we provide annual training for those who are promoted to the professional group that year. With focus on fostering the next-generation field leaders, our training includes courses on problem-solving, collaboration, and leadership, and meetings with executives/leaders.

Training for Job Experts

Through financial qualification certification and procurement manager qualification processes, we train specialists in each job field and develop their financial and strategic thinking skills. Additionally, in 2020, we introduced the DT (Digital Transformation) Talent Training Course, offering subdivided courses like skill-up courses for master level and pro level and courses on data science AI/SW engineering, etc.

Leadership Training

Leadership Development Program for Key Persons

To train future leaders and leader candidates, we have developed a three-stage training program that includes mentoring, coaching, and tutoring. In 2020, we focused on fostering female leadership, in particular.

1:1 mentoring is provided by executives, who are internal experts, on four roles of leadership: driving change; talent development; implementation; and effective resource management. In the next stage, an individual action plan is established through 1:1/group coaching with an external coach. In the last stage, customized training is provided on the subject of leadership, performance management, and communication.

New Team Leader Course Development

We have developed a new course on new team leader training to improve the skills needed for the changing roles of leaders. In 2020, as many as 36 new team leaders received the training, where individual assessment was performed to identify their strengths and weaknesses. Furthermore, experts in each field were invited to provide courses on the role and functions of a leader, expectation and common misunderstanding about leadership, generational conflict, etc.

New Team Leader Course

New Employee Training

Improving the new employee training

For the "soft landing" of new employees, the company has subdivided and enhanced the curriculum. Courses on information protection, compliance, and safety/environment are being offered, as well as special lectures by the CEO, the current status and vision of each business unit, and the current status of each business site and department to help shape the career vision of new employees. In order to learn about the basics of the petrochemical field, products, and production in the field, new employees work in shifts for two weeks on site. In addition, we assist quicker and easier adjustment of new employees by providing simulation training on work situations, practice focused on conflict cases, and stress management.

Global Empowerment Training

Launching strategic language courses

LOTTE Chemical offers a number of language courses internally to cultivate the global capabilities of employees for the goal of becoming a "Global Top 7 Chemical Company." In addition to the existing courses in English, Chinese, and Japanese, we have launched strategic language courses for Indonesian, Russian, Spanish, Vietnamese, and French. In addition, we support external programs, online language lessons, and micro-learning contents, to encourage employees to learn new languages according to their own schedule.

Foreign Service Employee (FSE) Foster Program

With the growing overseas business, the importance of training overseas expatriates has increased. As such, we have broken down the curriculum according to the timeline of their assignment. For example, prior to going abroad, prospective expat employees receive training in relation to their roles and responsibilities as expat employees, management of diversity and risk, and mental health. In addition, we offer intensive language courses, distribute local settlement manuals/related books, and conduct safety training to help adapt to new environments and cultivate a global mindset. We also offer cultural assimilation courses to families of expat employees.

Support Program for Retirees

LOTTE Chemical operates a program to help executives manage their emotions and design life after retirement. We give full support to executives' successful life after retirement by providing programs on license or qualification acquisition, 1:1 consulting by an expert, support for reemployment, and education/workshop.

Online Infrastructure

We share internal and external information through Acropolis*; as part of our response to COVID-19, we started offering the EDRC** course online and actively promote online, nonface-to-face education.

* Acropolis: A smart learning platform to share/search/learn about business insights and issues within the LOTTE Group
** EDRC: DT-based technology (process design, process safety simulator, etc.) convergence education

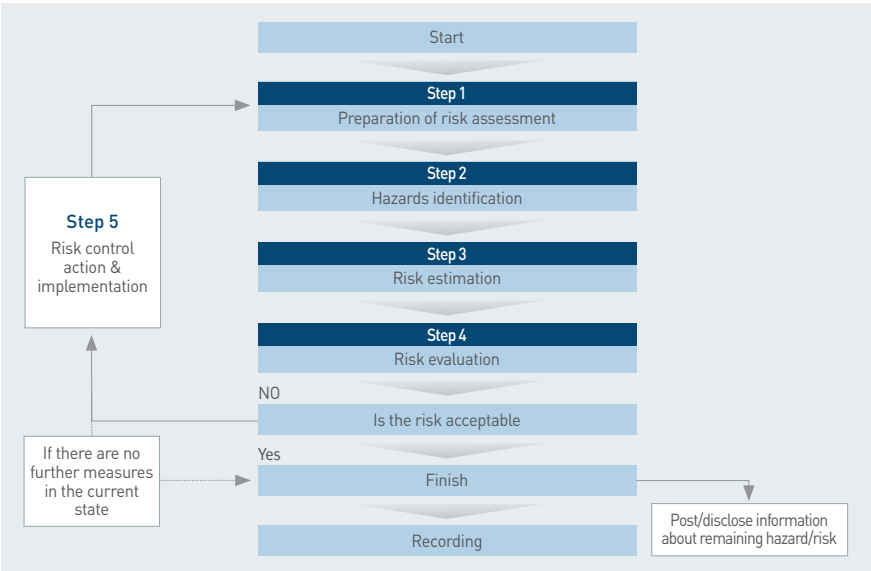
Safety and Health

Health and Safety Management

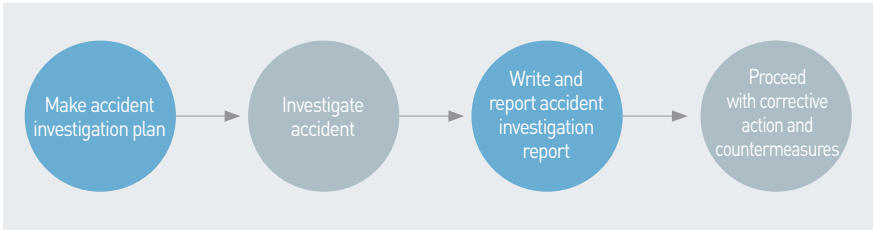
Managing health and safety risks

Worker safety is one of LOTTE Chemical's top priorities. We operate an integrated health and safety management system that manages safety and health policies, requirements, processes, and best practices to ensure that all workers return home safely from work. LOTTE Chemical understands that as a chemical company, the nature of our business exposes our employees and residents to physical risks, such as fire, explosion, and leakage, related to life cycle from production to transportation, storage, consumption, and disposal of chemical substances. We identify these risks, in addition to health, safety, and environmental risks, and study potential issues. In order to evaluate risks with high possibility of accidents during operation of business sites and to minimize risk factors, we have developed a system that ensures regular monitoring and improvement. The process allows all workers, including partners, to stop working and leave the worksite at their own discretion if they detect any signs of immediate danger or hazard. We also operate an emergency response system for immediate action in the event of a safety accident; we further prevent the recurrence of the same accident by investigating other related accidents and taking follow-up measures.

[Hazard Identification and Risk Assessment Procedure]



[Accident Investigation and Reporting System]



Health and Safety Management System

LOTTE Chemical has voluntarily established a safety and health system with more stringent standards than the occupational safety and health requirements stipulated by the law. All business sites of LOTTE Chemical have been certified by the new international safety and health management system (ISO 45001). We implement safety-first management policies and safety policies systematically based on the Plan-Do-Check-Action (PDCA) cycle, while also striving to integrate safety and health management systems with process safety management (PSM). Our safety and health management system is extended to our own employees at the head office and each business site, as well as employees of partner companies.

[Health and Safety Standards System]

Health, safety, and environmental Policies

Recognizing health, safety, and environment as the top management priorities, LOTTE Chemical selects important issues for sustainable development and fulfillment of social responsibility and faithfully implements them to improve safety and environmental performance. Safety accidents of a chemical company affect more people more directly. Thus, our goal is to achieve more proactive and more preemptive safety and health measures with a strong emphasis on prevention.

In addition, by establishing safety and health policies and principles, we seek to raise employees' awareness on the importance of safety and health and encourage their active participation. On our website, the Environment & Safety Management page provides detailed information on our safety and health policies, rules, and principles.

[Safety and Health/Environment Policy]

1 Safety, health, and environmental management as the top priorities

LOTTE Chemical considers safety, health, and the environment as top priorities in all its activities, including the entire process from product design to production, use, and disposal.

2 Strict compliance with laws and regulations; strict internal control

In addition to ensuring strict compliance with safety, health and environmental laws and regulations, we have established stricter internal standards and adhere to them.

3 Continuous effort to protect the environment

We continue to take measures to prevent environmental pollution, conserve resources and energy, control use of harmful substances, reduce waste, protect the ecosystem, and mitigate climate change.

4 Create comfortable work environment; establish a culture that values principles

We strive to create a healthy and comfortable working environment and establish a culture that respects principles.

5 Open-minded communication, corporate social responsibility

We strive to fulfill corporate social responsibility by disclosing information to employees and stakeholders, including local residents, customers, shareholders, and government, and communicate with an open-minded approach.

6 Continuous improvement

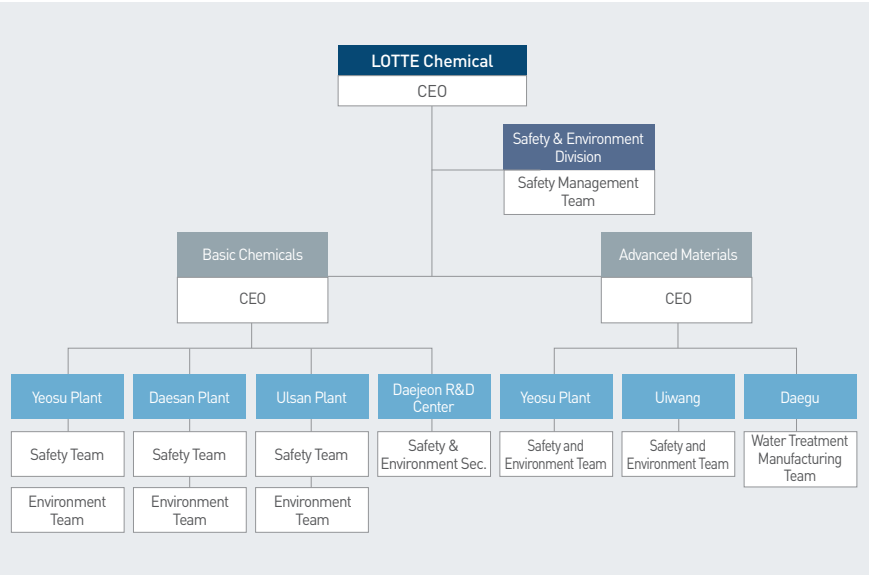
We set action plans to achieve our goals and pursue continuous improvement.

Health and Safety Governance

Recognizing that safety is the essence of our business, LOTTE Chemical implements key strategies to realize safe business sites and strives to be one of the safest chemical companies in the world. To this end, the Safety Management Team, a safety control tower, was established in 2020; the team develops safety and health policies and systems and audits compliance with the company's internal safety and health regulations. The Basic Chemicals and Advanced Materials division each has a safety team in charge of on-site safety activities, employee safety training, patrols of vulnerable areas, and government office work.

Each business site operates an occupational safety and health committee, which makes decisions on important safety and health matters on behalf of the labor union and management and holds quarterly meetings in accordance with the Industrial Safety and Health Law. The committee consists of the same number of persons from the labor union and management, including a worker's representative and management's representative.

[Health and Safety Organizational Chart]



Establishment of Safety Code of Practice

LOTTE Chemical has established a Safety Code of Practice to raise awareness, change the behavior of all employees, and establish a company-wide, sustainable safety culture on a global level. Safety Code of Practice details 20 specific conducts expected for each level (executive, department head, staff) based on LOTTE's core values (Challenge, Respect, Originality) and stresses safety as the highest priority for all domestic and foreign employees. In addition, LOTTE Chemical promotes sharing of best practices between executives and employees to facilitate internalization of the Safety Code of Practice and make it more than just a declaration.

Establishment of safety curriculum

LOTTE Chemical has established a safety curriculum to implement mandatory safety training for all employees, including the CEO. The curriculum includes courses on legal and job related matters, basic competency, and is designed to enable systematic management of workplace safety by providing quantified evaluation of the organizational and individual job competency and customized training for each position. In 2020, the basic safety course was reestablished after identifying and analyzing job competency requirements. We will continue to improve the program through operation.

Safety and Health Audits

LOTTE Chemical has been conducting safety and health audits since 2019 to internalize the safety culture and align safety and health policies. We inspect safety and health management systems, process safety, chemical material safety, safety culture, and safety compliance of all business sites at least once per month. In 2020, we conducted 11 inspections, through which a total of 2,512 issues were identified. LOTTE Chemical is working to minimize risk at each business site and tighten the level of management.

Supporting partners' safety inspections and consulting

LOTTE Chemical selects partners with an established industrial accident prevention system to secure the safety of business partners. Partners are selected based on their qualification of safety management evaluation in accordance with the partner selection procedure. Once selected, they undergo purchasing evaluation. LOTTE Chemical shares "Partner Health, Safety, and Environment Compliance Requirements" with the selected suppliers, in advance, to ensure compliance with our safety rules and allow necessary precautionary measures to take place. To further verify qualification of partners, we have conducted safety management guidance consulting for 320 companies as of 2020.

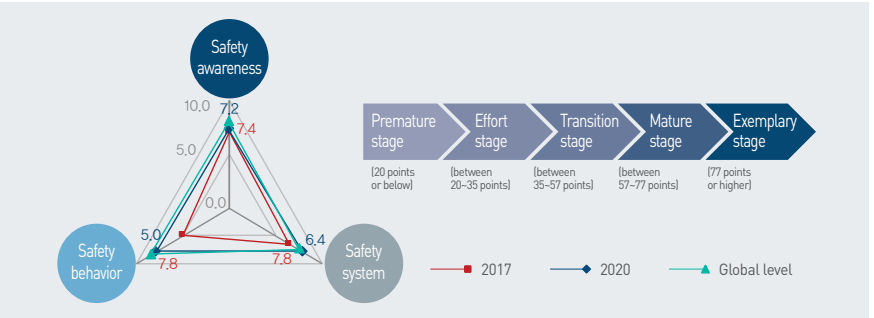
Risk factors were identified for the 14 major partner companies selected by LOTTE Chemical to be able to prevent occupational accidents on their own. To develop a sustainable safety and health management system, we provide consulting for obtaining the certification for the workplace with excellent risk assessment and an excellent occupational safety and health management system. Starting in 2021, LOTTE Chemical will offer regular consulting services to partner companies and continue to promote compliance and improvement of safety standards.

Internalization of Safety and Health Culture

Strategies to promote safety culture

Since 2017, LOTTE Chemical has been conducting safety culture diagnosis for the Basic Chemicals Department to identify and improve workplace safety barriers. In cooperation with the Safety Team and the Central Safety Committee, LOTTE Chemical has established and implemented short-term tasks and is implementing mid- to long-term tasks, including improvement of essential safety rules and safety activity motivation systems. The result of rediagnosis on safety culture in 2020 showed that the level of safety culture has improved from 'transition stage (2017)' to 'maturity stage (2020)'.

[Safety Culture Diagnosis Result]



• Competitor: Chevron (Richmond), Dow Chemical (overall), Exxon Mobil (overall)

Voluntary safety inspection at business sites

LOTTE Chemical operates a patrol team to conduct continuous safety inspections. An inspection team composed of the plant manager and team leader conduct on-site inspections; members of the PSM (Process Safety Management) team form a separate team to conduct monthly inspections on 12 items of PSM. In order to ensure compliance with the safety work permit regulations, we check the work permits on a weekly basis.

On-site Inspection Activities

Safety-Inspection Activities

Risk Assessments

Risk assessments are performed regularly and as needed to reflect changes in three fields (process, work, and chemical substances). For the risk assessment, we use either HAZOP*, or checklist, etc., as determined suitable for each field. In 2020, a total of 9,504 risk assessments were performed to analyze harmful risk factors. Appropriate mitigation measures were applied to 2,146 cases that were found to have higher risks than the management standard. Outside experts are invited to conduct related training to strengthen the capabilities of risk-assessment evaluators.

* HAZOP (Hazard and Operability Study): Analysis of risk and operability

Investigating Risk and Hazard Factors

Risk-Assessment Training by Outside Expert

Certified as excellent safety management laboratory

LOTTE Chemical's Daejeon R&D Center for Basic Chemicals obtains the Ministry of Science, ICT safety certification every year and actively promotes strengthening of autonomous safety management. For the duration of three years (2018-2020), we acquired 11 safety certifications (nine for basic chemicals for the Daejeon R&D Center, two for Advanced Materials for the Uiwang Plant). Daejeon R&D Center (CID 2 laboratory) was selected as the best laboratory and received commendation from the Minister of Science and ICT.

Commendation from Minister of Science and ICT

Best Laboratory Award by the Minister of Science and ICT

Safety Education and Training

LOTTE Chemical requires all employees to complete safety training so that they recognize safety as part of their everyday duties. The results from the previous year's education and training and employee feedback should be reflected in the next year's plan. We provide textbooks and equipment for education and training. Training allowances are paid for any training occurring after business hours. Workers and supervisors are required to complete regular and special safety training, in addition to material safety data sheet training, and other legal training. We offer training courses on Process Safety Management (PSM), safety, firefighting, standards compliance, etc. that are tailored to meet the conditions of each business site. After training, examinations and evaluations are conducted to measure performance.

[Safety Training Status]

(Unit: hours)

Category	2018	2019	2020
Total hours of training	84,125	86,608	85,278

Workplace health and safety management of partner companies

A Cooperative Council, which comprises resident partner companies, is formed at each business site and conducts monthly meetings, and ad hoc meetings. Through on-site inspections of resident partner companies, we identify and address risk factors. When selecting partner companies, we evaluate their health and safety management systems, health and safety training plans, work-related performance, industrial accident record, etc. After selecting a partner company, we regularly conduct safety and health evaluation We have formed a pool of eligible partner companies, to whom we provide support for partner safety and health management system and risk assessment certification for shared growth.

Joint safety inspections with partner companies

Promoting Employee Health and Wellness

LOTTE Chemical operates a health management program to promote physical and mental health of our employees. In addition to operating a fitness center within the premise of company housing, we have counseling rooms and meditation rooms. A person who has obtained a health and medical certificate is appointed as a health manager in charge of preventing spread

of diseases, managing the working environment, and promoting employee health. General health check-ups are provided every half year for workers, and health check-ups are offered to employees over 35 and their spouses every alternate year. For employees and spouses who are 40 years or older, a more comprehensive annual check-up is provided. We also offer smoking cessation aid programs and body-fat management programs to help employees stay healthy. We will continue to develop health and training programs based on the feedback of employees so that employees can lead a healthy lifestyle.

New Clean for Safety Activities

LOTTE Chemical's Daejeon R&D Center for basic chemicals promotes various activities to increase work efficiency, create a safe research environment, and establish a safe R&D culture.

[New Clean for Safety Activities]

- My Machine, My Area campaign (improving working environment, equipping basic facilities, safe site)
  1) Clean-up day (every Fri.): making it a habit to clean, sanitize, and tidy up the workplace
  2) 3-jeong activities for all goods (quantitative (jeongryang), genuine quality (jeongpoom), and in-place (jeongwichi))
- Safety activities for research staff
  : Safety campaign on Safety Culture Day on the last Friday of the month.
- Award of the Researcher of the Month (Best S.H.E.F)
  : Discover areas of improvement in the field of safety and environment

Top) My Area Campaign in the Processing Building (Floor Maintenance Work)
Bottom) Safety Campaign Activities on the Way to Work

Emergency-Response System Management

LOTTE Chemical employs an emergency response system to respond to emergency situations, such as fires, explosions, leakages, and natural disasters. The system allows immediate dissemination and reporting of an emergency event to assist and ensure prompt decision-making by the CEO.

All employees and partners receive basic firefighting training, in addition to a monthly fire brigade training and a quarterly emergency shut-down training (ESD). LOTTE Chemical will continue to develop measures to minimize damage and losses in the event of accidents by establishing and reinforcing a safety culture that focuses on accident prevention and improving emergency preparedness.

Work-Life Balance

Labor-Management Culture of Trust

LOTTE Chemical's Labor-Management Culture

LOTTE Chemical promotes labor-management communication to create a labor-management culture based on trust. Every year, we discuss with the labor union in advance about major business and system changes, and improvement of working conditions through wage and collective bargaining. At each business site, the labor-management council holds a quarterly meeting to discuss various issues, such as improving welfare and work environments and designing a reasonable system.

Operation of Labor-Management Council

LOTTE Chemical operates a labor-management council and employee council, and holds regular meetings to make decisions on major issues. The labor-management council and employee council play a central role in communication between labor and management and serve as a representative body for employees. Improvement and changes in working conditions, HR system, etc., are discussed at the labor-management council in each business site, through which we learn about the needs of employees and reflect them in the company policy upon further discussions.

Changes in Working Style

Work & Life Balance

As the new law limits work hours to 52 hours per week, promoting work and life balance has become a trend in the current generation and a long-term value to be pursued. Many job seekers prefer to work in a company with a corporate culture that respects an individual's personal life and promotes work and life balance. In line with these trends, LOTTE Chemical operates various measures to help employees maintain their work and life balance.

To firmly establish a 52-hour week system, increase work efficiency and create a flexible working environment, we have introduced a flexible work hour system and a PC-OFF system.

To improve work efficiency, we are constantly striving to create an environment that best suits each job, considering the characteristics of the work. As such, we have extended and actively promoted working from home in response to the changing environment. In addition, we strongly encourage the use of sabbaticals (one month vacation and vacation expense support), healing vacation day (vacation expense support when five consecutive vacation days are used), and work & life balance day (recommended vacation).

[Flexible Work Hour System]

Category	Details
Flexible Work Hour System	Employees decide their work hours according to their personal needs and schedules *Basis: at least four hours per day, 40 hours per week, and within the required hours per month.
Smart Work	Establish infrastructure, such as mobile office (Mobile S-Moin) and external communication network (Terminal Management Service, or TMS), to allow working from outside the office (including working from home)
Encourage Use of Vacation Day	Make the day before and after a holiday as official day off, promote it in advance and frequently, and refrain from having official events on that day to encourage use of vacation time

Family-Friendly Management

As part of our family-friendly policy, LOTTE Chemical is trying to help reduce the concerns about career interruption of female employees due to pregnancy, childbirth, and childcare by extending the duration of childcare leave, promoting maternity protection policies and support, etc. In addition, we are expanding a variety of family-friendly welfare programs through provision of family medical expenses, comprehensive checkups, and condos/resorts voucher to support the stability, health and leisure activities of our employees' families.

[PTO Usage]

Category	Unit	2018	2019	2020
PTO Usage	Day	9	9	11
Percentage use of flexible working hours	%	27	34	40

• Annual PTO use: Cumulative annual use of PTO days of all employees / number of employees

[Family-Friendly Management]

Category	Details
Strengthening support for pregnant employees	Provide office supplies for a comfortable working environment, snacks for pregnant women, parking assistance, etc.
Mandatory childcare leave system	Childcare leave automatically starts following the maternity leave (up to 1~2 years)
Mandatory childcare leave for men	Mandatory childcare leave for men (100% of basic rate for the first month)
Parenting 101 for Dads	Require attending Daddy School before or after childcare leave
Maternity leave and work system	Pregnancy leave (10 months), infertility leave (6 months), child school enrollment care leave (1 year), Reduce working hours during childcare period and relieve the burden of pregnancy, childbirth, and childcare; gifts and supplies for pregnancy and childbirth
In-house day care center	Operation of a daycare center with quality teachers and facilities
Family medical expenses support	Enrolled in group accident insurance that covers medical expenses for spouses/children and comprehensive medical checkups for wspouses/parents
Leisure and vacation support	Reimburse vacation expenses when using 5 consecutive days off and offer member price/vouchers for nationwide condos/resorts owned by LOTTE Group (Twice a year)

Employee communication and organizational culture

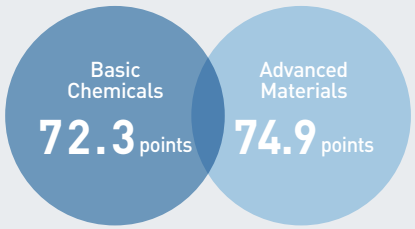
LOTTE Chemical strives to create a leading organizational culture with focus on employee satisfaction. We carry out various team building activities to boost our pride in the company, and to improve the sense of unity and fellowship among other members of the LOTTE Group. Each department selects a culture leader, who takes the lead in carrying out cultural experience activities, healing programs, family events, social contribution activities, etc. We offer various company-wide social events for development of healthy hobbies, and to assist recharging and communication time among our employees. In order to improve employee communication and organizational culture, the Organizational Culture TF Team has been launched, and is in operation since 2016. We listen to the opinions of all executives and employees in each division with regard to corporate value, employee happiness, and social values to set and implement major tasks.

In 2020, the Corporate Culture Committee held employee management briefing sessions and improved chemical education contents, evaluation process, and vacation systems.

도전하는 롯데케미칼
Chem!stry

[This represents the spirit of LOTTE Chemical, and shows our willingness to constantly take on challenges through new business and mergers.]

[2020 Employee Satisfaction Survey]



Survey participant	All employees and executives of LOTTE Chemical
Survey method	Online/mobile survey
Participation rate	Basic Chemicals 79.1% / Advanced Materials 88.1%

Employee Welfare

Mental Health Management

We form many relationships throughout our lives through various circumstances. The difficulties in interpersonal relationships, including those in the workplace, not only degrade work efficiency, but also affect our daily lives. LOTTE Chemical operates an in-house counseling room and meditation room, where professional psychotherapists specialized in the chemical industry help manage the mental health of employees. Our in-house professional counselors provide private counseling on interpersonal relationships and emotional control, group counseling for departments, and family counseling, in addition, various programs such as stress management programs, personality and temperament tests, and mental-health campaigns are offered. These counseling sessions can help employees relieve stress, anxieties, and conflicts from work or private life, and ultimately help enhance work productivity at work and quality of life.

Additionally, to improve employees' awareness of mental health and increase use of counseling rooms, we regularly distribute letters on topics related to mental health. We have been recently providing video counseling in line with the "untact" era.

Counseling Room

Mental Health Campaign

Welfare Program

Believing that the company can grow only when employees and their families are happy, LOTTE Chemical operates a variety of welfare and benefits programs tailored for each stage in the life cycle of employees, creating a flexible and enjoyable workplace that brings out an individual's potential.

Organizational revitalization program

We promote various programs at each business site to raise employee morale and revitalize the organization. We could not hold any events in 2020 due to changes in the external environment due to COVID-19, but we will resume events like the LOTTE Family One Heart Contest, LOTTE Giants baseball watching, team-building activities for each team and business site, cultural events, E-sports events, and various one-day classes.

Life Cycle/Career-Developing Welfare System

Newly employed	Early days of employment (~10 years)	Mid days of employment (~20 years)	Late days of employment (20 years~)
	Self-development/career development-oriented welfare system		
		Family-friendly welfare system	
			Family-friendly/retirement-ready welfare system

Housing/living support
- Home financing
- Company housing/ single-person accommodation provided
- Private pension support
- Family and condolence support

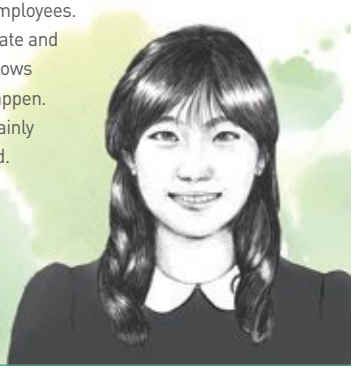
Parenting/educational support
- Childcare leave system
- In-house daycare center
- Support for school expenses
- Employee family events (experience activities)

Healthcare
- Comprehensive health checkups
- Regular health checkups
- Group accident insurance subscription
- Medical expenses support
- Support for infertility care (vacation and treatment expenses)

Self-development/ leisure activities
- Support for in-house social activities
- Language study expenses
- Condo/resort membership
- Welfare points
- Employee LOTTE Group affiliate card (W card)
- Refresh vacation system
- Sabbatical (executives, employees)
- Summer vacation

Stakeholder Interview

I believe that a flexible work environment and a system that supports work-life balance are essential for the company's sustainable growth as they help increase employee satisfaction and attract talented personnel. LOTTE Chemical actively operates a flexible working hours system, mandatory childcare leave system for female employees, and compulsory male childcare leave system to ensure work-family balance and retain female talent. In particular, the flexible working hours system allows employees to adjust their hours to suit the characteristics of the job and to reduce unnecessary overtime, thereby increasing productivity and satisfaction of employees.
As a working mom in a dual-income household, I fully appreciate and take advantage of the flexible working hours system, which allows me to take care of my sick child or when unexpected things happen. Promoting employee welfare based on their life cycle will certainly keep up the employees' morale and make them stay motivated.



LOTTE Chemical
Kim Da-mi Manager

Mutual Growth Management

Mutual Growth with Business Partners

Mutual Growth Implementation System

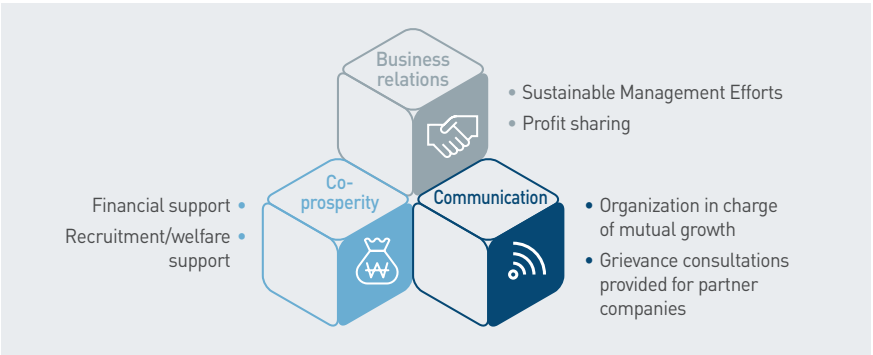
Partners of LOTTE Chemical

LOTTE Chemical operates numerous mutual growth programs with about 350 business partners of purchasing, sales, and research teams located nearby Yeosu, Ulsan, and Daesan job sites, in addition to the Seoul headquarters and Uiwang business site. As of the end of 2020, a total of 1,879 employees of partner companies were performing packaging, loading and unloading, facility maintenance, and factory and house management works at the business sites of LOTTE Chemical.

Mutual Growth Strategies

In order to promote mutual, shared growth and win-win partnerships, we are implementing various programs to strengthen business relations, facilitate shared growth, and improve communication. We maintain equitable trade relationships by complying with fair trade laws and standards, sharing profit, and expanding sustainable management. We promote mutual growth programs with our partners, providing financial support, recruitment / welfare support, etc. In addition, we have created an organization dedicated to reinforcing communication for mutual growth, which operates grievance consultation counters and focuses on fulfilling social responsibility and shared values for SMEs. As a result of these efforts, we received an excellent rating in the 2019 Shared Growth Index evaluation announced by the Korea Commission for Corporate Partnership. LOTTE Chemical will continue to develop long-term partnerships by supporting the creation of sound business structures of partners through various support programs.

[Promotion of Mutual Growth]



Mutual Growth Promotion Committee

LOTTE Chemical has been operating a Mutual Growth Promotion Committee since 2011 in order to systematically implement our strategies for mutual growth.

With the CEO as chairperson, the committee plans and implements systematic strategies for mutual growth while continuously monitoring key results and finding ways to make improvements.

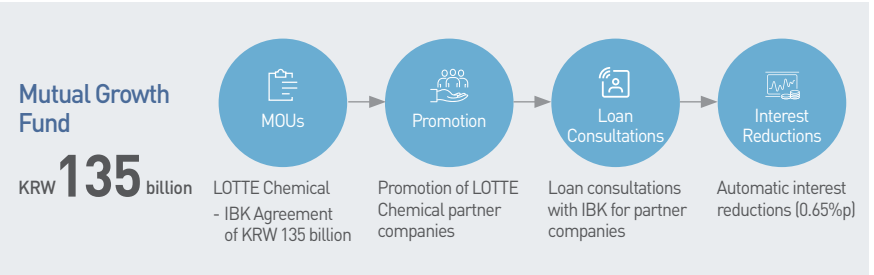
[Mutual Growth Promotion Committee Organizational Chart]

Mutual Growth Programs

Financial Support for Partner Companies

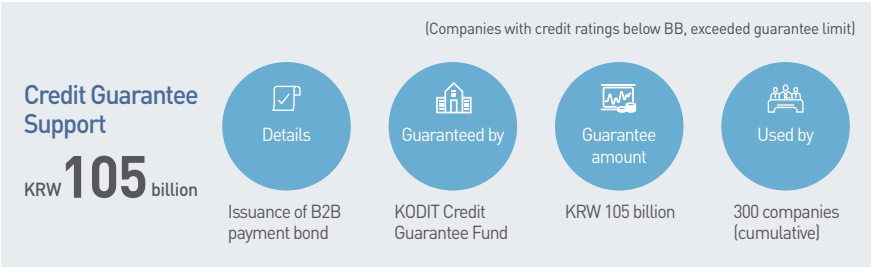
Mutual Growth Fund

For the economic support of business partners, we signed an agreement with IBK and contributed KRW 67.5 billion to create a mutual growth fund of KRW 135 billion. The raised funds are being used as loans to assist SME partners at rates lower than the market rate.



Credit Guarantee fund

To assist partner companies' financing, we have put funds to the Credit Guarantee Fund, guaranteeing KRW 105 billion in credit. We actively support the issue of bonds to SMEs whose credit limits are exceeded or are below a certain credit rating.



Technological support for partner companies

LOTTE Chemical and partner companies conduct joint research on various topics for product development and process improvement to strengthen the technological competitiveness of partners. Our research facilities provide material analysis of substances upon request by partners; we also dispatch research personnel to partner companies to help enhance the quality of their products. In 2020, a total of 3,889 analyses were requested, and 9,460 samples were analyzed for partners.

Welfare Benefits for Partner Companies

Naeil Chaeum Deduction System

We utilize the Naeil Chaeum Deduction System to help suppliers recruit employees and improve retention rates. We help improve the efficiency of partner companies' human resources management by subsidizing a portion of their contributions under the Naeil Chaeum Deduction System.

Vacation Fund for Workers

LOTTE Chemical subsidizes a portion of the partner company's share of the Vacation Fund for Workers promoted by the Korea Tourism Organization to improve the welfare of partner employees.

Safety Assessment

LOTTE Chemical strongly recommends acquisition of ISO 45001: Occupational Safety and Health Management System certification to improve the safety management level of partner companies. To this end, we dispatch third parties to the partner companies that wish to obtain the certification to evaluate the working environment, etc., and provide consultation to help improve the system.
In 2020, we provided guidelines to 14 partner companies to help them develop methods of implementation, procedures, and countermeasures when performing risk assessment on their own. In addition to the existing safety diagnosis, in 2021, we plan to offer fire risk consulting for partner companies through the Samsung Fire & Disaster Prevention Research Center and provide natural disaster risk diagnosis consulting for damages from floods, storms, and earthquakes.

Providing training to partner companies

We provide free online courses (Mutual Growth Academy) on management, foreign languages, and specific job functions to help enhance the competencies of partner companies' employees. We constantly provide on-site safety, environment, and health education to partner companies; a total of 1,832 employees of partner companies completed on-site safety training in 2020.

Communication with Partners

LOTTE Chemical holds an annual roundtable conference to discuss problems and improve the cooperative relationship through communication. In 2020, we conducted semi-annual visits to our business partners of each business site to listen to grievances, and promote win-win partnerships through communication.
We also hold briefing sessions twice a year, in which we explain LOTTE Chemical's mutual growth program and encourage active participation of partners. We share the contents of the mutual growth program via mail and email with partners who did not attend the briefing sessions.
LOTTE Chemical established a direct CEO reporting system through the CSV Team, which collects and responds to complaints from partner companies independently of the Purchasing Team and Compliance Team. The complaint-handling hotline and complaint-counseling email ensure confidentiality regarding the identity and contents of the informant, and are managed to prevent any disadvantages in accordance with the prohibition of retaliation guidelines.

Mutual Growth Report

Since the first issue of the Mutual Growth Report in 2020, LOTTE Chemical has been publishing the report annually to share our growth strategies, systems, and activities and to promote participation of partners in mutual growth programs. The Mutual Growth Report highlights financial, technical, and facility support for stable management of partners, in addition to our efforts to create social values through win-win partnerships and overseas expansion.

Mutual Growth Briefing Session

Mutual Growth Report

Sustainable Supply Chain

Responsible Supply Chain Management

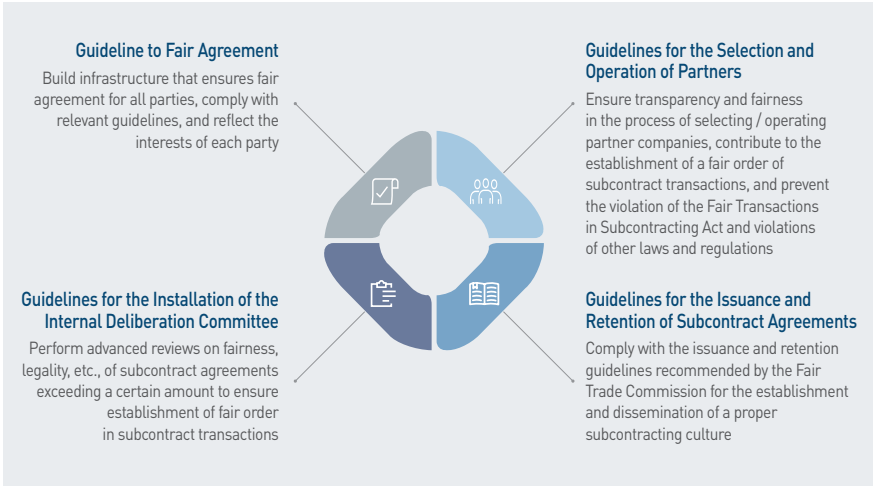
Fair Selection of Partners

LOTTE Chemical has introduced and complies with guidelines for fair selection of suppliers. LOTTE Chemical strives to enhance transparency and fairness in the selection and operation of partner companies and to contribute to the establishment of a fair order for subcontractor transactions. Accordingly, we have reflected criteria and procedures for selecting suppliers in the company regulations.

Fair Subcontractor Agreements

We have incorporated details of four guidelines for fair trade into our company regulations, among which are the guidelines for selecting and operating partner companies. Any company can apply to be registered as a partner company of LOTTE Chemical. An applicant is classified by the business area, and then a more comprehensive evaluation, including financial soundness, is conducted to determine the ultimate qualification for registration. The Purchasing Team registers qualified partner companies in the industry-specific vendor pool and extends invitation to bid accordingly. We clearly state and manage the reasons for canceling registration of partner companies so that no one is at a disadvantage due to an arbitrary decision made by the person in charge.

[Four Major Guidelines of Fair Trade]



Preventive Measures

LOTTE Chemical has established and operates a fair trade promotion department to prevent violation of laws in the company's internal decision-making and execution thereof. We operate a subcontracting transaction deliberation committee within the internal deliberation organization for fair trade. The internal deliberation committee consists of the deliberation chairperson, deliberation committee members, and secretary; the committee holds monthly meetings and reports results. In 2020, a total of 12 meetings were held by the committee, where legality and procedural aspects of large-scale contracts and business suspension of partners were reviewed. In addition, we introduced the guidelines to the issuance and retention of written documents, created and distributed standard contract forms for each of the frequently used contract types in the field, and managed the actual contracts accordingly. Through an electronic contract system linked to the electronic payment system, we are able to review the use of standard contract forms in advance and ensure compliance with internal regulations.

Follow-up Monitoring System

LOTTE Chemical performs regular inspections to prevent unfair trade practices. Through prescreening of electronic monitoring systems, we are able to detect and prevent unfair acts in advance. In addition, regular training is provided to employees of the headquarters and each business site in compliance with ISO 37001. LOTTE Chemical's internal fair trade regulation allows dismissal of employees who have been engaged in unfair trade behaviors. Separately, we have been operating an evaluation system that penalizes executives and departments that violated the Fair Trade Act since 2017.

Expanding Sustainable Management to the Supply Chain

LOTTE Chemical has been expanding Corporate Social Responsibility (CSR) activities to improve the sustainability of our partners. In cooperation with the Mutual Growth Committee, we have prepared guidelines that reflect global CSR indicators and domestic laws and regulations. By dispatching our experts to partner companies, we support improvement of the sustainability management level of 30 partner companies every year.

LOTTE Chemical Partner Sustainable Management Guidelines provide detailed action plans, reflecting global standards, domestic laws, and regulations in key CSR areas, including labor, human rights, environment, safety, ethics, fair trade, and management systems. In addition, the Korea Commission for Corporate Partnership issues CSR confirmation letters for our partners so they can prove their CSR performance level to overseas supply chains or other global companies.

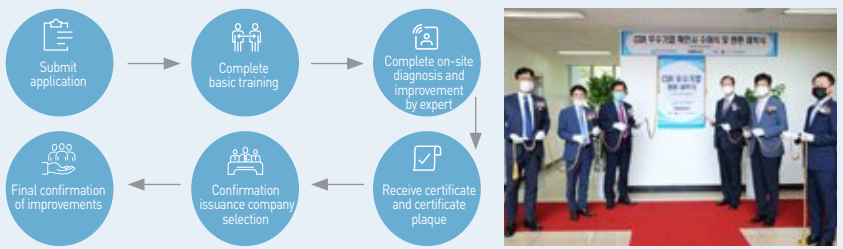
Best Practices

Awarded 'Excellent CSR Small and Medium Business Certificate' to partners with outstanding performance

LOTTE Chemical and Korea Commission for Corporate Partnership jointly launched the Small and Medium Business CSR Support Project in September 2019, under which we provided the CSR training and dispatched experts to the SME partners to help diagnose and coach on-site CSR activities for the duration of nine months. The Korea Commission for Corporate Partnership selected and awarded certificates to ten companies with excellent management systems among the participating LOTTE Chemical partners.

In key areas of CSR, we are striving to secure supply chain soundness and enhance sustainable competitiveness by developing management standards in line with global standards and detailed guidelines that reflect domestic laws and regulations.

Process of Issuing the Certificate of Excellent CSR Small and Medium Business



Stakeholder Interview

LOTTE Chemical is a representative chemical product manufacturer in Korea with a progressive and dynamic organizational culture. Recently, the ESG management has become a hot topic across all industries, drawing attention to not only environmental problems such as climate change and waste recycling, but also the problems that occur in a company's value chain.
As a large conglomerate, LOTTE Chemical must actively address supply chain sustainability issues like fair trade with partners and support for mutual growth. They are expected to consider the sustainability of partner companies for their own sustainability. Various efforts made by LOTTE Chemical, in this regard, have been enormously appreciated by its partners. I hope that LOTTE Chemical continues to build a stable supply chain and attain a virtuous cycle of growth with its SME partners.

WONLIM
Kim Jin-pil Managing Director

Community Participation

Promote Community Values

Social Contribution Strategies

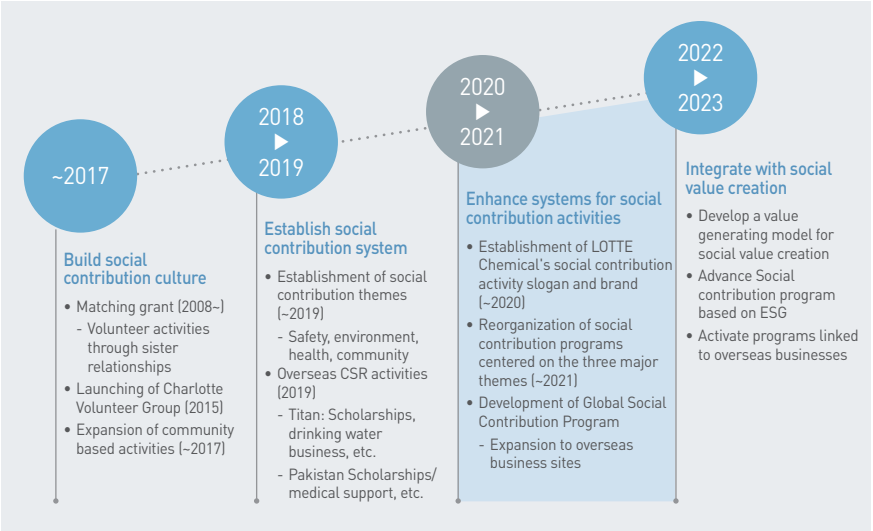
A corporation must endeavor to fulfill corporate social responsibility and pursue mutual growth with local communities. Understanding the importance of coexistence, LOTTE Chemical promotes social contribution activities not only in Korea, but also in overseas, and is striving to solve problems in local communities. Under the vision of "Green Circulation," LOTTE Chemical's social contribution activities focus on three areas: environment, people, and community. Through active social contributions at headquarters and at each domestic and overseas business site, we aim to grow together with local communities.

[CSR Vision and Theme]

Social Contribution Road Map

Since its founding, LOTTE Chemical has been promoting various social contribution activities to establish a social contribution culture. We have built a social contribution system around three major ideas in 2018 and have started conducting social contribution activities on these themes under the slogan of "Green Circulation" since 2020.

[Social Contribution Road Map]



Charlotte Volunteer Group

We have unified different volunteer groups operated by each business site into the Charlotte Volunteer Group in 2015 and have been encouraging voluntary participation of employees. The Charlotte Volunteer Group acts as a place for employees to gather and engage in a wide variety of activities, including CSR activities, and a channel for promoting an innovative labor management culture.

[Charlotte Volunteer Group Activities]

Category	Unit	2018	2019	2020
No. of participants	Persons	2,330	1,963	2,113
Participation hours	Hours	15,476	10,478	7,252
Average participation hours per person	Hours	6.64	5.34	3.43

Social Contribution Fund

LOTTE Chemical's social contribution fund consists of employee donations, matching grant, and company contribution. The Matching Grant is a system in which the company matches the full amount of employee donations. LOTTE Chemical's social contribution funds are being used in various CSR activities and charity events at each business site.

Best Practices

Creation of 365 Safety Village

In November 2020, LOTTE Chemical designated the Winter Village in Cheonggye-dong, Uiwang-si as a "365 Safety Village," as part of a joint project with the Uiwang Fire Station and Gyeonggi Social Welfare Community Fund.

365 Safety Village is a project to improve safety infrastructure through private, public, and corporate partnerships. The goal of the project is to establish a safe village by supplying firefighting vehicles, emergency supplies, and relief supplies, and to enhance the residents' ability to respond to emergency situations. We are installing emergency fire extinguishers, automatic external defibrillators (AEDs), etc., in areas highly susceptible to fire, far away from fire stations, and with a large population of elderly and disabled people. LOTTE Chemical donated KRW 10 million to install fire hoses and AEDs in Winter Village. In cooperation with Uiwang Fire Station, we will be conducting emergency response training and maintenance activities to create a safe village for all.

365 Safe Village Plaque


Installation of Fire Hose in 365 Safety Village

Community Participation Activities

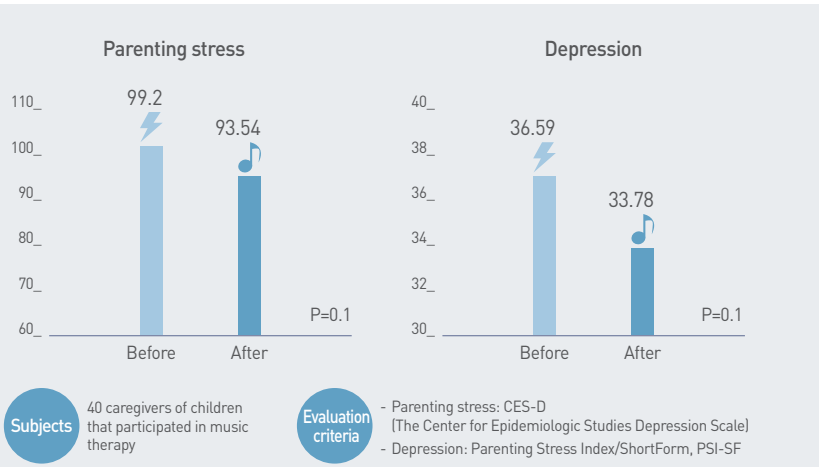
Social Contribution by Theme

People

Music Therapy at Bobath Children's Hospital (Rehabilitation)

Bobath Music therapy is a program through which LOTTE Chemical provides musical therapy to 3,345 children with incurable diseases and 40 caretakers. Through the program, children with disabilities receive physical and mental rehabilitation to recover health. In addition, the program helps reduce stress of parents and keep healthy family relationships.

[Psychological testing results of caregivers of children that participated in music therapy]



Source: Report on the results of music therapy with LOTTE Chemical

Comfortable residential environment for working mom

LOTTE Chemical participates in residential environment improvement projects for working moms of single-parent families in Yeosu. We carry out necessary house repair work such as replacement of wallpaper, window frames, and sink in old homes. The Working Mom & Children Healing Camp, which has been taking place since 2018, was substituted by a residential environment improvement project in 2020 due to COVID-19 to continue promoting work and family balance of working moms.

Supporting the Educational Independence Support

LOTTE Chemical's idea of social contribution includes consideration for the future. LOTTE Chemical is deeply interested in the younger generation and has been providing educational support with the goal of nurturing them as healthy and wise adults. LOTTE Chemical makes donations of science books worth KRW 9 million to local schools in the Daejeon area every year. We also provide scholarships and school uniform subsidies for students from socially underprivileged classes to help future talents grow and become independent as well-rounded in their abilities.

Donation of Humanities and science books

Dream Scholarship Award Ceremony

Best Practices

Daejeon R&D Center has been awarded by the Minister of Gender Equality and Family as an excellent partner for the "Out-of-School Youth Support Project"

Since 2016, LOTTE Chemical Daejeon R&D Center has been employing various CSR programs through scholarships, donation of humanities/science books, donation of lunch boxes for students taking the GED, etc. In recognition of these efforts, in December 2020, we were selected as an excellent supporter of the Out-of-School Youth Support Project by the Ministry of Gender Equality and Family.

The Out-of-School Youth Support Project is a government project that provides training, counseling, job search, mentoring, etc. to youths outside of school to help them return to school or become healthy members of the society.

Minister of Gender Equality and Family Award Ceremony

Environment

Waste-Sorting and Recycling Campaign, "Ddabunhaeng"

Plastic makes our lives more convenient. The plastic waste problem is clearly not being treated as a serious social issue, since the environmental pollution from plastic wastes has been rapidly intensifying in recent years. As part of our efforts to address the plastics problem not only in terms of reduction in usage but also in terms of recycling, LOTTE Chemical conducted a campaign for children called "Ddabunhaeng (literally translated as "Sort Plastic for Happiness)" to raise awareness of waste sorting and plastic recycling. We launched a website dedicated to the campaign, where participating children can post pictures of themselves recycling plastic waste and watch special online classes on waste sorting and recycling. In the 2020 DDabunhaeng campaign, a total of 226 children participated by uploading 496 pictures.

Environmental Clean-Up Activities

LOTTE Chemical participates in the "1-Company 1-River Clean-up" campaign. In particular, it contributes to the restoration of the ecosystem by throwing clay balls containing effective microbial groups (EM) into the river. We will also continue cleaning up beaches, parks, forests, etc. near our business sites.

DDabunhaeng Campaign Website

Children's science magazine introducing online plastic recycling class

Environmental Clean-Up: Throwing an EM clay ball

Environmental Clean-Up: Throwing an EM clay ball

Upcycled Beads Jump Rope

Upcycling means upgrading discarded objects and recreating them as new products. We made beaded jump rope for children from recycled plastic and donated the ropes to an elementary school in Yeosu. Our employees were actively involved in collecting waste plastic to make jump rope kits. This upcycled beads jump rope became a great source of workout for children whose physical activities were greatly limited due to the prolonged COVID-19.

Elementary school students doing jumping rope with the beads jump rope

Beads jump rope made by LOTTE Chemical employees

Local Community

Mutual Cooperation Fund for Rural Community

We selected three volunteer organizations in rural areas and donated goods and repair expenses. For the Seosan City Autonomous Crime Prevention Alliance, we purchased security equipment and repaired old, dysfunctional guard posts. For the Daesan-eup Medical Fire Department, our donations were used to purchase fire extinguishing equipment; for the Daesan Life Rescue Team, we funded purchase of search and rescue equipment to help prevent marine safety accidents.

Sponsoring Families from the KBS Documentary, "Companion"

"Companion" is a documentary show that has been aired on KBS since 2015. The objective of the show is to reinforce the social safety net by providing housing, furniture, and goods to the marginalized persons in the community. LOTTE Chemical, sharing this vision, has been sponsoring families that have been featured in the show and continues to support such people in our local communities.

KBS "Companion" Sponsorship Agreement Ceremony

Support for Economic Independence

LOTTE Chemical promotes a variety of social contribution activities in hopes of growing with local communities and to improve economic independence of the socially vulnerable. We send food trucks and share food every month with the elderly and the marginalized neighbors. We provide daily necessities to the elderly, refugees, and veteran families, and pay heating bills for multicultural households and the disabled. In addition, we provide 'Cool Box' care packages every year to 800 low-income households in preparation for the summer heatwave. We also repair homes of elderly people living alone and people with disabilities who have a hard time making a living.

To further contribute to resolving social problems and promote independence of facilities, we regularly donate operating expenses to a number of welfare centers, nursing homes, and nurseries. Our employees at each business site volunteer at those facilities to show support as well.

Cool Box Delivery


Employees packing Cool Box Package

Supporting Cultural Activities for Firefighters

We recognize the dedication of firefighters in protecting the safety of our employees in our business sites and the local residents of the neighborhood we are in. To show appreciation and respect for their hard work, LOTTE Chemical promotes various sponsorship activities. In 2020, we funded family trips for firefighters, including light meals. In place of the 2nd Firefighting Family Cultural Performance, which was temporarily postponed due to COVID-19 LOTTE Chemical BU held a cultural event to promote the cultural lives of firefighters and their families.


롯데 화학BU와 소방가족이
함께하는 "함께 가는 친구" 감사 이벤트

고맙습니다

"제2회 롯데 화학BU와 소방가족이 함께하는 크리스마스 오드리 동화 여행"
Thank You Card sent to families of firefighters

Case Study

Campaign to support education for the marginalized in Africa

LOTTE Chemical, together with the Heart-Heart Foundation, conducted a "Drawing Hope with Crayons" campaign to support the education of children in Africa. Through the campaign, we delivered crayons to children in Africa exposed to poor educational systems. Employees at LOTTE Chemical's headquarters, research centers, and plants collected crayons that were not being used at their homes, sorted the collected crayons by color, and sent the packaged crayons to children in Africa. The Heart-Heart Foundation made new sets of crayons from the collected crayons and delivered messages of support from LOTTE Chemical employees to an elementary school in Lindy, a rural village in southern Tanzania.


Delivery of crayons

Stakeholder Interview

Chemical companies in today's world are faced with environmental problems, such as responding to climate change and controlling plastic emissions, and social problems, which typically include industrial safety and toxic substance management. I think that the highest priority should be given to preemptively responding to safety accidents and fire accidents that can occur in domestic and overseas business sites and preventing them in advance. In particular, the discharge of harmful gases and chemicals generated in the workplace can cause fatal damages to the local community. It is best if these problems do not occur, but if they do occur, the difficulties experienced by the community should be considered with utmost importance, accompanied by proper posttreatment measures. LOTTE Chemical carries out various social contribution activities for the local community. I hope that LOTTE Chemical continues to promote community projects that can provide substantial help to the local communities.

Korean Society of Retired Fire Officers
Hong Jun-seong

GOVERNANCE

Governance Structure

Board of Directors

As of March 2021, LOTTE Chemical's Board of Directors consists of 11 members, six outside directors, four in-house directors, and one non-executive director. Executive directors are recommended by the BOD, and outside directors are recommended by the Outside Director Candidate Recommendation Committee after careful examination of the candidate's qualification based on the Diversity Principle. In order to be able to perform checks and balances on the management and to realize a sound corporate governance, the BOD consists of more than 50% outside directors. The BOD makes balanced decisions with the goal of improving transparency, expertise, independence, and diversity, as well as long-term corporate values, including stable business operation, the pursuit of happiness for all stakeholders, and strategic decision-making. In addition, to enhancing diversity, the Articles of Incorporation require equal representation of genders in the BOD. Hence, we have appointed female outside directors in 2015.

[Board of Directors]

(As of March 2021)

Category	Name	Gender	Area of Expertise	Position
In-house Director	Shin Dong-bin	Male	Overall business management	Current Chairman of LOTTE Group, CEO of LOTTE Chemical
	Kim Gyo-hyun	Male	Overall business management	Current Head of LOTTE Group Chemical BU, CEO of LOTTE Chemical
	Hwang Jin-koo	Male	Overall business management	Current Head of LOTTE Chemical Basic Chemicals, CEO of LOTTE Chemical
	Lee Young-jun	Male	Overall business management	Current Head of LOTTE Chemical Advanced Materials, CEO of LOTTE Chemical
Other Non-Executive Directors	Lee Hoon-ki	Male	General management	Current Head of Management Innovation Office, Vice President of LOTTE Holdings Co., Ltd.
Outside directors	Jeong Joong-weon	Male	Fair Trade	Current Advisor of Law Firm, Bae Kim & Lee LLC / Outside Director of Jin Air
	Choi Hyon-min	Male	Tax	Current Advisor of Jipyong LLC / Outside Director of Handsome Corp.
	Nam Hye-jung	Female	Accounting	Current Professor of Accounting, Dongguk University Business School / Current non-executive director of Korea Trade Insurance Corporation
	Jeon Woon-bae	Male	Labor/employment policies	Advisor of Law Firm, Deatons Lee
	Lee Geum-ro	Male	Legal	Current Representative Lawyer of Law Firm, Sol / Outside director of SBS Media Holdings Co., Ltd.
	Kang Jeong-won	Male	Industry/R&D	Current Professor, Department of Chemical and Biological Engineering, Korea University / Current President of Korea Association of Laborating Safty & Environment

Operation of BOD

The LOTTE Chemical Board of Directors is the highest decision-making body within the company. A total of 11 experts and directors discuss various issues and determine the company's mid- to long-term strategies. The board meeting is held once per month, in general, and for urgent matters, an ad hoc meeting is convened. In 2020, a total of 14 board meetings were held. In addition, four committees, including the Audit Committee, have been established within the BOD to reinforce expertise and efficiency in decision-making.

In order to increase independence, more than half of the committee members are outside directors. In particular, an outside director is appointed as the chairman of each committee to further ensure checks and balances on BOD.

In addition, they frequently report to the Board of Directors on major issues that may affect the company's sustainability in economic, social, and environmental aspects and direct their expertise into corporate policies.

[Operation of BOD]

Category		2018	2019	2020
No. of agenda		56	91	56
No. of BOD meetings		14	16	14
Attendance rate (%)	Excl. In-house Directors*	75	67	90
	Outside Directors	97	95	81**

* Non-executive directors are included in the attendance rate of inside directors

** The attendance rate shown here is the average for all directors who served during the period.
(Excluding the retired outside directors, the attendance rate of 6 current outside directors is 99% for 2020)

Independence and Diversity of the Board

LOTTE Chemical appoints directors based on their careers and expertise. The qualifications, background of appointment, and independence of directors are disclosed through public announcements or disclosures. The areas of expertise of our outside directors include industry, accounting, tax, labor management, law, and fair trade. With their expert knowledge in the respective fields, the outside directors help make rational decisions.

In addition, to enhance diversity and independence in the governance structure, female outside directors have been appointed since 2015 and restrictions on qualifications for the chairman position are removed completely. We have incorporated the clause related to separate election of audit committee members from amended Commercial Act in the Articles of Incorporation, and ensure independence of outside directors to reflect shareholders' interest in a balanced manner.

Board Expertise

LOTTE Chemical's Board of Directors is composed of experts in the fields closely related to the company's business areas. They have been nominated and appointed through a careful verification process in consideration of their contribution to promoting our mid-to-long-term business strategies. This means that all of the board members have a high level of understanding of our industry. To even further assist outside directors understand our company and business, we frequently invite them to the plants/laboratories and regularly share necessary information.

[Composition and Operation of Subcommittees within the BOD]

(As of May 2021)

Subcommittee	Main Role	Number of Members	Members	No. of Meetings in 2020
Outside Director Candidate Nomination Committee	Outside Director Candidate Verification and Nomination	Total 3	Lee Geum-ro (Chairman) Jeon Woon-bae, Hwang Jin-koo	1
Transparent Management Committee	Deliberation on internal transactions and private contracts over a certain amount; proposal of internal policies related to fair trade	Total 3	Jeong Joong-weon (Chairman) Lee Geum-ro, Nam Hye-jung	8
Audit Committee	Accounting and audit	Total 3	Choi Hyon-min (Chairman) Jeong Joong-weon, Nam Hye-jung	4
Compensation Committee	Deliberation of remuneration limit for executives (including registered directors) and proposal of remuneration policy	Total 3	Jeon Woon-bae (Chairman) Choi Hyon-min, Kang Jeong-won	4

Performance Evaluation and Compensation of the BOD

LOTTE Chemical conducts an independent evaluation of all outside directors and those whose terms are about to expire. The evaluation is based on the contribution to the BOD, internal and external influence, and expertise, and the result is used to determine reappointment.

The Compensation Committee within the BOD manages directors' remuneration limits and individual compensation through a transparent and fair process. The limit of remuneration for directors is determined by a resolution of the Compensation Committee, subject to approval of the general shareholders' meeting; an individual remuneration limit is set by reflecting the company's major values such as business performance and contribution to sustainable management and compliance management.

The remuneration amount for all outside directors is the same and is determined to be within the limit approved at the general shareholders' meeting. The Compensation Committee allows separate compensation for the Audit Committee considering its legal responsibilities, time, and effort performing tasks as members of the Audit Committee.

The remuneration limit for directors approved at the 2020 general meeting of shareholders was KRW 10,200 million; the total amount of remuneration paid to directors was KRW 5,635 million. Remuneration of each director and auditor over KRW 500 million is disclosed in the business report in accordance with relevant laws.

[Remuneration of BOD]

(As of December 2020 / Unit: persons, 1 million KRW)

Category	Number of members	Amount paid in total	Average per person
Registered Director (Excl. outside directors and members of the Audit Committee)	5	5,202	1,040
Outside Directors (Excl. members of the Audit Committee)	3	204	68
Members of the Audit Committee	3	229	76

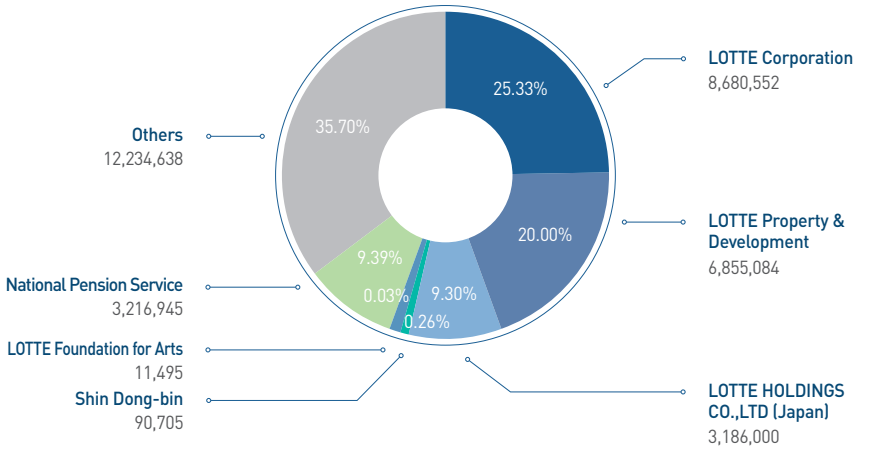
• Inc. directors and auditors who have retired during the 2020 fiscal year, in addition to directors and auditors who were in office as of the end of December 2020.

Transparent Disclosure

LOTTE Chemical strives to provide timely and accurate information to shareholders and stakeholders regarding the company's overall business activities. In order to guarantee the full exercise of rights of shareholders at the general meeting of shareholders, the convening is announced with sufficient information for a period that exceeds the statutory convening deadline. In addition, when the Board of Directors makes important management decisions or in the event of critical issues affecting investment decisions, we immediately inform the relevant parties. In accordance with the recent ESG demands of the financial market, we actively inform and communicate our business activities related to sustainability of the global environment, our contribution to the society and community, and our endeavors to protect the rights and interests of investors.

Shareholders (Share Ratio and Number of Shares)

(As of December 31, 2020)



Compliance

Compliance Management

Compliance Management System

LOTTE Chemical has established a compliance system under direct supervision of the CEO within the Legal & Compliance Division to manage overall compliance-related risks in business activities. To meet the global standards, we have established a mid/long-term vision, developed a standard model to promote the culture of compliance management in subsidiaries, and implemented action plans with a goal of establishing a compliance management culture trusted by stakeholders. The compliance system allowed LOTTE Chemical to amend the Compliance Management Charter, compliance management regulations, and regulations related to anti-corruption and fair trade, and to conduct regular online/offline training on compliance.
In addition, we conduct annual follow-up and renewal audits to maintain the anti-corruption management system certification (ISO 37001) acquired in 2019. Lastly, we analyze our current system to develop a global-level compliance model, which can be applied to all domestic subsidiaries and overseas business sites.

[Mid- to Long-Term Vision for Compliance]

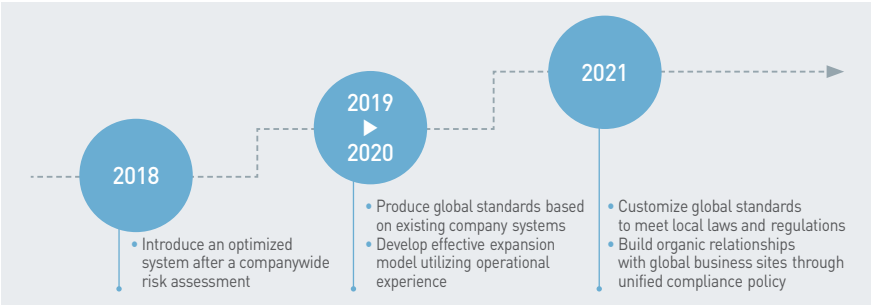
Develop a compliance system that meet global standards

AS-IS	TO-BE
• Operate electronic monitoring system • Create regulations and processes that meet global standards • Build know-how in system development and management	• Establish compliance chain that connects LOTTE Group, LOTTE Chemical and domestic/ overseas affiliates • Operate a compliance system of top-tier global company

[Compliance System]

Audit and recurrence prevention	• Investigate the violation and penalize those involved • Ensure anonymity of the reporting system
Managing internal regulations	• Establish and publish Compliance Management Charter and Compliance Management Regulations • Develop anti-corruption and fair trade-related regulations • Create handbooks, Do's & Don'ts and other checklists that employees can refer to and use in the field
Creation and operation of a specialized team	• Create and operate Compliance Team within the Legal & Compliance Division under direct supervision of CEO
Internal whistleblowing, monitoring and risk detection	• Operate internal reporting channel • Operate risk monitoring, response and processing through computerized monitoring system
Regular training and counseling	• Online and offline training • Provide compliance counseling on a regular basis
Internal accounting management	• Operate reliable internal accounting management system

[Compliance Action Plan]



Compliance Program

In order to raise awareness of compliance among employees, we conduct group training by job, topic, and business site, and online training for all employees. We publish a compliance newsletter and advertise it through the company intranet.

To respond to the tightening legal and social requirements and regulations on corporations, we are actively promoting activities of the Transparent Management Committee and reaching out to legal advisory groups to get extensive consulting on matters related to fair trade, anti-corruption, etc. We encourage the use of standard contract forms for every transaction and require standard anti-corruption clause to be included in the contracts. LOTTE Chemical is strengthening its response to evaluation indicators at home and abroad, and is striving not only to comply with global standards but also to meet the demands of corporate social responsibility.

Enhancing supply chain compliance

As our business areas and suppliers are expanding all around the globe, it is important to manage supply chain risks in a more systematic manner. LOTTE Chemical pursues sustainable business operations and seeks to fulfill its social responsibilities by identifying and monitoring risks and trends in domestic and overseas supply chains in advance. LOTTE Chemical has been enforcing the 'Code of Conduct for the Integrity of Suppliers' since the establishment in 2015. In order to ensure transparent and fair transactions with our partners, we have been reinforcing mandatory use of standard contracts and expanding the use of the Electronic Contract System (ECS) since 2019. We have extended compliance training to employees of partner companies and incorporated anti-corruption clauses in all contracts, including the revised standard subcontract and standard contracts in the electronic purchasing system.

Additionally, we have established an anti-corruption management system (ISO 37001 certification) in compliance with domestic and international anti-corruption laws, including the Anti-Graft Act. We plan to support companies in our supply chain to establish their own compliance systems and programs. In 2020, we started requiring certain partners to obtain compliance certificates before signing a contract, extending compliance management to our supply chain. In the future, in order to manage third party-related risks, we will be developing regulations and conducting due diligence on third-party agents prior to signing a contract.

Fair Trade Culture

Operating fair trade compliance program

LOTTE Chemical introduced the Fair Trade Voluntary Compliance Program in 2006, which presented clear standards for employees to prevent violations of the Fair Trade Act and encourage voluntary compliance thereof. We have distributed the Fair Trade Voluntary Compliance Manual to employees, and have been making frequent updates to reflect the changes in the relevant laws and regulations. In our internal standards for fair trade SOPs (regulations, checklists, Do's & Don'ts List, handbooks, guidelines, etc.), we present a clear code of conduct for each business situation. In addition, our electronic monitoring system helps monitor and ensure compliance in advance. Furthermore, we reinforce voluntary compliance with fair trade law by enforcing use of standard contracts for subcontract agreement in the chemical industry as recommended by the Fair Trade Commission. The Transparent Management Committee composed of outside directors reviews internal transactions in depth, and investigates possibility of breach or violation of regulations during subcontractor selection process, the appropriateness of detailed trading conditions, the reasons for concluding a contract, and the possibility of a direct contract with a nonaffiliated independent company for internal transactions. In addition, all processes related to fair trade and anti-corruption are subject to a preliminary review by the Compliance Team, and preliminary reviews and follow-up audits are conducted for major business units.

[Operation of fair trade compliance program]

Category	Main Tasks
2020	Establishment of subcontract transaction management tips and guidelines; standard subcontract update; inspection of subcontract transactions with domestic subsidiaries; compliance check when signing a purchase contract; subcontractor management training; investigation of the written condition of subcontract transactions; revision of Fair Trade Compliance Manual; Internal transaction risk diagnosis and guideline consulting
2019	Application of amendments to the standard contract for the subcontracting industry; standardization of unit price contract; preparing and distributing the compliance handbook; investigation on reality of using written subcontract document; incorporation of the anti-corruption clause in the standard contract and have the legal team review the contracts in the electronic purchasing system

Training on Fair Trade

LOTTE Chemical provides regular training on the details of the enacted/revised fair trade laws, the latest court decisions and precedents, and internal standard SOP to employees and executives of all business sites to remind them of the necessity and importance of voluntary compliance. The fair trade training is organized by the Compliance Team for various tasks and positions. Specific courses for expat employees, subcontractor managers, and sales personnel are also offered.

[Fair Trade Training Status]

(Unit: Sessions)

Category	2018	2019	2020
Employees	10	17	13
Partners	3	4	1

Compliance with Fair Trade in Partner Companies

Through meetings and training, we help enhance fair trade and transaction transparency of partners. We provide reinforced training on subcontracting laws for departments involved in making subcontract agreements with suppliers, and we investigate cases of unfair trade involving suppliers. We standardized contracts in 2018 and in 2019, we conducted compliance training for overseas subsidiaries. Our fair trade compliance standards for partners are being applied regardless of country or region. In 2020, we have gradually expanded the scope of fair trade and started checking the compliance status of domestic and foreign subsidiaries. For domestic subsidiaries, we provide compliance guidelines and investigated the status of subcontract transactions. If a partner company is found to be not complying with fair trade standards, we strongly recommend and even terminate the existing contractual relationship.

Partner Selection and Monitoring

When signing a purchasing agreement that exceeds a certain amount, LOTTE Chemical conducts self-inspection through a checklist, which includes items related to the reputation of the company in the industry, fair trade/anti-corruption, safety evaluation, and conflict of interest. For the partner company, we check the relevant items through the compliance certificate. Even after signing the contract, we regularly monitor and check for illegal acts during execution of the contract by a partner.

Channel for reporting unfair trade

LOTTE Chemical operates an online reporting channel, Shinmungo, on the company's ethical management website, through which employees can report any unfair or unreasonable conduct at any time.

Online Shinmungo

Compliance Letter

The CEO's Compliance Letter was sent to all employees and partners to show his determination to practice compliance management and to build a transparent business culture. The letter called for fair and transparent transactions between our employees and partner companies, and urged them not to exchange or request money, gifts, or entertainment from each other. LOTTE Chemical makes continuous efforts to establish a fair and transparent transaction culture as we announce our willingness to practice compliance management to all stakeholders, including shareholders, customers, business partners, competitors, local communities, and employees.

Compliance Letter

Stakeholder Interview

Recently, as governments and international organizations strengthen their demands for responsible investment and ESG from institutional investors, domestic and foreign pension funds and global asset management companies are requiring reinforced ESG management systems. Accordingly, global asset management companies prefer companies that have well established ESG diagnosis systems. As LOTTE Chemical conducts various overseas businesses, it seems necessary to develop an ESG system in connection with the existing compliance system. During the process of providing legal advice, I observed the willingness and commitment of LOTTE Chemical's employees for transparent and honest management. The nature of the chemical industry requires active response to potential risks. I think Lotte Chemical's faithful efforts to fulfill legal requirements can be regarded as top-tier in the industry.

Kim & Chang
Kang Han-chul Attorney

Ethical Management

Ethical Management Implementation System

LOTTE Chemical pursues sustainable development and common interest of the company through ethical management. To fulfill the corporate philosophy of creating a prosperous future for all, we share our achievements and values with customers, shareholders, partner companies, employees, nation and society.

LOTTE Chemical has organized a Management Improvement Team, which acts as the Ethics Secretariat, promoting internalization of ethical management mindset and supporting transparent, fair and rational work. The Management Improvement Team has also declared its Code of Ethics to internal and external stakeholders, establishing systems to provide detailed support for ethical management activities. LOTTE Chemical does not fund any political parties or persons; our anti-bribery and anti-corruption policy are clearly set out in the Code of Ethics and Code of Conduct. More details on this matter are provided on the Ethical Management website (http://ethics.lottechem.com).

[Values Pursued by Ethical Management]

Ethical Management System

We have established an ethical management system that monitors and shares the culture of ethical management with all employees. The Code of Ethics is disclosed on LOTTE Chemical Ethical Management website (http://ethics.lottechem.com) for internal and external stakeholders. In addition, we operate a channel through which internal and external stakeholders can report unethical practices.

Ethics Management Website

Diagnose and Improve Ethical Management

Ethical management is not a matter of choice, but rather an obligation that must be fulfilled by all employees of LOTTE Group. LOTTE Group has established the Code of Conduct, which clearly explains the direction of ethical management, and the Code of Ethics, which provides supplementary guidelines. LOTTE Chemical monitors employees and makes sure that they do their due diligence and comply with the specifics provided in the guidelines to improve its business process. In addition, through regular self-evaluation, we learn about our current status of ethical management and what needs to be done to make improvements.

Self-Evaluation of Ethical Management

Internalization of Ethical Management Culture

Training on Ethical Management

LOTTE Chemical conducts regular training on ethical management through a variety of methods, including online and group training for internalization of the ethical management culture in employees. We customize contents by position and topic to further ensure the effectiveness of our program. The necessity of ethical management, how to use the reporting site, etc., are included as essential topics of ethical training, emphasizing the importance of ethical mindset for executives and employees. In particular, in 2020, our Compliance Team conducted group training on ethics and compliance to improve employees' awareness on compliance and ethical management and better prevent risks.

[Ethical Management Training Status]

Category		Unit	2018	2019	2020
Group Training (Employees)	No. of training courses	EA	5	1	4
	Total hours of training	Hours	15	2	11
	Actual number of persons that completed the training / Total number of people to take the course (%)	Persons (%)	394/403(97.8)	65/65(100)	147/188(78.2)
Group Training (Partners)	No. of training courses	EA	1	1	1
	Total hours of training	Hours	4	4	2.5
	Actual number of persons that completed the training / Total number of people to take the course (%)	Persons (%)	111/111(100)	136/136(100)	29/29(100)
Online Training	No. of training courses	EA	52	52	52
	Total hours of training	Hours	3	3	3
	Actual number of persons that completed the training / Total number of people to take the course (%)	Persons (%)	2,843/2,994 (95.0)	2,957/3,090(95.7)	3,968/4,349(91.2)

• Suspension of the Ethical Management Education for the BOD due to COVID-19

Unethical Practices Reporting Channel_Informant Protection

We operate various online and offline channels, including mail, landline, and e-mail, so that stakeholders can easily consult and report unethical conduct. In particular, we receive reports on violations and items of improvement from internal and external stakeholders through "Shinmungo," an online page on the ethical management website. We protect the informants' identities on the online Shinmungo website and protect them from any disadvantages or unfair treatment due to reporting.

[Reported Cases of Unethical Conduct and Resolutions]

Category	Unit	2018	2019	2020
Reports received	Cases	14	13	20
Reports resolved		14	13	20
Measures and disciplinary action for unethical conducts		1	1	2

Information Security

Information Security Management System

LOTTE Chemical is committed to the protection of trade secrets, including the company's core technologies and business strategies. In order to comply with recommended standards, we have acquired the standard information security management system (ISO 27001) established by the International Organization for Standardization (ISO) in 2015, and have certified the Advanced Materials division when we renewed the certification in 2020.

LOTTE Chemical's information protection policy covers all areas of security management, including management of physical security and technology, the basic security principles, and specific methods of compliance for each area. We update the policy once per year in consideration of the enactment and revision of related domestic and foreign laws and the business environment.


Certificate of Approval
LOTTE CHEMICAL CORPORATION

ISO 27001 Certification

LOTTE Chemical conducts LOTTE Group's information protection diagnosis once per year to prevent security accidents and improve the quality of security management. The diagnosis allows us to identify vulnerabilities and find ways to make improvements. We appoint information protection managers for domestic research institutes / plants, overseas corporations, and subsidiaries to conduct regular promotional activities for the council. The council operates a centralized information protection management system through the implementation of information protection strategies and joint response in the event of an emergency.

Information Security System

LOTTE Chemical has established a monitoring system that enables real-time detection and timely response to external attacks and viruses in collaboration with LOTTE Group's Cyber Security Control Center. We use vaccines, document encryption, media control, network access control, and server access control to protect information assets. In response to the recent increase in security threats at the production sites, we are expanding use of vaccines for production and laboratory equipment, sealing the production PC USB ports, and installing firewalls in the workplace. In addition, the Information Security evaluates the importance of internal systems annually and performs mock hacking and system security checks to identify and improve vulnerabilities for major systems.

[Personal Information Leakage]

Category	Unit	2018	2019	2020
Number of leakage cases	Cases	0	0	0

Information Security and Cyber Security Policies

LOTTE Chemical has developed an internal management plan to protect personal information of employees and customers.

The plan reflects encryption and disposal of personal information, as well as the recently strengthened standards for ensuring security of personal information. LOTTE Chemical's personal information manager is required to complete personal information protection training once per year.

In addition, we conduct annual inspections to ensure that personal information of customers managed by a third party is safely managed and protected at the level of our own.

Information Security Education and Training

LOTTE Chemical offers annual information protection training to raise awareness among employees and stakeholders. In 2020, the curriculum included security rules related to remote working to reflect the changed, non-face-to-face working environment. Every other month, we publish an information protection newsletter containing the company's activities and external security issues.

As the number of cyber attacks via malicious emails has increased recently, we are conducting special training for those who have fallen victims of the malware infection through quarterly e-mail simulations. In addition, to prevent trade fraud accidents involving our business partners, we send official letters requesting resetting of our account information in their systems once every six months.


정보보호
NEWS Letter

Information Security Newsletter

[Information Security Training Status]

Category		Unit	2018	2019	2020
Employees	Hours of training	Hours	1	1	1
	Persons who completed the training	Persons	2,177	2,099	4,544
External parties / partner companies	Hours of training	Hours	1	1	1.4
	Persons who completed the training	Persons	50	50	62

APPENDIX

Targets and Achievements

Environment

[Achievements in 2020]

Category	Key Issues	Targets for 2020	Achievement Index	Target Date	Achievement	Achievement Status ●◐○
Response to Climate Change	Responding actively to regulations on emissions trading scheme	Securing carbon credits	Secured additional emission credits from the previous year (additional allocation)	~2020	Reduced emissions by 750,000 tons compared to quota (21% decrease from the previous year)	●
Environment Management	Active operation of resource circulation management system	Response to resource recycling target management system	Establish and implement internal resource circulation goals	~2020	Established and implemented internal resource circulation goals (2% more than the legal standard)	●
Chemical Substances	Response to international regulations on management of chemical substances	Submit overseas REACH reports in advance (Turkey, Russia)	Complete submission of overseas REACH reports (Turkey, Russia)	~2020	Pre-registration of 60 substances in Russia and 91 substances in Turkey	●
	Response to domestic regulations on management of chemical substances	Substance registration in accordance with the Act on Registration and Evaluation of Chemical Substances	Completed for 50% of substances	~2021	Completed consortium membership for 50 substances	●
Sustainability Management	Establish lifecycle management systems	Expand life-cycle management products	Carry out life-cycle assessments (LCA) for at least two products	~2020	2 types of environmental labeling certification acquired for BIO PET, R-PC products	●

[Targets for 2021]

Category	Key Issues	Targets for 2021	Achievement Index	Target Date
Climate Change	Carbon Neutral Growth	Reduce carbon emission by 2% compared to 2021 quota	Reduce carbon emission by 2% more than the allocated quota	~ 2021
Environment Management	Create green ecosystem	Establish a plan to reduce incineration/landfill waste, air pollutant emissions, and wastewater emissions by 50% compared to 2019 by 2030	Complete establishment of waste reduction plan for each process	~ 2021
Chemical Substances	Reduce hazardous substances emissions	Upgrade hazardous substance emission measurement system	Establish an efficient measurement system and apply it to all business sites	~ 1st half of 2021: System establishment
				~ 2nd half of 2021: Measurement once a month
	Substance registration in accordance with the Act on Registration and Evaluation of Chemical Substances	Complete registration of 50 manufactured/imported substances	Substance registration rate	~ 2021
Environmental Investment	Implementation of continuous environmental energy investment	Invest KRW 120 billion	Investment fulfillment rate	~ 2021

Safety and Health

[Achievements in 2020]

Category	Key Issues	Targets for 2020	Achievement Index	Target Date	Performance by Target	Achievement Status ●◐○
Internalization of safety culture	Safety awareness/safety behavior/rediagnosis of company-wide safety system	Establish 2nd phase roadmap	Advanced level (maturity stage): 57~77 points	~2020	Re-diagnosis result: maturity stage (60 points)	●
Upgrade management system	Convert all business sites from OHSAS-18001 to ISO 45001	Acquire ISO 45001 certification for all business sites	100% acquisition of ISO 45001	~2020	Acquire ISO 45001 certification for all business sites	●

[Targets for 2021]

Category	Key Issues	Targets for 2021	Achievement Index	Target Date
Promote safety innovation tasks	Strengthening organization and internal capabilities; system improvement; expansion of safety investment	Execution, planning and support of key tasks for safety innovation	Completion of safety innovation tasks (more than 9 out of 25 tasks over 3 years)	~2023
Response to the Serious Accidents Act/ Occupational Safety and Health Act	Strengthen government/regulations	Strengthen safety management	Derive / implement tasks (institutional improvement, regulation enactment/ amendment, etc.)	~2023
Promote ESG safety action items	Safety business model considering corporate sustainability	Discover tasks, sign mutual business agreements, and promote tasks	Implementation of safety management through collaboration with external organizations	~2023

Targets and Achievements

Employees

[Achievements in 2020]

Category	Key Issues	Targets for 2020	Achievement Index	Target Date	Achievements	Achievement Status ●◐○
HR Management	Improving HR policy	Improve evaluation system	Adopt absolute/regular/multifaceted appraisals	~2020	1. Introduced absolute evaluation factors 2. Established regular performance evaluation system: Feedback/coaching on performance between team members and department heads throughout the year 3. Introduced 360 review: In addition to the existing topdown evaluation, introduce peer evaluation and subordinate evaluation for promotion	●
		Establish strategies to improve position/wage system	1. Improve rank system 2. Develop a system that links role, performance, and compensation	~2020	1. Improved the rank system: Review introduction of role oriented rank system; advanced consultation and discussion on S Grade integration 2. Developed a compensation system based on performance, avoiding other factors such as promotion and seniority	◐
	Setting up and upgrading systems	Set up advanced HR system	1. Establish post-HR consulting task force and advanced HR system 2. Establish integrated HR management system (based on AI and big data)	~2020	1. Initiated development of post-HR consulting task force and advanced HR system 2. Initiated development of HR management system	◐
	Supporting the strengthening of R&D	Support strengthening of research capabilities	Establish research performance and reward levels	~2020	1. Derived measures to strengthen R&D capabilities - Conducted interviews and surveys to hear internal opinions - Introduced reward system and reviewed other reinforcement measures	◐
Respect for Human Rights	Promoting creative labor-management culture	Promote a trusting labor-management culture	Restore mutual trust between labor and management and establish mutually understanding in labor-management relations	~2022	1. Dispute-free wage negotiations: All three labor unions delegated wage negotiations to the company to support company in times of difficult business situations	●
Employee-Friendly Organizational Culture	Implementing GWP	Provide psychological counseling for staff	Actually implement psychological counseling for staff	~2020	1. Created counseling rooms; conducted face-to-face/nonface- to-face (phone, video) counseling for employees	●
	Innovating workplace culture	Implement Smart Work	Establish and implement plans for Smart Work	~2020	1. Encouraged working from home to promote workplace culture innovation 2. Promoted activities encourage vacation use - Encouraged vacation use through introduction of group vacation day and recommended vacation day - Announced annual holiday calendar in advance to allow employees to manage vacation schedule on their own 3. Promoted self-directed work system through introduction of flexible working hours system and selective working hours system	●
	Continuing to improve corporate culture	Formally inaugurate Corporate Culture Improvement Committee	1. Establishment of organizational culture aligned with company's vision 2. Promoted measures to increase work efficiency and enhance business performance 3. Pursue work method innovation by pursuing DWP	~2020	1. Established the Corporate Culture Committee - Proposed, deliberated, and promoted agenda related to corporate culture improvement 2. Created Winning Rules to develop a winning culture 3. Organized HR Innovation TF Team: Work efficiency improvement through DT and HR system improvement	●
Talent Development	Strengthening capabilities of key leaders and global competency	1. Strengthen capabilities of key persons and new team leaders 2. Establish a training system for new and returning expat employees	1. Establish platform to develop core female talent 2. Establish platform to develop core female talent 3. Propose guidelines for developing local core talent at overseas offices 4. Establish onboarding and relocation processes for expat employees	~2021	1. Established a platform for core female talent development (1~3 phases) 2. Offered mentoring as first stage and coaching as second stage of core female talent development program 3. Conducted the new team leader course 4. Conducted joint training for prospective expat employees of oil/petrochemical companies	◐
	Strengthening job competency	Enhance understanding and competency of production staff	1. Develop production expert facilitators 2. Plan and operate programs to transfer work knowledge	~2021	1. Designed a course on production process technology	◐
	Enhancing integrated synergy	Plan and operate training that integrates petrochemical companies	1. Integrate systems and values; plan and operate vision-sharing program 2. Plan and operate a program about the differences between organizational cultures	~2020	1. Started integrated new employee training course 2. Started integrated manager training course 3. Introduced integrated HR Forum	●

Targets and Achievements

Employees

[Targets for 2021]

Category	Key Issues	Targets for 2021	Achievement Index	Target Date
HR Management	Improving HR policy	Establish career development program	1. Establish a program and system to promote individual career development	~2021
		New evaluation system/ early stabilization of system	1. Develop a new evaluation system /early stabilization of system 2. Monitor by analyzing and auditing evaluation data and survey results 3. Establish a coaching/feedback-oriented, nurturing evaluation system through development of evaluator training	~2021
	Setting up and upgrading systems	1. Grand opening of integrated HR management system 2. Stabilize the new system to increase work efficiency	1. Introduce integrated HR management system 2. Increase work efficiency through the new HR management system	~2021
Respect for Human Rights	Promoting creative labor-management culture	1 . Promote expansion of trust-based labor-management culture	1. Restore mutual trust and understanding in labor-management relations	~2021
Employee-Friendly Organizational Culture	Improve organizational culture	1. Employee counseling program 2. Organizational culture promotion activities	1. Expand employee counseling program 2. Implement organizational culture activities in consideration of internal/external conditions	~2021
	Innovating workplace culture	1. Implement Smart Work	1. Expand Smart Work culture 2. Draw conclusion from the HR Innovation TF; improve system; launch new system	~2021
	Continuing to improve corporate culture	1. Operate Organizational Culture TFT 2 Implement activities to improve the value creation culture evaluation result	1. Expand communication channels 2. Promote activities to build employee consensus	~2021
Talent Development	Strengthening capabilities of key leaders and global competency	1. Establish key leadership development system 2. Establish new team leader development system 3. Reinforce training of expat employees	1. Implement key leadership development program in three stages 2. Implement new team leader course 3. Develop curriculum for new/ returning expat employees	~2021
	Strengthening job competency	1. Enhance understanding and competency of production staff	1. Plan and operate programs to transfer work knowledge 2. Train in-house instructors for production job training	~2022

Customer

[Achievements in 2020]

Category	Key Issues	Targets for 2020	Achievement Index	Target Date	Achievement	Achievement Status ● ◐ ○
Customer Communication	Customer Satisfaction Survey	Periodic monitoring of customer satisfaction rate	Periodic monitoring of customer satisfaction rate	~2020	Continued execution, feedback on improvements to quality	●
	Award events for the most outstanding customers	Continued communication through invitational events for customers	Continued implementation	~2020	Implement close customer service, Identify and reflect customer needs and items of improvements	●
	'Green communication' events for customers in each region	Communication activities for customers in each region	Continued implementation	~2020		●

[Targets for 2021]

Category	Key Issues	Targets for 2021	Achievement Index	Target Date
Customer Communication	Customer Satisfaction Surveys	Periodic monitoring of customer satisfaction rate	Continued execution, feedback on quality improvements	~2021
	Award events for the most outstanding customers	Continued communication through invitational events for customers	Continued implementation	~2021
	'Green communication' events for customers in each region	Communication activities for customers in each region	Continued implementation	~2021

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Summary of Consolidated Financial Statement

(Unit: KRW)

Category	2018	2019	2020
Assets			
I. Current assets	8,143,917,538,954	7,220,858,878,213	6,876,462,666,084
1. Cash and cash equivalents	1,329,974,466,103	1,351,954,868,848	1,522,332,787,708
2. Short-term financial instruments	3,306,356,089,721	1,606,579,519,102	1,549,763,760,642
3. Financial assets at fair value through profit or loss	61228839825	843,603,427,108	665,000,000,000
4. Financial assets at fair value through other comprehensive income	4,544,530,000	34,810,000	-
5. Accounts receivables and other receivables	1,536,464,504,902	1,512,052,951,782	1,416,877,789,764
6. Inventories	1,777,344,107,136	1,679,720,619,364	1,557,128,565,647
7. Financial lease receivables	138,598,084	138,598,084	138,598,084
8. Current income tax assets	23,703,051,222	45,549,391,256	13,063,507,105
9. Other current assets	31,091,183,088	26,655,588,650	11,879,740,419
10. Other current financial assets	73,072,168,873	94,932,222,007	124,882,062,167
11. Non-current assets held for sale	-	59,636,882,012	15,395,854,548
II. Non-current assets	12,655,221,294,150	12,822,246,278,915	12,510,083,328,546
1. Long-term financial instruments	67,512,500,000	67,512,500,000	67,508,500,000
2. Financial assets at fair value through profit or loss	10,477,026,362	2,681,475,011	7,744,843,856
3. Financial assets at fair value through other comprehensive income	105,494,703,734	52,528,464,045	174,936,906,650
4. Financial lease receivables	2,761,874,442	2,634,857,432	2,507,304,055
5. Investments in associates	1,610,446,273,728	2,036,156,543,768	2,105,417,519,313
6. Investments in joint ventures	990,502,713,594	1,025,578,345,526	1,047,059,948,347
7. Tangible assets	8,036,093,695,375	7,505,115,476,923	7,173,147,285,901
8. Right-of-use assets	-	282,945,728,094	295,823,889,613
9. Investments in real estate	112,015,364,493	50,738,229,837	50,353,682,471
10. Goodwill	723,796,856,918	672,123,719,852	661,431,350,327
11. Other intangible assets	929,231,047,968	1,052,988,414,792	811,516,130,619
12. Other current financial assets	21,961,882,770	21,100,868,512	35,629,151,103
13. Other non-current assets	12,351,445,832	9,308,643,780	62,723,811,532
14. Deferred income tax assets	32,575,908,934	40,833,011,343	14,283,004,759
Total Assets	20,799,138,833,104	20,043,105,157,128	19,386,545,994,630

Category	2018	2019	2020
liabilities			
I. Current liabilities	3,961,420,261,244	2,740,030,326,653	2,867,690,834,694
1. Purchase payables and other payables	1,102,408,993,149	1,213,444,206,257	1,083,672,921,953
2. Financial liabilities at fair value through profit or loss	223,020,520	4,380,487,916	7,693,798,485
3. Loans payable and corporate bonds	2,185,774,111,188	1,179,502,553,224	1,241,666,602,631
4. Current lease liabilities	-	25,028,253,981	23,587,366,770
5. Current income tax liabilities	369,321,658,376	30,713,058,241	60,629,666,015
6. Other financial liabilities	126,034,288,844	86,904,570,086	67,512,492,996
7. Other current liabilities	168,474,654,674	176,048,308,768	375,319,715,469
8. Provisions	9,183,534,493	24,008,888,180	7,608,270,375
II. Non-current liabilities	3,293,391,331,347	3,249,944,438,951	2,806,499,865,992
1. Financial liabilities at fair value through profit or loss	43,310,577,157	10,148,669,271	20,184,480,256
2. Loans payable and corporate bonds	2,600,624,849,061	2,322,906,756,552	2,007,847,677,933
3. Non-current lease liabilities	-	104,133,223,144	100,513,796,560
4. Net defined benefit liabilities	34,038,128,999	10,226,148,343	2,761,025,943
5. Deferred income tax liabilities	512,169,390,749	628,580,123,669	525,823,372,761
6. Other financial liabilities	13,765,745,922	66,661,432,127	22,224,696,827
7. Other non-current liabilities	14,162,651,831	11,676,587,844	32,512,140,728
8. Provisions	75,319,987,628	95,611,498,001	94,632,674,984
Total Liabilities	7,254,811,592,591	5,989,974,765,604	5,674,190,700,686
Equity			
I. Equity attributable to the owner of the parent	12,734,717,751,049	13,204,399,243,017	12,846,515,982,933
1. Capital share	171,377,095,000	171,377,095,000	171,377,095,000
2. Other paid-in capital	880,861,285,570	880,837,946,542	880,490,834,932
3. Retained earnings	11,784,662,256,446	12,158,354,451,643	12,076,919,914,542
4. Other components of equity	-102,182,885,967	-6,170,250,168	-282,271,861,541
II. Non-controlling interests	809,609,489,464	848,731,148,507	865,839,311,011
Total Equity	13,544,327,240,513	14,053,130,391,524	13,712,355,293,944
Total Equity and Liabilities	20,799,138,833,104	20,043,105,157,128	19,386,545,994,630

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Summary of Consolidated Statement of Comprehensive Income

(Unit: KRW)

Category	2018	2019	2020
Ⅰ. Sales	16,073,061,465,123	15,123,477,947,655	12,223,031,551,258
Ⅱ. Cost of sales	13,368,922,712,367	13,208,748,237,908	11,069,734,022,497
Ⅲ. Gross profit	2,704,138,752,756	1,914,729,709,747	1,153,297,528,761
Selling and administrative expenses	757,961,371,256	807,470,800,524	796,386,247,615
Ⅳ. Operating income (loss)	1,946,177,381,500	1,107,258,909,223	356,911,281,146
Financial income	184,348,488,102	178,096,327,674	188,941,331,053
Financial costs	189,387,947,129	237,353,470,829	261,818,494,644
Valuation losses and gains using equity method	202,316,945,067	184,901,952,786	68,051,078,050
Other non-operating incomes	277,791,521,332	352,712,288,568	211,534,907,721
Other non-operating expenses	212,746,274,036	337,061,163,039	316,873,645,628
Ⅴ. Net income before income tax	2,208,500,114,836	1,248,554,844,383	246,746,457,698
Income tax expense	608,677,598,112	389,970,380,485	71,398,309,362
Ⅵ. Consolidated net income from continuing operations	1,599,822,516,724	858,584,463,898	175,348,148,336
Ⅶ. Consolidated net income (loss) from discontinued operations KRW (loss)	42,111,621,112	-101,918,470,012	-
Ⅷ. Profit for the year	1,641,934,137,836	756,665,993,886	175,348,148,336
Ⅸ. Other comprehensive income	107,719,724,682	148,864,875,233	-343,653,782,521
1. Items that will not be reclassified subsequent to income	-12,142,722,394	28,727,317,041	-48,677,220,979
Re-measurements of defined benefit plans	-20,424,474,469	-10,795,103,565	8,790,779,554
Other comprehensive income -valuation gain/loss of financial assets at fair value	758,177,215	-1,529,917,133	-14,652,076,176
Retained earnings using the equity method	-20,863,647,286	39,765,848,624	5,967,587,788
Overseas business translation gain/loss	27,939,229,487	28,752,844,580	-57,426,135,166
Changes in capital variation using the equity method	-14,712,032,490	-23,015,732,472	8,241,611,907
Tax effects	15,160,025,149	-4,450,622,993	401,011,114
2. Items that will be reclassified subsequent to income	119,862,447,076	120,137,558,192	-294,976,561,542
Valuation loss (gain) of derivatives	-129,744,253	47,322,074	-2,249,362,639
Overseas business translation gain/loss	105,640,140,601	104,344,567,411	-257,395,025,744
Changes in capital variation of equity method	14,316,371,058	15,758,682,278	-40,765,681,813
Tax effects	35,679,670	-13,013,571	5,433,508,654
Ⅹ. Total comprehensive gain/loss	1,749,653,862,518	905,530,869,119	-168,305,634,185

Category	2018	2019	2020
Net income(loss) attributable to			
Owner of the parent	1,579,194,571,925	714,978,059,663	158,468,912,016
Current net income from continuing operations	1,537,082,950,813	816,896,529,675	158,468,912,016
Income (loss) from discontinued operations	42,111,621,112	-101,918,470,012	-
Non-controlling interests	62,739,565,911	41,687,934,223	16,879,236,320
Current net income from continuing operations	62,739,565,911	41,687,934,223	16,879,236,320
Comprehensive income attributable to :			
Comprehensive income attributable to the owner of the parent	1,658,916,975,700	835,101,554,081	-127,890,841,174
Comprehensive income attributable to non-controlling interest	90,736,886,818	70,429,315,038	-40,414,793,011
Earnings per share			
Basic and diluted income per share	46,074	20,860	4,623
Basic and diluted income per share from continuing operations	44,845	23,833	4,623
Basic and diluted income per share from discontinued operations	1,229	-2,973	-

Economy

[Economic Value Distribution]

(Unit: KRW 1billion)

Category		2020
Shareholders and investors	Dividend*	1,234
	Interest	1,077
Government	Corporate tax	714
Employees	Wage	4,554
	Retirement pay	487
	Employee benefits	958
Local communities and NGO	Social contribution activity expenses**	88
Partners	Raw material cost	98,000

* Dividends are based on separate financial statements.
** Social contribution activity expenses: Including donations, CSR/CSV activity expenses, etc.

[Credit Rating (Corporate Bond)]

(Unit: level)

Category	2018	2019	2020
Korea Investors Service	AA+	AA+	AA+
Korea Ratings Corporation	AA+	AA+	AA+
National Information & Credit Evaluation (NICE)	AA+	AA+	AA+

[Sales of domestic and overseas business sites]

(Unit: KRW 1 trillion)

Category	2018	2019	2020
Sales of domestic business sites	11.8	10.6	8.4
Sales of overseas business sites	4.8	4.5	3.8
Total	16.5	15.1	12.2

ESG DATA

Tax Policy

Global Trends Related to Profit Shifting

As the OECD international transactions increase, so are the fraudulent acts of reducing tax burdens by artificially shifting the profit to another country with lower tax rates and using transactions with particular parties, regardless of the risk or actual location of the business transaction. To address the issue, we published a BEPS (Base Erosion and Profit Shifting) Action Plan Report that contains regulatory measures related to corporate tax strategies. The Action Plan 13 (Review of Profit Shifting Documentation Regulations), in particular, requires taxpayers to disclose extensive information. With the enactment of the regulation in 2016 in Korea, it started having a binding effect on domestic taxpayers.

Response to the Profit Shifting

In order to respond to regulations required by the BEPS Action Plan 13 and related domestic tax laws, LOTTE Chemical has published the 1) Master File, 2) Local File, and 3) Country by Country Report for annual submission to the National Tax Service.

LOTTE Chemical thoroughly analyzes new physical and non-material transactions every year and adjusts the shifting price to be within the normal price range. In the case of overseas subsidiaries, we prepare and provide reports that meet the requirements of the respective local authorities.

As such, LOTTE Chemical fully complies with the tax policies of each country where our business sites are located; and we closely follow and respond to policy changes of the OECD and tax authorities to minimize tax risks in all business activities.

Category	Master File (Stage 1)	Local File (Stage 2)	Country by Country Report (Stage 3)
Details	A report that outlines internationally controlled transactions	A report that explains the rationality of the shifting price policy to the tax authorities of each country	A report that provides non-statistical data on business activities, such as country-specific revenue, pretax profit, tax paid, employment index, and capital stock
	- Global business description - Organizational chart of multinational enterprises - Intangible assets - Internal financial transactions, financial status, etc.	- Provides information needed for the analysis of shifting price of international transactions of companies located in the corresponding country	- Revenue, pre-tax profit, tax payable, number of employees, tangible assets, major business activities, etc.

Environment

[GHG Emissions]

(Unit: tCO2e)

Category		2018	2019	2020
Direct emissions (scope 1)	Yeosu Plant (Basic Chemicals)	1,772,963	2,388,697	2,421,592
	Yeosu Plant (Advanced Materials)	48,268	54,834	103,816
	Daesan Plant	1,706,840	1,663,614	592,272
	Ulsan Plant	661,700	634,642	503,536
	HQ and other business sites	3,575	3,329	2,710
	Total	4,193,346	4,745,116	3,623,926
Indirect emissions (scope 2)	Yeosu Plant (Basic Chemicals)	649,672	681,922	669,486
	Yeosu Plant (Advanced Materials)	358,738	367,291	357,677
	Daesan Plant	705,000	679,869	632,747
	Ulsan Plant	345,408	319,394	280,872
	HQ and other business sites	10,506	10,877	9,558
	Total	2,069,324	2,059,353	1,950,341
Total emissions	Yeosu Plant (Basic Chemicals)	2,422,635	3,070,619	3,091,078
	Yeosu Plant (Advanced Materials)	407,006	422,125	461,493
	Daesan Plant	2,411,840	2,343,483	1,225,019
	Ulsan Plant	1,007,108	954,036	784,409
	HQ and other business sites	14,081	14,206	12,268
	Total	6,262,670	6,804,469	5,574,267
GHG emission intensity (tCO_2e/MT)	Yeosu Plant (Basic Chemicals)	0.597	0.629	0.629
	Yeosu Plant (Advanced Materials)	0.230	0.234	0.286
	Daesan Plant	0.535	0.559	0.613
	Ulsan Plant	0.442	0.437	0.429
	Total (average)	0.451	0.465	0.489

ESG DATA

[Energy Consumption Inside the Organization]

(Unit: TJ)

Category		2018	2019	2020
Direct energy consumption	Yeosu Plant (Basic Chemicals)	33,183	45,641	47,278
	Yeosu Plant (Advanced Materials)	724	740	711
	Daesan Plant	37,966	35,189	9,565
	Ulsan Plant	9,567	9,227	7,273
	HQ and other business sites	69	64	52
Indirect energy consumption	Yeosu Plant (Basic Chemicals)	12,468	12,821	12,560
	Yeosu Plant (Advanced Materials)	6,767	6,838	6,674
	Daesan Plant	12,314	11,945	10,664
	Ulsan Plant	7,232	6,686	5,877
	HQ and other business sites	216	224	197
Total energy consumption	Yeosu Plant (Basic Chemicals)	45,651	58,462	59,838
	Yeosu Plant (Advanced Materials)	7,490	7,578	7,385
	Daesan Plant	50,280	47,134	20,229
	Ulsan Plant	16,799	15,913	13,150
	HQ and other business sites	285	288	249
Energy intensity (GJ)	Yeosu Plant (Basic Chemicals)	11.25	11.98	12.17
	Yeosu Plant (Advanced Materials)	4.23	4.19	4.57
	Daesan Plant	11.15	11.24	10.13
	Ulsan Plant	7.37	7.29	7.19
	HQ and other business sites	-	-	-

[Energy Consumption Outside the Organization]

(Unit: TJ)

Category	2018	2019	2020
Energy consumption outside the organization	709	824	906

• Based on all outsourcing companies as of the end of April 2021

[Energy Sales]

(Unit: TJ)

Category	2018	2019	2020
Steam	2,732	2,516	2,476
Power	2,584	2,306	2,360

[GHG Emissions and Energy-Reduction Activities by Plant]

Category		2018	2019	2020
GHG emission-reduction (Cases)	Yeosu Plant (Basic Chemicals)	23	25	23
	Yeosu Plant (Advanced Materials)	1	1	1
	Daesan Plant	24	25	31
	Ulsan Plant	1	3	5
GHG emission-reduction (tCO2e)	Yeosu Plant (Basic Chemicals)	13,632	25,061	26,047
	Yeosu Plant (Advanced Materials)	15,822	15,549	16,979
	Daesan Plant	21,171	25,353	12,555
	Ulsan Plant	930	8,370	1,036
Energy conservation (TJ)	Yeosu Plant (Basic Chemicals)	261	478	472
	Yeosu Plant (Advanced Materials)	228	303	268
	Daesan Plant	368	416	223
	Ulsan Plant	18	146	19

[Environmental Investment]

(Unit: KRW 1,000)

Category		2018	2019	2020
Energy	Investment	10,336,762	6,427,718	4,385,168
	Operating cost	620,330	140,015	2,137,090
Environment	Investment	13,484,173	33,717,859	36,027,840
	Operating cost	11,605,988	18,301,459	42,639,630
Total		36,047,252	58,587,052	85,189,728

[Raw Material Use]

(Unit: ton)

Category	2018	2019	2020
Yeosu Plant (Basic Chemicals)	2,565,070	3,023,700	3,021,974
Yeosu Plant (Advanced Materials)	1,191,624	1,231,867	1,155,336
Daesan Plant	3,161,967	2,935,354	745,599
Ulsan Plant	1,108,518	1,101,685	858,963

ESG DATA

[Water Use]

(Unit: 1,000 ton)

Category	2018	2019	2020
Yeosu Plant (Basic Chemicals)	19,190	20,886	21,703
Yeosu Plant (Advanced Materials)	3,112	2,825	2,988
Daesan Plant	13,810	13,217	6,495
Ulsan Plant	10,042	10,393	8,127

• Mostly represent industrial water, with exception of some underground water in Ulsan plant (5,840 tons in 2020)

[Water Recycling Amount]

(Unit: 1,000 ton)

Category	2018	2019	2020
Yeosu Plant (Basic Chemicals)	119	112	127
Yeosu Plant (Advanced Materials)	1,413	1,317	1,318
Daesan Plant	-	-	-
Ulsan Plant	-	-	-

• Daesan Plant: Water recycling amount is shown as 0 because only the treated wastewater is accounted.

[Wastewater discharge]

(Unit: 1,000 ton)

Category	2018	2019	2020
Yeosu Plant (Basic Chemicals)	4,162	4,172	4,342
Yeosu Plant (Advanced Materials)	2,385	2,263	2,280
Daesan Plant	2,419	2,488	1,859
Ulsan Plant	6,440	5,590	4,710

• Final discharge site: Daesan plant discharges wastewater into the ocean after treating it at its own treatment facility; other business sites discharge to public sewage treatment plants.

[Air Pollutant Emissions]

(Unit: ton)

Category		2018	2019	2020
Particulates	Yeosu Plant (Basic Chemicals)	29.532	44.314	32.257
	Yeosu Plant (Advanced Materials)	17.8	16.4	6
	Daesan Plant	4	11	8
	Ulsan Plant	15	12	7
Sox	Yeosu Plant (Basic Chemicals)	9.377	17.699	8.279
	Yeosu Plant (Advanced Materials)	0	1.1	3
	Daesan Plant	0	4	60
	Ulsan Plant	45	41	168
Nox	Yeosu Plant (Basic Chemicals)	397.052	402.072	341.117
	Yeosu Plant (Advanced Materials)	0.2	1.5	4.1
	Daesan Plant	7	8	0
	Ulsan Plant	568	483	434

• Daesan Plant: In some facilities, higher than the usual amounts of SOx were measured temporarily

[Water Quality]

(Unit: ton)

Category		2018	2019	2020
BOD	Yeosu Plant (Basic Chemicals)	28.14	75	108.32
	Yeosu Plant (Advanced Materials)	29.6	42.7	17.3
	Daesan Plant	4	8	17
	Ulsan Plant	167	95	70
COD	Yeosu Plant (Basic Chemicals)	132.66	99.43	214.82
	Yeosu Plant (Advanced Materials)	138.8	82.4	120.2
	Daesan Plant	55	35	39
	Ulsan Plant	246	160	134
SS	Yeosu Plant (Basic Chemicals)	142.5	92.01	140
	Yeosu Plant (Advanced Materials)	10.5	27.9	18.9
	Daesan Plant	15	6	5
	Ulsan Plant	120	82	61

[Chemical Emissions (PRTR : Pollutant Release and Transfer Register)]

(Unit: ton)

Category		2018	2019	2020
Ethylene	Yeosu Plan (Basic Chemicals)	14	13	4
	Yeosu Plant (Advanced Materials)	-	-	-
	Daesan Plant	7	1	6
	Ulsan Plant	-	-	-
Propylene	Yeosu Plan (Basic Chemicals)	12	12	2
	Yeosu Plant (Advanced Materials)	-	-	-
	Daesan Plant	2	2	3
	Ulsan Plant	-	-	-
Xylene	Yeosu Plan (Basic Chemicals)	-	-	-
	Yeosu Plant (Advanced Materials)	-	-	-
	Daesan Plant	-	-	1
	Ulsan Plant	3	3	3
Acetic acid	Yeosu Plan (Basic Chemicals)	-	-	-
	Yeosu Plant (Advanced Materials)	-	-	-
	Daesan Plant	-	-	-
	Ulsan Plant	9	11	9
Others	Yeosu Plan (Basic Chemicals)	65	62	57
	Yeosu Plant (Advanced Materials)	37	39	26
	Daesan Plant	47	24	18
	Ulsan Plant	11	10	10

[By-Product Management Status]

(Unit: ton)

Category		2018	2019	2020
By-product generation	Yeosu Plan (Basic Chemicals)	2,432,273	2,994,596	3,534,494
	Yeosu Plant (Advanced Materials)	2,895	2,488	2,339
	Daesan Plant	2,910,006	2,698,713	741,161
	Ulsan Plant	51,769	49,024	36,763
By-product recycling	Yeosu Plan (Basic Chemicals)	2,432,273	2,994,596	3,534,494
	Yeosu Plant (Advanced Materials)	2,895	2,488	2,339
	Daesan Plant	2,910,006	2,698,713	741,161
	Ulsan Plant	51,769	49,024	36,763
By-product Recycle Ratio (%)	Yeosu Plan (Basic Chemicals)	100	100	100
	Yeosu Plant (Advanced Materials)	100	100	100
	Daesan Plant	100	100	100
	Ulsan Plant	100	100	100

[General Waste Management Status]

(Unit: ton)

Category		2018	2019	2020
Incineration	Yeosu Plan (Basic Chemicals)	3,400	2,484	2,958
	Yeosu Plant (Advanced Materials)	2,471	2,571	3,018
	Daesan Plant	274	768	669
	Ulsan Plant	176	65	96
Landfill	Yeosu Plan (Basic Chemicals)	3,328	2,559	2,601
	Yeosu Plant (Advanced Materials)	2,071	2,142	1,806
	Daesan Plant	1,524	1,804	509
	Ulsan Plant	9,974	4,905	4,751
Recycling	Yeosu Plan (Basic Chemicals)	6,566	8,140	8,461
	Yeosu Plant (Advanced Materials)	30,158	29,255	29,507
	Daesan Plant	3,298	4,392	3,636
	Ulsan Plant	15,945	20,458	16,566
Total	Yeosu Plan (Basic Chemicals)	13,294	13,183	14,020
	Yeosu Plant (Advanced Materials)	34,699	33,968	34,331
	Daesan Plant	5,096	6,964	4,814
	Ulsan Plant	26,095	25,428	21,414

[Designated Waste Management Status]

(Unit: ton)

Category		2018	2019	2020
Incineration	Yeosu Plan (Basic Chemicals)	3,076	2,689	2,336
	Yeosu Plant (Advanced Materials)	2,310	1,982	1,882
	Daesan Plant	171	522	620
	Ulsan Plant	531	122	87
Landfill	Yeosu Plan (Basic Chemicals)	92	95	66
	Yeosu Plant (Advanced Materials)	14	23	7
	Daesan Plant	1	38	178
	Ulsan Plant	19	122	10
Recycling	Yeosu Plan (Basic Chemicals)	12,265	14,009	13,449
	Yeosu Plant (Advanced Materials)	526	493	565
	Daesan Plant	9,886	13,613	9,644
	Ulsan Plant	1,191	1,394	183
Total	Yeosu Plan (Basic Chemicals)	15,433	16,793	15,851
	Yeosu Plant (Advanced Materials)	2,849	2,497	2,455
	Daesan Plant	10,058	14,173	10,442
	Ulsan Plant	1,741	1,638	280

ESG DATA

[Integrated recycling rate of general and designated waste]

(Unit: %)

Category	2018	2019	2020
Yeosu Plan (Basic Chemicals)	65.6	74	73.3
Yeosu Plant (Advanced Materials)	81.7	81.6	81.7
Daesan Plant	87	85.2	87
Ulsan Plant	61.6	80.7	77.2

[Sales of eco-friendly products]

(Unit: KRW)

Category	2018	2019	2020
Bio-PET*	9,748,753,810	12,076,400,886	12,180,047,775
GC-1214 compound**	-	-	3,701,595,421
PCR-PP	-	-	19,475,158
Ti-PET	1,102,410,827	598,935,750	-
TIPP	4,937,361,810	9,701,812,659	10,505,921,142
Water-treatment business	-	7,871,978,571	8,960,346,029
LFT injection-molded backbeam for automobiles	173,716,622	232,983,107	215,329,653
Eco-friendly compound products (ABS, EPP, PC, PP etc.)	-	-	150,674,374,024

* Bio-PET : Certified by the Ministry of Environment
** GC-1214 compound: UL EPD certified

[Eco-friendly Products and Services Purchasing Performance]

(Unit: KRW)

Category	2018	2019	2020
Eco-friendly Products and Services Purchasing Performance	12,542,396,470	14,551,687,440	17,425,325,100

SOCIAL

[Customer-Satisfaction Survey]

(Unit: Point)

Category	2018	2019	2020
Satisfaction level	82.2	85	93.4

[Human Rights Training]

Category	Unit	2018	2019	2020
Total number of training provided	EA	14	12	10
Total hours of training	Hours	13,270	15,328	14,360
Persons who completed the training	Persons (%)	5,857(99.16)	5,776(100)	5,811(100)

[2020 Employee Education Status]

Category		Unit	Performance
Training hours per person (both online & offline)		Hours	57.43
Training hours per person*	Male	Hours	31.40
	Female		42.05
Training budget per person		KRW 1,000	1,716
Number of persons who completed training by position (%)/hour	Executive level	Persons (%) / hr	1,830(5)/9,148
	Manager level or above		15,113(43)/95,980
	Associate-level or below		18,045(52)/155,827

* Only for online training

[Employee Safety and Health Status]

Category	Unit	2018	2019	2020
Occupational Injuries	Cases	0	0	2
Number of deaths due to work-related accidents	Cases	0	0	0
Number of deaths due to work-related illness	Persons	0	0	0

ESG DATA

[Partners Safety and Health Status]

Category	Unit	2018	2019	2020
Occupational injuries	Cases	2	1	2
Number of deaths due to work-related accidents	Cases	0	0	0
Number of deaths due to work-related illness	Persons	0	0	0

[Labor Union Membership Status]

(Unit: Persons)

Category	Headquarters	Uiwang	Yeosu (Basic Chemicals)	Yeosu (Advanced Materials)	Daesan	Ulsan	R & D Centers	Total
Total number of people	768	756	1,093	567	634	415	311	4,544
Union members	7	47	690	352	349	213	22	1,680
Ratio(%)	1	6	63	62	55	51	7	37

[Scope of Application of Collective Agreement]

Category	Unit	2018	2019	2020
No. of employees subject to collective bargaining	Persons	1,422	1,477	1,680
Percentage of employees subject to collective bargaining	%	44	44	37

[Employees Represented by the Labor-Management Joint Health and Safety Committee]

Category	Unit	2018	2019	2020
Number of employees*	Persons	2,093	2,191	3,490

* Yeosu/Daesan/Ulsan

[Employees in Korea]

(Unit: Persons, %)

Category		2018	2019	2020
Total (Incl. internal registered director)		3,158	3,285	4,544
New employees	Male (%)	200(6.3)	202(6.1)	140(3.1)
	Female (%)	38(1.2)	47(1.4)	62(1.4)
	Employee with disability	5	27	7
	High school graduates	40	46	28
Resigned/retired	Male (%)	46(1.5)	39(1.2)	59(1.3)
	Female (%)	15(0.5)	23(0.7)	25(0.6)
Type of Employment	Regular	3,067	3,204	4,435
	Irregular	91	81	109
Rank	Executive	76	82	92
	Manager level or above	706	760	1,313
	Associate level or below	2,376	2,443	3,139
Age	20s (%)	472(14.9)	490(14.9)	593(13.1)
	30s (%)	1,062(33.6)	1,136(34.6)	1,632(35.9)
	40s (%)	760(24.1)	733(22.3)	1,077(23.7)
	50s or older (%)	864(27.4)	926(28.2)	1,242(27.3)
Gender	Male (%)	2,761(87.4)	2,866(87.2)	3,832(84.3)
	Female (%)	397(12.6)	419(12.8)	712(15.7)

[Overseas Employee Status]

(Unit: Persons, %)

Category		2018	2019	2020
Total number of overseas employees		137	86	126
Gender	Male (%)	135(98.5)	85(98.8)	126(100.0)
	Female (%)	2(1.5)	1(1.2)	0(0.0)
Type of employment	Regular	120	85	125
	Irregular	17	1	1
Rank	Executive	22	20	19
	Manager level or above	96	61	106
	Associate level or below	19	5	1
Age	20s (%)	5(3.6)	0(0.0)	0(0.0)
	30s (%)	32(23.4)	22(25.6)	26(20.6)
	40s (%)	55(40.1)	37(43.0)	74(58.7)
	50s or older (%)	45(32.8)	27(31.4)	26(20.6)

ESG DATA

[Childcare leave usage]

Category			2018	2019	2020
Total number of employees entitled to parental leave	Male	Persons	596	607	898
	Female		87	94	158
Total number of employees whose childcare leave expired (A)	Male	Persons	76	118	116
	Female		20	27	28
Total number of employees who actually returned to work (B)	Male	Persons	76	118	116
	Female		19	25	28
Return rate (=B/A*100)	Male	%	100	100	100
	Female		95	93	100
No. of employees who will have been back at work for 12 months after childcare leave in the coming year (C)	Male	Persons	47	76	118
	Female		14	19	25
No. of employees who have been back at work for at least 12 months after returning from childcare leave (D)	Male	Persons	47	76	118
	Female		14	19	25
Retention rate after childcare leave (=D/C*100)	Male	%	100	100	100
	Female		100	100	100

[Employee Diversity]

(Unit: %, Persons)

Category			2018	2019	2020
Female Leadership	Rank	Total female employee ratio	12.6	12.8	15.7
		Total female manager* ratio	11.1	11.4	13.4
	Employment type	Female ratio among the regular employees	54.9	42	41.3
		Female ratio among the irregular employees	11.3	12	15
Others		Foreigners (%)	5(0.2)	5(0.2)	7(0.2)
		Veterans (%)	106(3.4)	117(3.6)	162(3.6)
		Employees with disability (%)	44(1.4)	71(2.2)	99(2.2)

* Manager: Manager or above

[Employee Status by Business Site]

Category	Unit	2018	2019	2020
No. of domestic sites (Incl. sales branch)	EA	10	10	16
No. of domestic employees (Incl. internal registered director)	Persons	3,158	3,285	4,544
No. of overseas sites*	EA	25	24	37
No. of overseas employees (Incl. local hires)	Persons	4,150	4,335	5,549

* Manufacturing and sales corporation, manufacturing corporation, sales corporation, branch office

[Employees subject to regular performance evaluations and career development reviews]

Category	Unit	2018	2019	2020
Percentage of employees subject to review	%	38.4	38.8	49.2
No. of employees subject to review	Persons	1,212	1,274	2,235

[Retirement Pension Subscription Rate*]

Category	Unit	2018	2019	2020
Subscription rate	%	78	76	87
Total no. of employees	Persons	2,429	2,248	3,696

* As of end of December of the corresponding year

[Mutual Growth Support for Partners]

Category		2018	2019	2020
Mutual growth fund	KRW 1 billion	1,350	1,350	1,350
Companies participating in mutual growth program	EA	350	350	350
Partner support programs	EA	12 [Financial support(3)/ Technology support (6)/ Training support (0)/ Management support (3)	15 [Financial support(4)/ Training support (2)/ Technology support (3)/ Management support (6)	19 [Financial support(4)/ Training support (2)/ Technology support (3)/ Management support (6) Personnel support (4)]
No. of training courses held for partners	EA	0	4	4
No. of partner employees who have completed training	Persons	0	79	50
No. of companies supported for overseas expansion	EA	30	31	60

[Social Investments]

(Unit: KRW 1 million)

Category	2018	2019	2020	Remarks
Social welfare	1,672	1,972	2,262	Improvement of residential environments; investments in social welfare facilities
Education and scholarships	215	320	202	Investments in child welfare centers
Environment and culture	30	67	331	Nature cleanups, etc.
Others	6,034	7,069	5,708	

GHG Verification

Verification Statement on 2020 Greenhouse Gas Emisson Report

Verification Target

Korean Foundation for Quality (hereinafter "KFQ") has conducted the verification of "2020 Report on Quantity of emitted Greenhouse gas Consumption (hereinafter 'Inventory Report") for LOTTE Chemical Corporation.

Verification Scope

KFQ's verification was focused on all the facilities which emitted the greenhouse gas during the year of 2020 under LOTTE Chemical Corporation's operational control and organizational boundary.

Verification Criteria

The verification process was based on 'Rule for emission reporting and certification of greenhouse gas emission tranding Scheme (Notification No. 2018-78 of Ministry of Environment)', 'Rules for verification of operating the greenhouse gas emission trading scheme (Notification No. 2018-80 of Ministry of Environment)' and 'ISO14064-3' for every applicable part.

Verification Procedure

The Verification has been planned and conducted as the 'Rules for verification of operating the greenhouse gas emission trading scheme', and the level of assurance for verification shall be satisfied as reasonable level of assurance. And it confirmed through the internal review whether the process before the verification conducted effectively.

Verification Limitation

The verification shall contain the potential inherent limitation in the process of application of the verification criteria and methodology.

Verification Opinions

Regarding to the data of the Greenhouse Gas Emission Consumption from the report through the verification, KFQ provides our verification opinions as below;

1) The Inventory Report has been stated in accordance with 'Rule for emission reporting and certification of greenhouse gas emission tranding Scheme'
2) The result of Material discrepancy satisfied the criteria for an organization that emits more than 5,000,000 tCO_2-e shall not exceed 2% from total emission as per 'Rules for verification of operating the greenhouse gas emission trading scheme'
3) Thus, KFQ conclude that the Greenhouse Gas Emissions of LOTTE Chemical Corporation in 2020 is correctly calculated and stated in accordance with 'Rule for emission reporting and certification of greenhouse gas emission tranding Scheme'.

(unit : ton CO_2eq)

Report Year	Emission of Scope1	Emission of Scope2	Total Annual Emission
2020	3,623,926	1,950,341	5,574,267

June 11th, 2021

KOREAN FOUNDATION FOR QUALITY (KFQ) CEO **JI-YOUNG SONG**

Ji Young Song

LOTTE Chemical Declaration of Human Rights

As a global chemical company working to build a healthy and prosperous future for humankind, LOTTE Chemical practices social responsibility and aims to achieve sustainable growth based on the trust of all of its stakeholders.
LOTTE Chemical hereby declares its support for the international principles set forth in documents such as the 'Universal Declaration of Human Rights' and the 'UN Guiding Principles on Business and Human Rights; Ruggie Framework', and pledges to fulfill all related responsibilities.
We will do our best to prevent any violations of human rights in the course of doing business, and we publicly pledge our commitment, as fully stated fully below, to respecting and protecting the human rights and free will of all of our stakeholders, including customers, members, local communities, partner companies and others.

Employee Human Rights

- Preventing discrimination based on gender, race, religion, disability, origins, etc.
- Fundamentally preventing wrongful labor practices such as forced labor and child labor
- Complying with all labor principles recommended by the International Labour Organization (ILO) and ratified by the Korean government, including those on health and safety, working hours and others

Customer Human Rights

- Requesting, recording and storing only the minimum amount of personal information needed to comply with laws and regulations
- Establishing strong security systems, such as encryption, to prevent leaks of personal information
- Using personal information responsibly and limiting its use to providing services and marketing

Human Rights of Local Communities

- Recognizing our responsibilities and participating actively in social contribution activities for the development of local communities
- Measuring and managing the impacts of activities that can cause environmental and social problems in local communities

Human Rights of Partners

- Establishing fair and equal business relationships as a win-win partner
- Prohibiting discrimination against members of partner companies and preventing forced labor and child labor

As a corporate citizen with a sense of responsibility in the global business environment, LOTTE Chemical will do its utmost to ensure that subsidiaries and partner companies adhere to these human rights policies, and we will work to be leaders in the promotion of human rights management.

Thank you.

June 2021

Kim Gyo-hyun, CEO of LOTTE Chemical

Third Party Assurance

LR Independent Assurance Statement

Relating to LOTTE Chemical Corporation's Sustainability Report for the 2020 calendar year

Lloyd's Register

This Assurance Statement has been prepared for LOTTE Chemical Corporation in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

Lloyd's Register Quality Assurance Limited (LR) was commissioned by LOTTE Chemical Corporation to provide independent assurance on its '2020 LOTTE Chemical Sustainability Report' ("the report") against the assurance criteria below to a "moderate level of assurance and materiality" using "Accountability's AA1000AS v3", where the scope was a Type 2 engagement.

Our assurance engagement covered the operations and activities of LOTTE Chemical Corporation in Korea and specifically the following requirements:

- Evaluating adherence to the AA1000 AccountAbility Principles1 of Inclusivity, Materiality, Responsiveness and Impact
- Confirming that the report is in accordance with GRI Standards2 and core option
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below:
  - GRI 200 (Economic): 201-1, 205-2, 205-3
  - GRI 300 (Environmental): 302-1, 302-2, 302-3, 302-4, 303-1, 303-2, 303-3, 305-1, 305-2, 305-4, 305-5, 305-7, 306-1, 306-2, 306-3, 307-1
  - GRI 400 (Social): 401-2, 401-3, 403-1, 403-2, 403-3, 403-4, 403-5, 403-6, 403-7, 403-8, 404-1, 404-2, 413-1, 416-1, 416-2

Our assurance engagement excluded the data and information of LOTTE Chemical Corporation's suppliers, contractors and any third-parties mentioned in the report.
LR's responsibility is only to LOTTE Chemical Corporation. LR disclaims any liability or responsibility to others as explained in the end footnote. LOTTE Chemical Corporation's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of LOTTE Chemical Corporation.

LR's Opinion

Based on LR's approach nothing has come to our attention that would cause us to believe that LOTTE Chemical Corporation has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data and information as all errors or omissions identified during the assurance engagement were corrected
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a moderate level of assurance and at the materiality of the professional judgement of the verifier.
Note: The extent of evidence-gathering for a moderate assurance engagement is less than for a high assurance engagement. Moderate assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a moderate assurance engagement is substantially lower than the assurance that would have been obtained had a high assurance engagement been performed.

LR's approach

LR's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing LOTTE Chemical Corporation's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through reviewing documents and associated records.
- Reviewing LOTTE Chemical Corporation's process for identifying and determining material issues to confirm that the right issues were included in their Report. We did this by benchmarking reports written by LOTTE Chemical Corporation and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to

evaluate whether LOTTE Chemical Corporation makes informed business decisions that may create opportunities that contribute towards sustainable development.

- Auditing LOTTE Chemical Corporation's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.
- Checking whether GHG emissions and energy consumptions in the appendix of the report weretransposed correctly from the GHG inventory which was verified by the third-party assurance provider.
- Reviewing additional evidence made available by LOTTE Chemical Corporation at its head office in Seoul.

Observations

Further observations and findings, made during the assurance engagement, are:

- **Inclusivity**
  We are not aware of any key stakeholder groups that have been excluded from LOTTE Chemical Corporation's stakeholder engagement process.
- **Materiality**
  We are not aware of any material issues concerning LOTTE Chemical Corporation's sustainability performance that have been excluded from the report. It should be noted that LOTTE Chemical Corporation has established extensive criteria for determining which issue/aspect is material and that these criteria are not biased to the company's management.
- **Responsiveness**
  LOTTE Chemical Corporation reported its sustainability objectives and measures. It is expected that more long-term sustainability objectives will be reported in the future.
- **Impact**
  LOTTE Chemical Corporation described its achievements of eco-friendly products development in the report. It is expected that LOTTE Chemical Corporation will monitor and report the results of how much eco-friendly products contributed to sustainability development in both environmental and social dimensions in the future.
- **Reliability**
  LOTTE Chemical Corporation has reliable data management systems for the indicators in the report.

LR's standards, competence and independence

LR implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition and ISO/IEC 17021 Conformity assessment – Requirements for bodies providing audit and certification of management systems that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

LR ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

This verification engagement is the only work undertaken by LR for LOTTE Chemical Corporation and as such does not compromise our independence or impartiality.

AA1000
Licensed Report
000-11/V3-B6LDV

DATED: 14 JUNE 2021

Lloyd's Register Quality Assurance Ltd.

LR Lead Verifier **Tae-Kyoung Kim**

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GRI 413: Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	6.3.9, 6.5.1-6.5.2, 6.5.3, 6.8	75-79
GRI 103 Management Approach 2016	103-1~3	Management Approach		25
GRI 416: Customer Health and Safety 2016	416-1	Assessment of the health and safety impacts of product and service categories		59-60
	416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	6.7.4	59

TCFD/SASB

TCFD

The Task Force on Climate-related Financial Disclosures (TCFD) established by the G20 Financial Stability Board issues recommendations on the climate-related information that companies should disclose, and promotes the disclosure of climate-change data. LOTTE Chemical supports the TCFD recommendation, recognizing that it is a corporate responsibility to disclose climate-related risks and opportunities along with financial in formation. Hence, in accordance with the recommendations of the TCFD, we evaluate risks and opportunities for climate change, establish and implement long term carbon-neutral strategies, and disclose relevant details.

TCFD recommendations	Page
Governance	
a) Describe the board's oversight of climate-related risks and opportunities	p. 45
b) Describe management's role in assessing and managing climate-related risks and opportunities	p. 45
Strategy	
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	p. 45
b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	p. 45
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	p. 45
Risk management	
a) Describe the organization's processes for identifying and assessing climate-related risks.	p. 46
b) Describe the organization's processes for managing climate-related risks	p. 46
c) Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	p. 46
Metrics & targets	
a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	p. 46, 88
b) Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas emissions and the related risks	p. 46, 93
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	p. 46, 88

TCFD/SASB

SASB

The Sustainability Accounting Standards Board (SASB) is an American non-profit organization that sets industry-specific sustainability reporting standards. The SASB presents sustainability risk topics that are highly relevant to each industry and recommends that companies continuously report on the topics to communicate with investors and stakeholders. LOTTE Chemical intends to report and share relevant data with stakeholders in accordance with the Chemicals Standard, which is most related to our main business area.

Topics	Accounting Metrics	Category	Code	Response
Greenhouse Gas Emissions	(1) Gross global Scope 1 emissions, (2) percentage covered under emissions-limiting regulations(eg.K-ETS)	Quantitative	RT-CH-110a.1	(1) p.93 (limited to emissions of domestic sites) (2) 100%
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	RT-CH-110a.2	p. 46, 88
Air Quality	Air emissions of the following pollutants: (1) NOX (excluding N2O), (2) SOX, (3) volatile organic compounds (VOCs), and (4) hazardous air pollutants (HAPs)	Quantitative	RT-CH-120a.1	(1) p.95, (2) p.95 (3) 130 tons, (4) 53 tons
Energy Management	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable, (4) total self-generated energy	Quantitative	RT-CH-130a.1	(1) p.94, (2) Domestic 100%/ Overseas 100% (3) Domestic 0%/ Overseas 0%, (4) 9,700TJ
Water Management	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	RT-CH-140a.1	(1) p.95 (2) No business sites with high water stress risk
	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Quantitative	RT-CH-140a.2	0 incident
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Discussion and Analysis	RT-CH-140a.3	p. 49
Hazardous Waste Management	Amount of hazardous waste generated, percentage recycled	Quantitative	RT-CH-150a.1	p. 96-97
Community Relations	Discussion of engagement processes to manage risks and opportunities associated with community interests	Discussion and Analysis	RT-CH-150a.1	p. 23
Workforce Health & Safety	(1) Total recordable incident rate (TRIR) and (2) fatality rate for (a) direct employees and (b) contract employees	Quantitative	RT-CH-320a.1	(1) p. 97-98 (2) direct employees 0%, contract employees 0%
	Description of efforts to assess, monitor, and reduce exposure of employees and contract workers to long-term (chronic) health risks	Discussion and Analysis	RT-CH-320a.2	p. 67-69
Product Design for Use-phase Efficiency	Revenue from products designed for usephase resource efficiency	Quantitative	RT-CH-410a.1	p. 97 (Sales of Eco-friendly products)
Safety & Environmental Stewardship of Chemicals	(1) Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances, (2) percentage of such products that have undergone a hazard assessment	Quantitative	RT-CH-410b.1	Not a current management indicator (LOTTE Chemical restricts the use of substances that are found to be highly harmful to the product or the environment by controlling them more strictly than legal standards. Our activities regarding product safety and chemical management systems are reported on p.55.)
	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact	Discussion and Analysis	RT-CH-410b.2	(1) p. 59-60 (2) p. 51-55
Genetically Modified Organisms	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Quantitative	RT-CH-410c.1	Not applicable
Management of the Legal & Regulatory Environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Discussion and Analysis	RT-CH-530a.1	p.19, 82-85
Operational Safety, Emergency Preparedness & Response	(1) Process Safety Incidents Count (PSIC), (2) Process Safety Total Incident Rate (PSTIR), and (3) Process Safety Incident Severity Rate (PSISR)	Quantitative	RT-CH-540a.1	(1) 2 (2) Not a current management indicator (3) Not a current management indicator
	Number of transport incidents	Quantitative	RT-CH-540a.2	0 incident

Membership

Korea Industrial Safety Association	Korea Water & Wastewater Works Association
Korea Chamber of Commerce and Industry	Korea Productivity Center
The Federation of Korean Industries	Korea Petrochemical Industry Association
Korea Business Council for Sustainable Development	Korea Fire Safety Institute
Korea Responsible Care Council	Korea Hydrogen Industry Association
Korea Enterprises Federation	Korea AEO Association
Korea Economic Research Institute	Korea Engineering and Consulting Association
The Polymer Society of Korea	Korea Association for Exterior Insulation
The Korean Society of Industrial and Engineering Chemistry	Korea Personnel Improvement Association
Korea Fair Competition Federation	Korea Fine Chemical Industry Promotion Association
Korea Customs Logistics Association	Korea Intellectual Property Association
Korea Management Association	Korea Plastics Pipes Research Society
The Membrane Society of Korea	The Korean Institute of Chemical Engineers
Korea International Trade Association	Korea Chemicals Management Association
Korean Association for Radiation Application	Korea Chemical Industry Council
Korea Industrial Technology Association	Korea Japan Economic Association
Korea Listed Companies Association	

About This Report

LOTTE Chemical has been publishing the sustainability report every year since 2008; the current issue for 2021 is the 14th report.
The 2020 LOTTE Chemical Sustainability Report contains the financial and non-financial performance of the company, through which we intend to communicate openly with stakeholders.

Reporting Standard	GRI Standards (Core Option)
Reporting Scope	LOTTE Chemical's headquarters; the Daejeon R&D Center; plants in Yeosu, Daesan and Ulsan; subsidiaries; and overseas business sites (partial performance) (Some evironmental data (2018-19) are reported as data before the merger of LOTTE Advanced Materials)
Reporting Boundary	LOTTE Chemical
Reporting Period	January 1, 2020 ~ December 31, 2020 (first half of 2021 included for partial performance)
Reporting Cycle	Annual (Previous issue: June 2020)
Assurance	Lloyd's Register Quality Assurance Ltd.
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