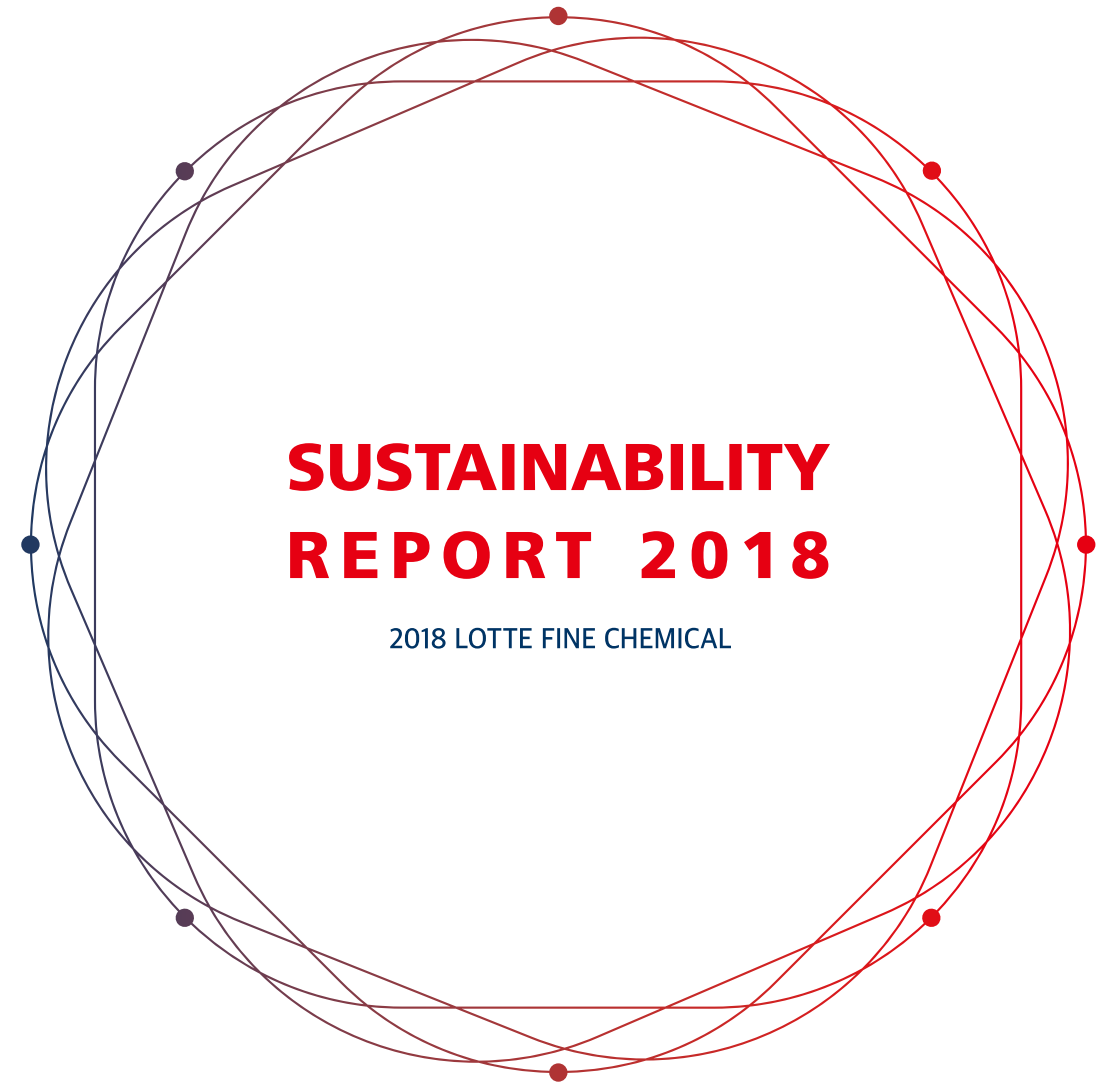


*Leading Fine Change*

2018 LOTTE FINE CHEMICAL SUSTAINABILITY REPORT

Lifetime  
Value Creator



LOTTE FINE CHEMICAL



26th and 27th Fl., Glass Tower Building 534,  
Teheran-ro, Gangnam-gu, Seoul, South Korea  
TEL +82-2-6974-4500 [www.lottefinechem.com](http://www.lottefinechem.com)



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## About this report

This report is the fourth Sustainability Report of LOTTE Fine Chemical (LFC). The company has published and disclosed a report to stakeholders annually since its first report in 2016 to notify internal and external stakeholders of the sustainability of the company and to listen to their expectations and demands. This report integrates both financial and non-financial performances, and contains LFC's sympathy with the UN SDGs (Sustainable Development Goals) and the commitment to link its business with the sustainable development targets. It therefore analyzes and reports main businesses from the economic aspect as the basis for income creation and growth engines and the socio-environmental aspect that determines the sustainability of enterprises, based on which it seeks to promote sustainable development and increase the confidence of stakeholders.

### Reporting period and scope

This report contains the activities from January 1, 2018 to December 31 of the same year. For the case of quantitative performance, the company has included data for the past three years to identify trends. This report focuses on the economic, environmental, and social performance of LFC's Ulsan complex as well as its Seoul office and Incheon plant. Some of the data disclosed includes the performance of overseas subsidiaries, direct subsidiaries, and supply chains.

### Reporting principles

This report is based on conformity to the core options of the GRI (Global Reporting Initiative) Standards, which are the guidelines for international reports of sustainability and reflects the ESG and UN SDGs.

### Reporting Cycle

Annual publication (The latest publishing: May 2018)

### Report Verification

The contents of this report have been verified by THE CSR, a sustainability consulting institution.

### Inquiries

LOTTE Fine Chemical General Affairs Team  
website [www.lottefinechem.com](http://www.lottefinechem.com)  
Blog [www.finelfc.com](http://www.finelfc.com)  
Facebook [www.facebook.com/lottefinechem](http://www.facebook.com/lottefinechem)  
E-mail [fine@lottechem.com](mailto:fine@lottechem.com)  
TEL +82-2-6974-4500

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## CEO Message



“  
LFC pledges to be a sustainable company that creates a better future together with stakeholders by fulfilling its social responsibility and continuously communicating with stakeholders.  
”

Dear stakeholders,

I would like to express my gratitude for your continued interest and support for LFC.

The global economy has become increasingly uncertain due to the accumulation of various downside risks that could lead to economic downturn in recent years. Protectionism and populism have led to intensified discord among the international society and continued difficulties in cooperation that extend conflicts between countries. Ethnocentrism in major countries, in particular, has caused market confusion such as trade wars, and has become a factor in accelerating the global economic slowdown.

The difficulties of business activities are continuing in Korea as the policy change by the new administration has increased the burden on businesses, and the prolonged low-growth trend due to declining productivity has resulted in continued difficulties in business activities.

LFC has made various efforts to increase profitability despite such a difficult business environment over the past year, and this is our fourth Sustainability Report since the publication of the first in 2016.

LFC recorded a profit for the ECH (Epichlorohydrin) business, which had been sluggish for a long time, due to improved market conditions and additional profits for the caustic soda business in the past year. As a result, LFC reported the best performance in its history at KRW 1.3717 trillion in sales and KRW 214.9 billion in net income.

LFC intends to increase cost and quality competitiveness as well as business efficiency and to develop new products and technologies while abiding by its philosophy and principles under the long-term vision of “Global Leader in Fine Chemicals”.

Moreover, LFC will continue its efforts to enhance economic value and social value at the same time. The company has established its CSR initiative “The World of Sharing and Mutual Cooperation” and the 3+1 social contribution strategy “Happy Family, Dreamy Future, Warm Companion, and Clean Environment” to continue its social contribution activities and give the support that it has received from customers back to the community to fulfill its responsibility as a corporate citizen. The company plans to strengthen ties with local communities by expanding support for women and children in 2019.

LFC pledges to be a sustainable company that creates a better future together with stakeholders by fulfilling its social responsibility and continuously communicating with stakeholders.

LFC hopes for the continued interest and support of its stakeholders.

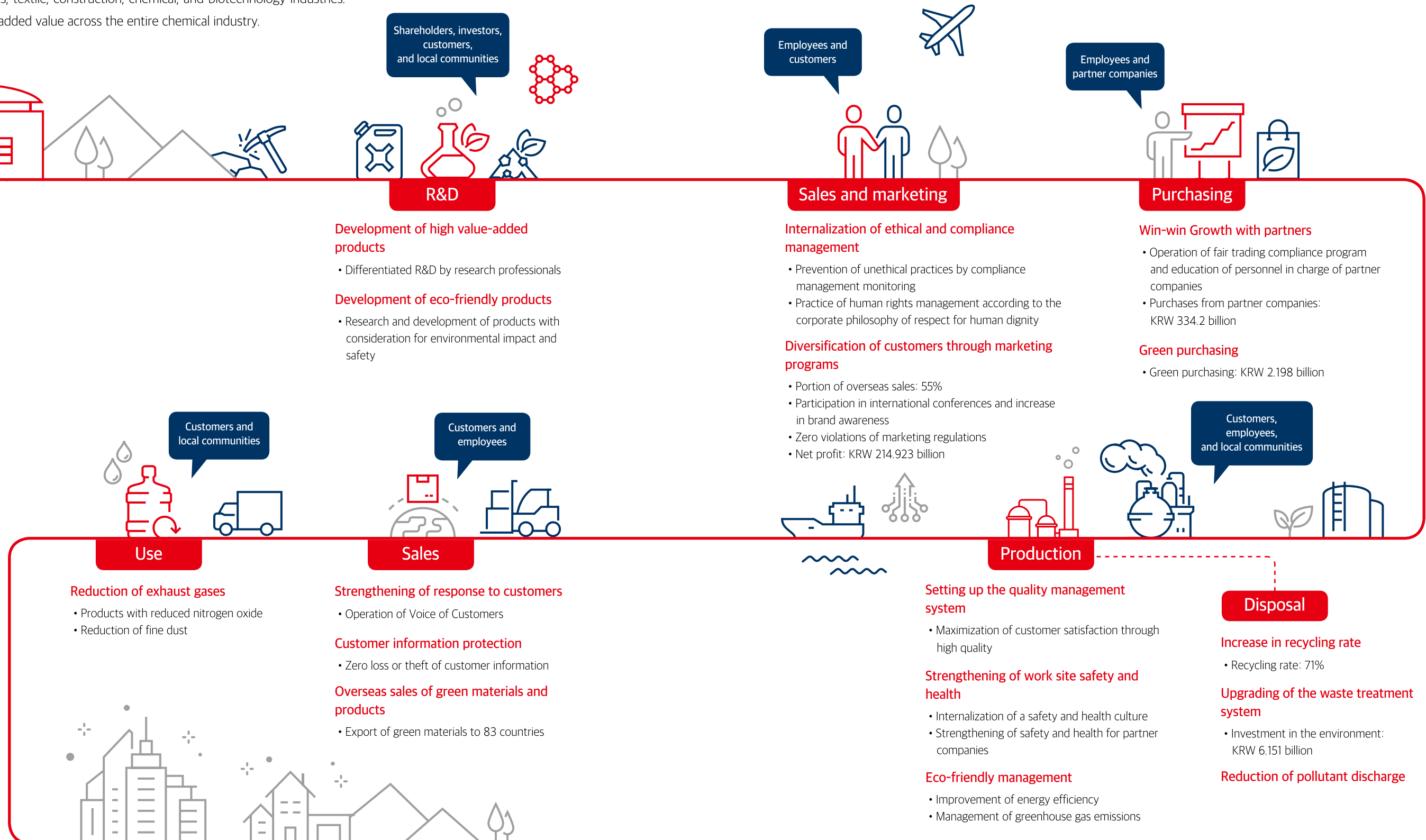
Thank you.

June 2019

CEO, LOTTE Fine Chemical **Hong-Yul Lee**

# The LFC Value Creation Process

LFC receives raw materials from basic chemical industries such as oil refining, petrochemicals, coal, and fertilizer, and supplies raw and intermediate materials to the automobile, ship, electronics, textile, construction, chemical, and biotechnology industries. The company creates high added value across the entire chemical industry.

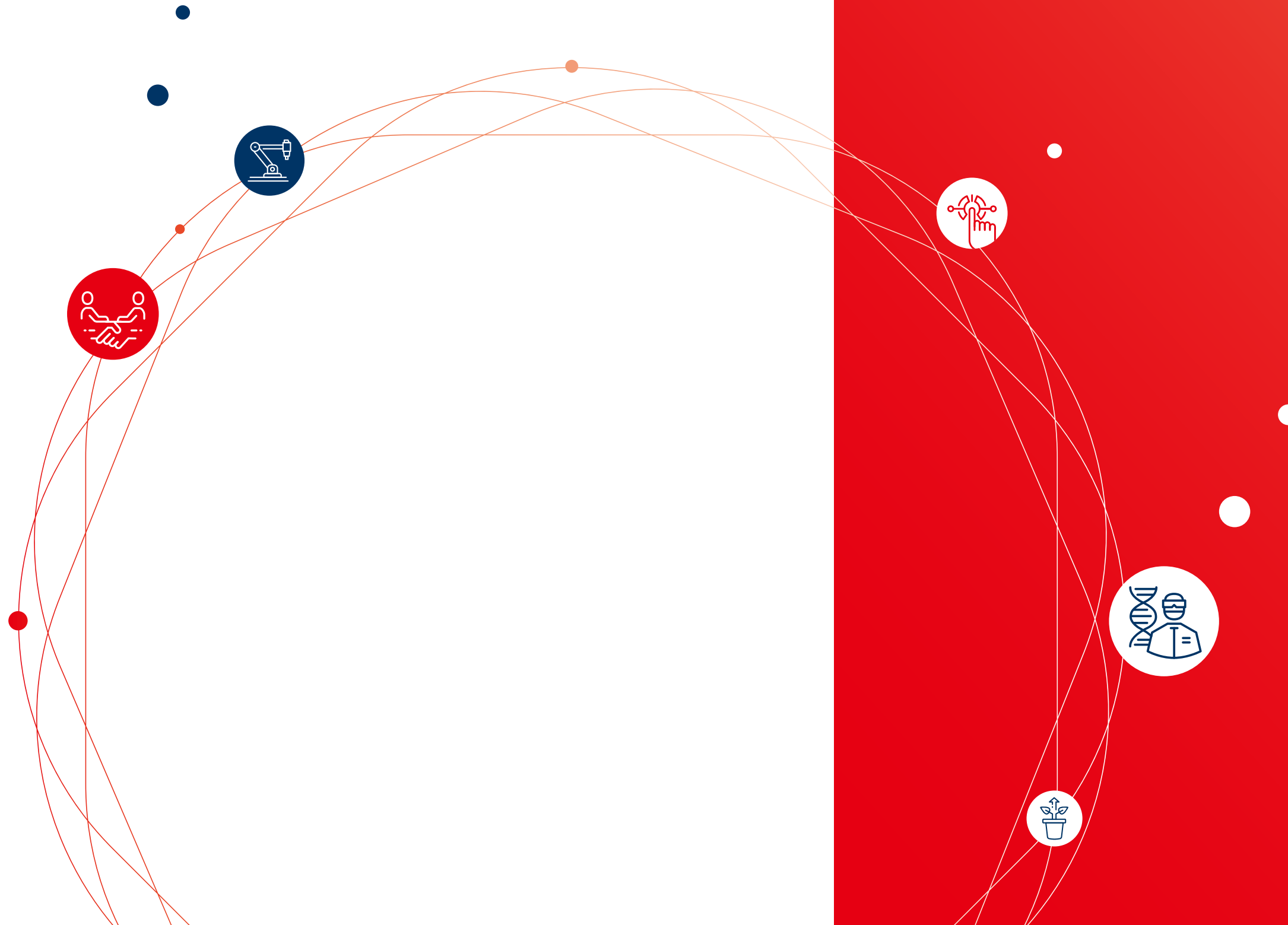




# PART 01

## Creating new value

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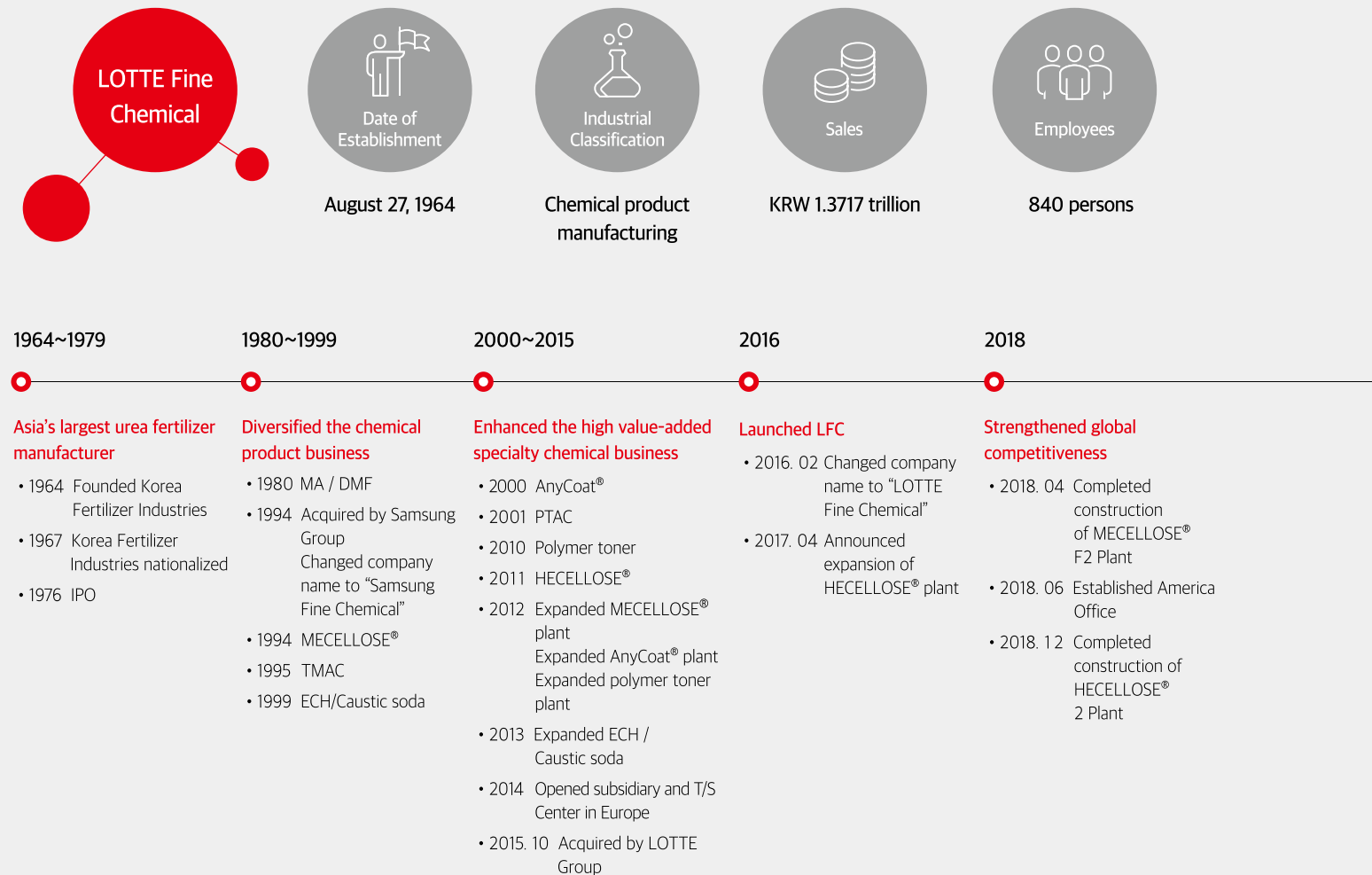
## Company Overview

LFC has been part of the history of the advancement of the Korean chemical industry since its establishment in 1964. LFC, the specialty chemical company based on time-honored capabilities and experience accumulated over the past 50 years, continues to fulfill its social responsibility through shared growth.

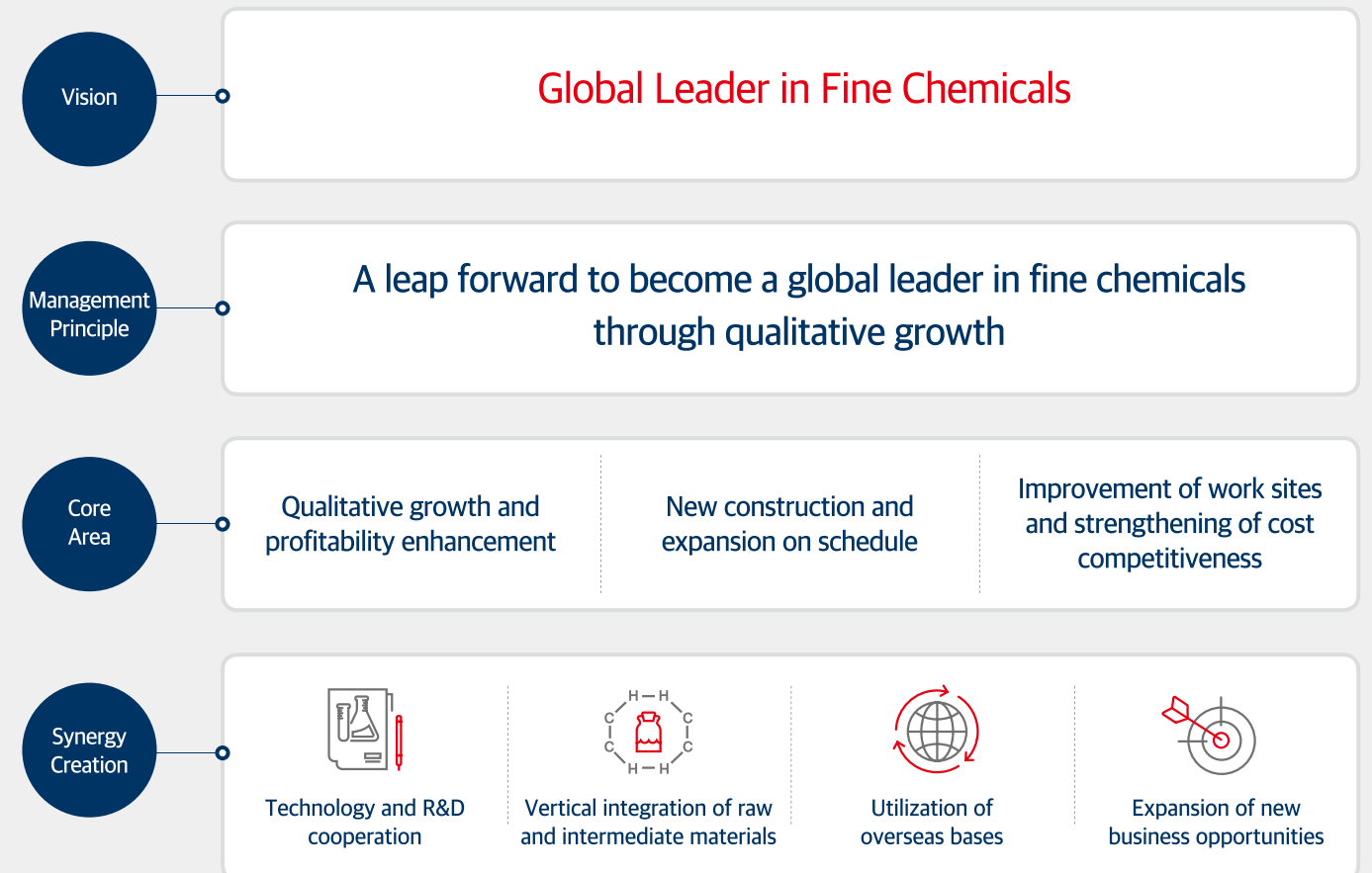
From an economic aspect, LFC has achieved the best performance in history with sales reaching KRW 1.3717 trillion and net profit of KRW 214.9 billion, and improved corporate value by expanding competitive businesses under challenging conditions of increasing internal and external uncertainty along with the continued low-growth trend in 2018.

From the social aspect, LFC established the '3+1 strategies' to create value for the shared growth of local communities and the company, and has carried out various sharing activities to grow as a company that fulfills its social responsibility.

From the environmental aspect, LFC has been investing in green management for including the reduction of environmental pollutants.



LFC established the long-term vision of 'Global Leader in Fine Chemicals' to play a key role in the chemical sector of LOTTE Group. As such, it intends to become a sustainable company by reinforcing synergy, improving substantial growth and profitability, expanding its production base, improving business sites, and enhancing cost competitiveness based on the status of LOTTE Group in the domestic market and the networking and operating capabilities of its chemical affiliates in the global market.



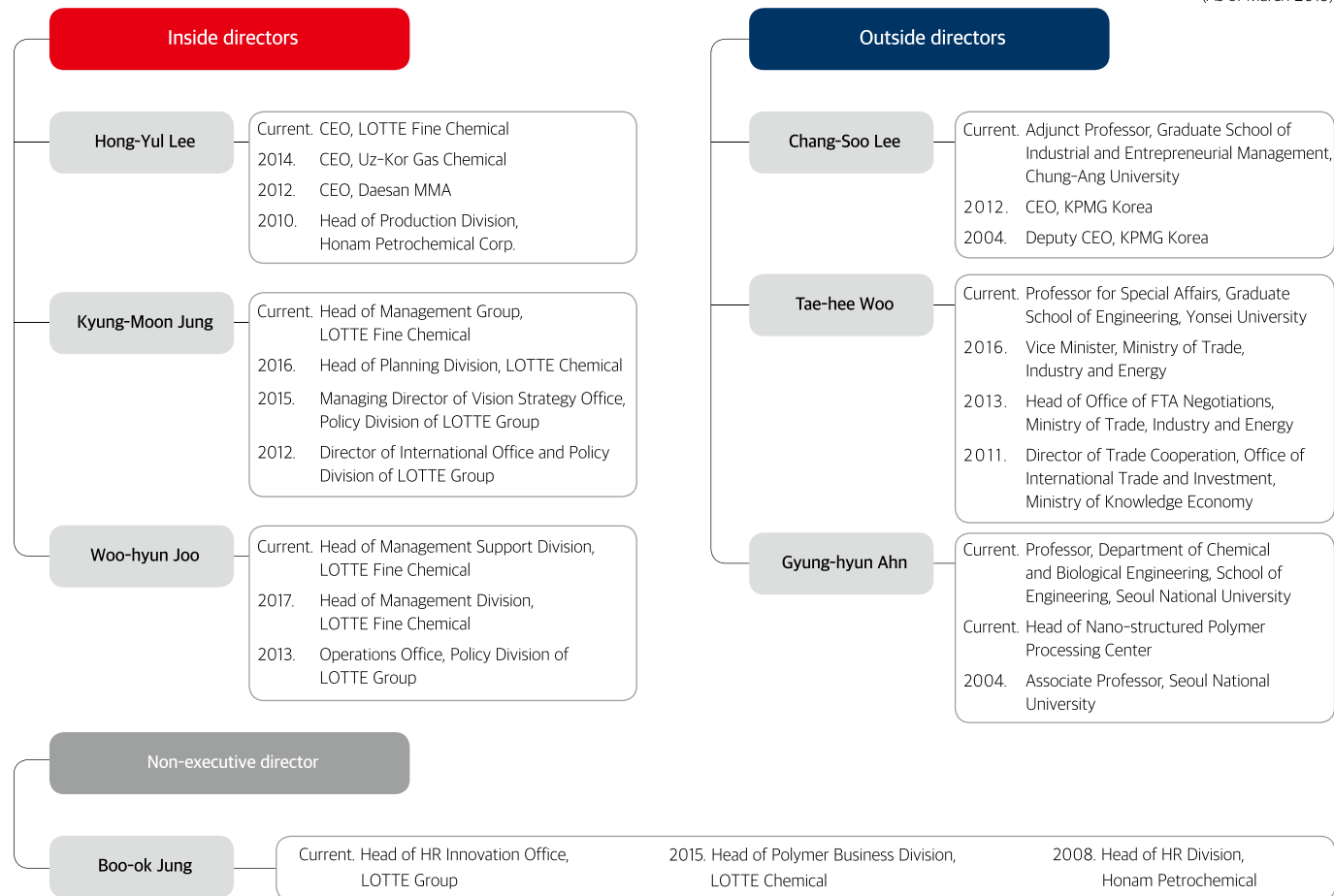
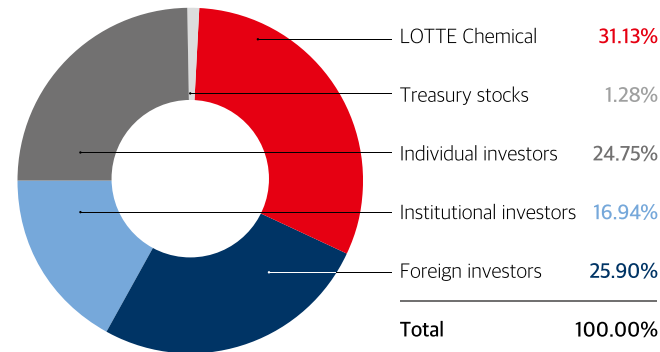
# Governance

## Board of Directors(BOD) status

The BOD is the highest decision-making body for management activities and overall business operation. LFC operates the BOD transparently to carry out management activities based on checks and balances. The BOD consists of three inside directors, a non-executive director, and three outside directors, who are experts in each field. Based on the independence requirements, outside directors provide professional opinions regarding the company's major decisions in terms of sustainability and evaluate and review the performance of the company. The BOD meets regularly in accordance with the annual operating plan, and may hold a provisional meeting when there is an urgent decision-making issue. Voting rights of the directors are limited in accordance with the Commercial Act and the BOD regulations to prevent conflicts in a specific agenda.

## Ownership ratio

(As of the end of December 2018)



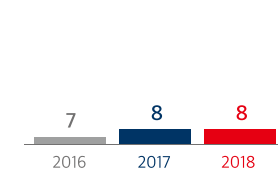
## Activities of BOD

The BOD holds the regular and provisional meetings as necessary, and deliberates and resolves the major management issues of the company as stipulated by the applicable laws, the articles of incorporation, and the BOD regulations. In 2018, a total of eight board meetings were held, and a total of 22 resolutions were passed. The average attendance rate of outside directors was 100%. The BOD meeting is convened by the chairperson of the board or a director appointed by the board, and resolutions are

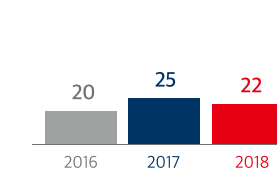
made by the attendance of the majority directors and the majority votes of the attending directors, except as otherwise provided in the applicable laws and regulations. LFC discloses information on the board, including the composition and performance of the board of directors and its subcommittees as well as major resolutions, on its website. Moreover, LFC discloses business reports regularly and makes prompt and accurate disclosures as required by the relevant laws and regulations, and discloses matters that may have a material effect on shareholders and stakeholders.

Date	Key Agenda	Decision	(Unit: Person)	
			Attending Directors (Total)	Attending Outside Directors (Total)
January 10, 2018	● Report on the promotion and retirement of executives	-	5(5)	2(2)
January 25, 2018	● Approval of financial statements and business report for the 54th fiscal year(2017) ● Donation	Passed Passed	4(5)	2(2)
February 26, 2018	● Decision on holding of the 54th ordinary shareholders' meeting and other agendas ● Payment of performance bonus to CEO ● Report on assessment of internal accounting management system operation for 2017 ● Report on auditor's opinion on internal accounting management system operation ● Report on examination of compliance control standard	Passed Passed - - -	4(5)	2(2)
March 22, 2018	● Commission of director's duty ● Appointment of committee members of BOD ● Approval of limit on remuneration of directors for the 55th fiscal year ● Approval of limit on remuneration of executives for 2018 ● Appointment of fair trading compliance officer	Passed Passed Passed Passed Passed	4(4)	1(1)
April 20, 2018	● Establishment of US office ● Business performance for Q1 in 2018 and outlook for H1	Passed -	5(5)	2(2)
July 26, 2018	● Approval of limits on transactions with major shareholders ● Retirement pension transaction with person of special interest ● Business performance for H1 in 2018 and annual outlook	Passed Passed -	5(5)	2(2)
October 25, 2018	● Business performance for Q3 in 2018 and annual outlook	-	5(5)	2(2)
December 19, 2018	● Establishment of business plan for 2019 ● Approval of comprehensive limits on transactions with major shareholders in 2019 ● Report on the promotion and retirement of executives	Passed Passed -	5(5)	2(2)

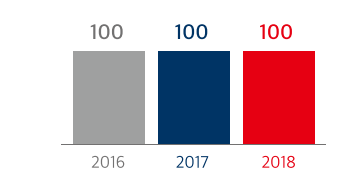
Number of meetings (Unit: Time)



Number of decisions (Unit: Case)



Attendance rate of outside directors (Unit: %)









### Sub-committees of the BOD

To improve the efficiency of management activities, the BOD has established the Management Committee, Audit Committee, Related Party Transactions Committee, and Compensation Committee. Although LFC with its total assets of less than KRW 2 trillion does not have an obligation to operate the Audit Committee, the company established it to ensure the transparency of its accounting business audit.

### Transparency of BOD operation

With total assets of less than KRW 2 trillion at the end of the previous year, the company does not have an obligation to operate an outside director nominating committee. However, for fairness and independence in management, it elects directors through nomination by the BOD and resolution by the general meeting of shareholders. Directors are required to satisfy the qualifications defined in the applicable laws and regulations and the articles of incorporation and to have integrity, sound ethical awareness, and a proper work ethic, and to represent the long-term and balanced interests of all shareholders and stakeholders of the company. Accordingly, the company has elected directors who can make independent decisions and have no significant personal interests in the company.

(As of March 2019)

Sub-committee	Composition	Position	Purposes and Authorities
Management Committee	3 inside directors 	Hong-Yul Lee Chairperson Kyung-Moon Jung Member Woo-hyun Joo Member	Improve efficiency of management and operation Resolve Board of Directors delegations
Audit Committee	3 outside directors 	Chang-Soo Lee Chairperson Tae-hee Woo Member Gyung-hyun Ahn Member	Gain transparency and efficiency of business
Related Party Transactions Committee	3 outside directors  1 inside director 	Chang-Soo Lee Member Tae-hee Woo Member Gyung-hyun Ahn Member Kyung-Moon Jung Member	Secure transparency in company management by establishing fair trading compliance program
Compensation Committee	2 outside directors  1 inside director 	Tae-hee Woo Chairperson Chang-Soo Lee Member Kyung-Moon Jung Member	Secure objectivity and transparency in calculating director compensation Determine compensation limits for registered directors to be submitted to the general meeting of shareholders Other matters delegated by the BOD

## Risk Management

### Risk management system

In a rapidly changing business environment, the importance of risk management centered on the corporate environment, safety, and

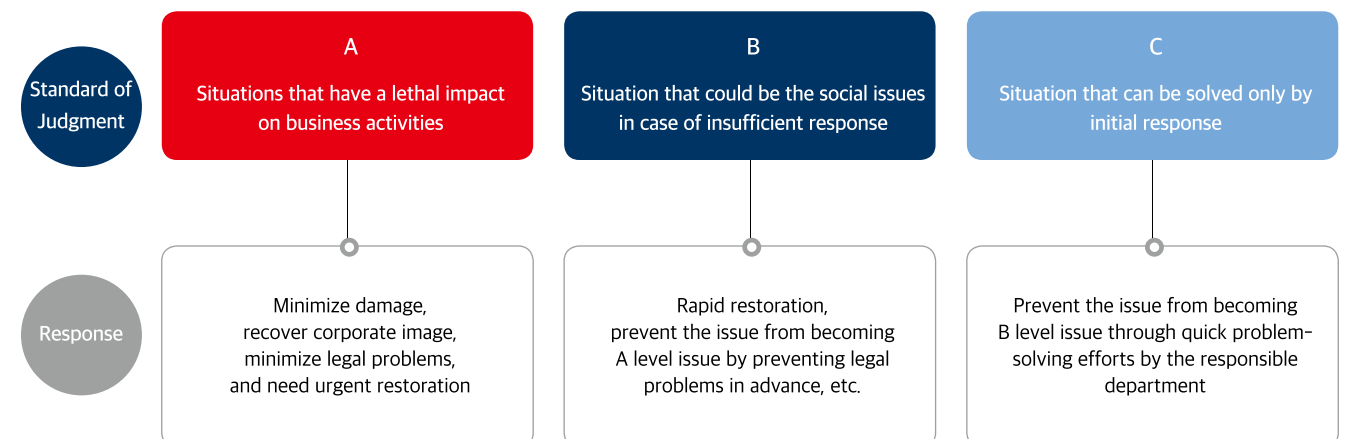
response to external media are increasingly emphasized. LFC manages company-wide risks (financial and non-financial) and business-specific risks, and the risk management system of the company enables rapid decision-making and early response.



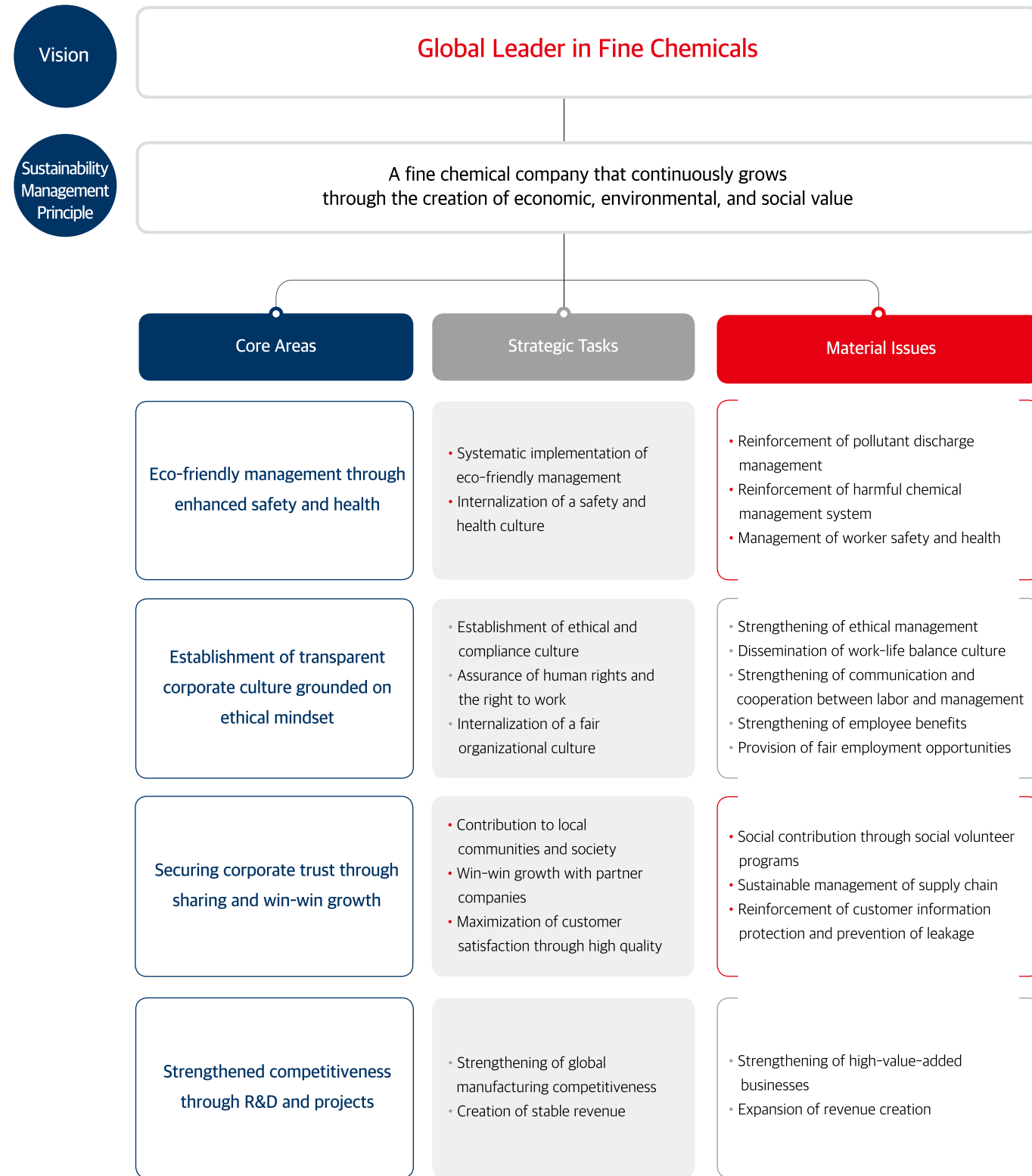
### Risk response process

LFC operates a risk response process according to the level of risk. For levels A and B with higher risk levels, the Risk Management Committee

is convened for a company-wide response. For level-C risks at the lower level, the executive in charge responds promptly and submits a follow-up report to the Risk Management Committee.



# LFC's Sustainability Management



## Sustainability strategies

LFC has established the sustainability management system linked with a company-wide management strategy to implement sustainable business management. It expanded the core areas for implementation and established strategic tasks based on material issues. The performance of the sustainability management system is linked with the UN Sustainable Development Goals.

Performance in 2018					Related SDGs
Environmental investment (noise, water quality, air quality, etc.)	Green purchasing	Process Safety Management (PSM) Rating	Deficiencies in Safety and Health		3. GOOD HEALTH AND WELL-BEING 6. CLEAN WATER AND SANITATION 7. AFFORDABLE AND CLEAN ENERGY 13. CLIMATE ACTION 14. LIFE BELOW WATER
KRW 6.151 billion	KRW 2.198 billion	P	6,567 cases identified 87.7% improved		
Total number of corruption	Percentage of male employees taking parental leave	Collective agreement application rate	Average years of service	Total number of female leaders	5. GENDER EQUALITY 10. REDUCED INEQUALITIES 16. PEACE, JUSTICE AND STRONG INSTITUTIONS 17. PARTNERSHIPS FOR THE GOALS
0 case	71%	51.0%	14.8 years <small>*Industry average: 10.6 years</small>	4 persons	
Social contribution expenditure	Partner company transactions	Partner company satisfaction	Total number of loss or theft of customer information		1. NO POVERTY 2. ZERO HUNGER 4. QUALITY EDUCATION
KRW 9.56 million	KRW 334.2 billion	84.5 points	0 case		
Investment in R&D	Sales of eco-friendly products	Export of green materials	Net profit		8. DECENT WORK AND ECONOMIC GROWTH 9. INDUSTRY, INNOVATION AND INFRASTRUCTURE 11. SUSTAINABLE CITIES AND COMMUNITIES 12. RESPONSIBLE CONSUMPTION AND PRODUCTION
KRW 11.9 billion	KRW 352.3 billion	83 countries	KRW 214.9 billion		

## United Nations Sustainable Development Goals (SDGs)

17 goals in a global partnership for sustainable development of all countries-developed and developing.





LFC supports the UN SDGs and intends to fulfill its role in achieving the goals through its business and organizational operation.

LFC will contribute to the promotion of the local economy and the sustainable growth of the national economy by creating quality jobs through the process of producing products (SDGs 8). The company distributes value by returning economic resources gained through business activities to the society and its stakeholders.

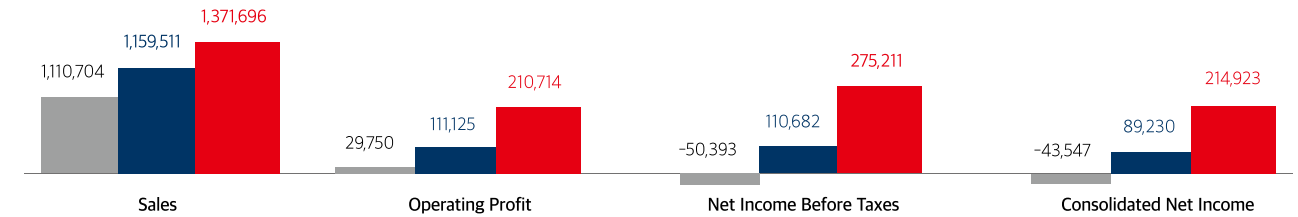
## Creation of Economic Value



### Creation and distribution of economic value

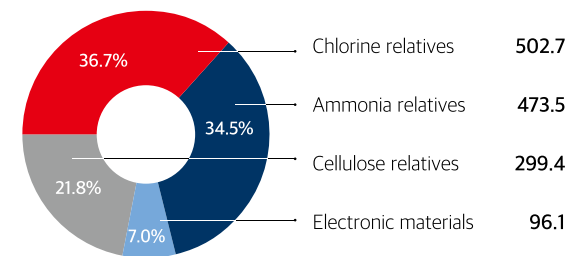
#### Summarized Consolidated Income Statement

2016 2017 2018 (Unit: KRW million)

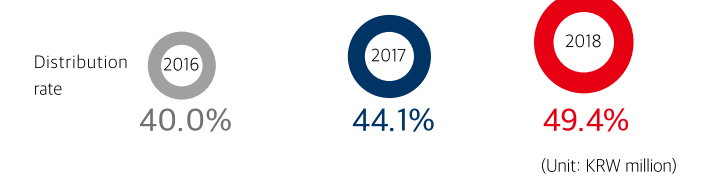


#### Portions of sales by business sector

(Unit: KRW billion)

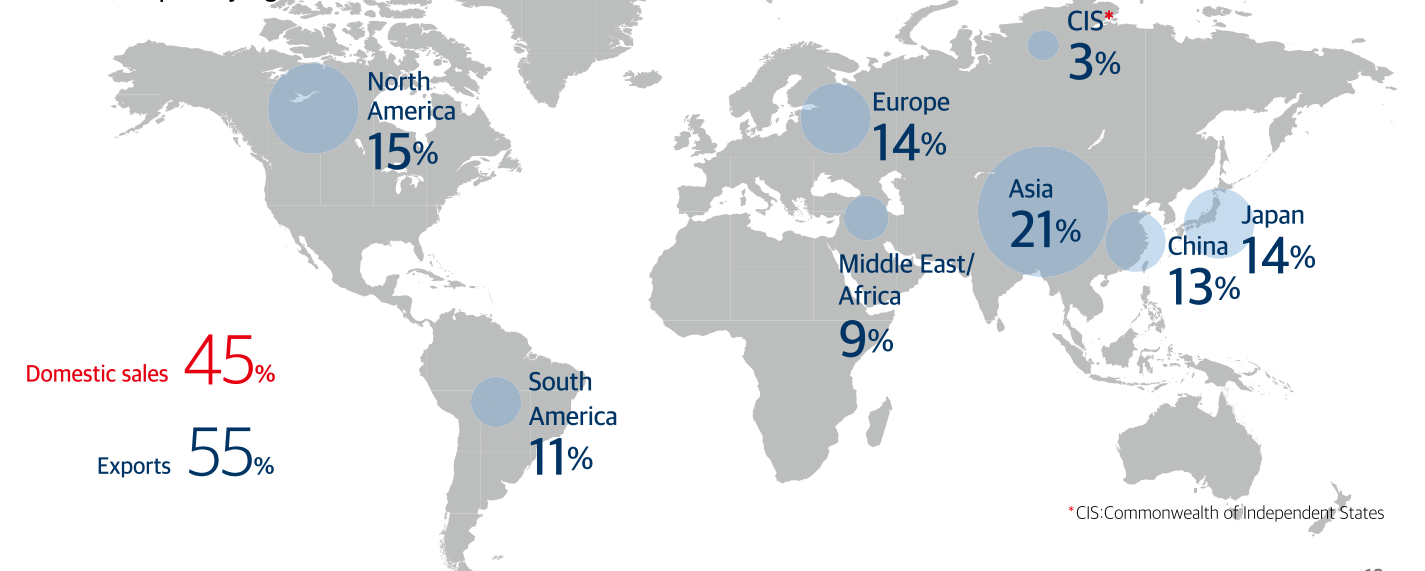


#### Distribution of economic value



Type	2016	2017	2018
Shareholders	7,641	20,376	43,299
Employees	96,775	110,476	122,912
Government and public institutions	19,494	11,807	60,892
Local community	388	561	1,096
Partner companies	319,442	368,530	449,578
Total	443,740	511,750	677,777

#### Portions of exports by region





LFC's product portfolio consists of a chlorine relatives that is widely used in various industries, a high-functional cellulose relatives with leading technology, an ammonia relatives that enriches daily living, and an electronic materials, all of which are the keys to IT-based innovation. LFC secures technological and cost competitiveness through continuous R&D and investment, and leads the way in the global fine chemicals market based on expertise in the production of fine chemicals accumulated over 50 years.



## Chlorine relatives



The chlorine relatives includes products such as ECH (epoxy resin raw material), caustic soda (basic raw material for chemical products), and PTAC (reinforcing agent of paper) that are widely used in a wide range of industries such as architecture, textiles, resins, and medicine. LFC is becoming competitive in the domestic and overseas markets through capacity expansion, new market creation, and cost saving.

### ECH (Epichlorohydrin)

ECH is the raw material for epoxy resin, which is the main material for waterproof and rustproof paints, and its demand is expanding in various industries.



| Applications | Water-resistant synthetic resin products, ion exchange resins, and flame retardants

### Caustic soda

Caustic soda is a by-product of Chlorine, a raw material of ECH and PVC. It is used for basic raw materials and pH adjustment of the chemical industry, metal washing, and water treatment.



| Applications | Surfactants, synthetic fibers, dye intermediate, perfumes, pesticides, etc.



## Cellulose relatives



The cellulose relatives include MECELLOSE® (cement property enhancer), HECELLOSE® (paint property enhancer), AnyCoat® (capsule or coating agent), and AnyAddy® (food additive) that are widely used in a wide range of industries including architecture, pharmaceutical, and food, and are securing market competition through differentiated technologies.

### MECELLOSE® (Architectural additive)

MECELLOSE® is a non-toxic white powder and soluble polymer product that is added to building cement to add viscosity, water retention, lubricity, and stability.



| Applications | Cement mortar, tile cement, ceramic extrusion, polymers, etc.

### HECELLOSE® (Paint additive)

HECELLOSE® is a non-toxic white powder and soluble polymer product that is added to paint and health care products such as shampoos and lotions to enhance viscosity and moisturizing functions.



| Applications | Paint, detergents, personal care, home care, medicines, oil drilling, etc.

### AnyCoat® (Coatings and capsule material)

AnyCoat® is a non-toxic white powder and functional product that enhances the delivery function of pharmaceutical products by utilizing the viscosity, water-solubility, and water retention of tablet coatings and capsule material.



| Applications | Capsules, tablet coatings(for stomach and intestines), etc.

### AnyAddy® (Food additive)

AnyAddy® is a non-toxic white powder and food additive that enhances food texture using viscosity, water solubility, and water retention functions.



| Applications | Applications: Food additive, health functional food coating, gluten-free additive, etc.





## Ammonia relatives

The general chemical business sector that began with the urea and ammonia business has contributed to the drastic growth of the Korean economy by supplying core materials for agriculture and basic industries and by localizing industrial materials that had previously been dependent on imports.

### Ammonia

The basic chemical is widely used as raw material for synthetic fiber nylon and ABS resin. It has contributed to stable income creation for LFC based on top-tier infrastructure.

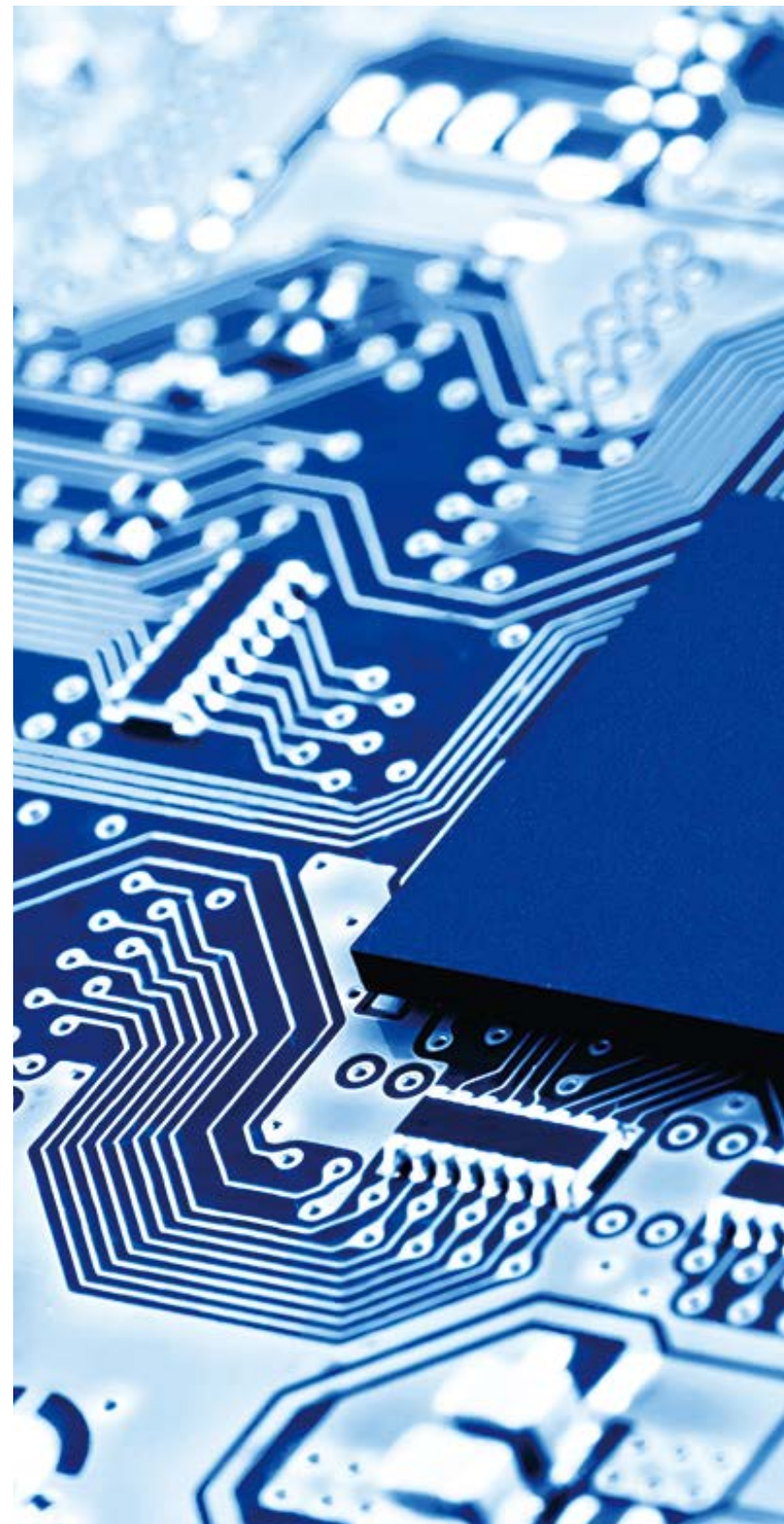


| Applications | Raw material for nitrogen-based fertilizer (urea, ammonium sulfate, ammonium chloride, and ammonium nitrate)  
Raw material for nitric acid, rayon, nylon, acrylonitrile, hydrazine, etc.

### EUROX®

EUROX® is a chemical compound made by mixing urea and ultrapure water. The catalyst reducing solution reduces nitrogen oxide, which is a cause of secondary particulate matter discharged from diesel engines.

EUROX® is LFC's brand for high-quality products manufactured through strict quality control and inspection to be used in the SCR systems of automobiles and ships.

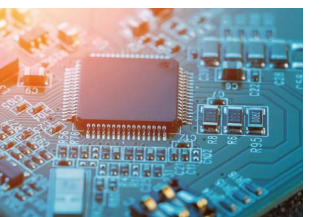


## Electronic materials

The electronic materials includes TMAC(a raw material for semiconductor developing solution) and polymerized toner for color laser printers. LFC is also pursuing electronic materials businesses for the future IT and electronics industries.

### TMAC (Tetramethylammonium chloride)

TMAC is a colorless and transparent liquid that is the core material for the semiconductor developing solution (TMAH) used in semiconductor and LCD/OLED manufacturing.



| Applications | Raw material for semiconductors and LCD/OLED developing solution

### Polymer toner for color laser printers

LFC's polymer toner for color laser printers has the advantages of uniform and small particle size, energy saving due to low temperature, and high-speed printing compared to conventional pulverized toners.







LFC mitigates the socio-environmental impact of urban overpopulation by conducting social contribution programs to improve urban agriculture and low-income residential environments in local communities (SDGs 11). LFC's commitment and efforts to establish a transparent and upright organizational culture have been effective in preventing illegal activities (SDGs 16). LFC intends to become a company that assures sustainable accessibility to energy by operating eco-friendly production processes (SDGs 7), and leads efforts to cope with climate change by implementing company-wide and practical measures to reduce greenhouse gas emissions (SDGs 13).

## Creation of Socio-Environmental Value

Ensure access to sustainable energy



Green Company Certification

### Energy efficiency Organization

LFC has formed a group dedicated to industry-leading energy efficiency and established a long-term roadmap to secure global energy competitiveness. Its Ulsan complex has implemented and upgraded the environmental management system since it acquired the environmental management system certification in 1996. It was designated as a Green Company by the Ministry of Environment again in

2017, and has striven to create an eco-friendly workplace based on the commitment to environmental management by all employees. LFC conducts internal and subsequent external audits to evaluate the performance of its management systems, and continuously strives to meet the environmental trends and customer requirements in Korea and abroad.

### Integrated energy management system

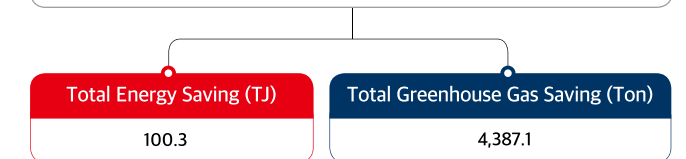
LFC established the challenging goal to monitor energy usage by all devices in its Ulsan, Seoul, and Incheon sites in real time. To achieve the goal, it has held the 'Energy Innovation Day' since 2012 and is continuously promoting energy saving every day by sharing its work with engineering (establishing guidelines and improvement plans), production (applying guidelines and improvement efforts), and energy (system setup and daily feedback).

### Energy efficiency innovation activities

LFC strives to supply high-quality products at low cost to customers and to reduce overall costs under the difficult business environment of rapidly fluctuating international oil prices and currency exchange rates. 'Energy efficiency and cost saving' are the KPI of the production department, and LFC introduced the company-wide integrated innovation program in 2015 to achieve them. The company actively promotes the energy innovation activities of its employees by collecting creative ideas through the knowledge suggestion system, and awarding ideas according to merit.

### Energy Savings in 2018

- MA steam reduction (process improvement)
- PTAC steam reduction (optimized operation of evaporation tower pressure)
- Power saving through efficient PTAC rotator operation
- Energy saving through optimization of urea solution dissolution temperature (25 → 20)
- Improvement of MECELLOSE® power basic unit (saving of power used by reactor inverter circulation pump)
- Improvement of MECELLOSE® steam basic unit (process improvement)
- Saving of HECELLOSE® steam basic unit
- Power cost savings through increase in efficiency of #2 ECH WWT blower operation
- Optimization of DCH circulation pump (1200 → 1000m<sup>3</sup>/H)
- Steam optimization by APC operation
- Power savings by use of a low power consumption membrane

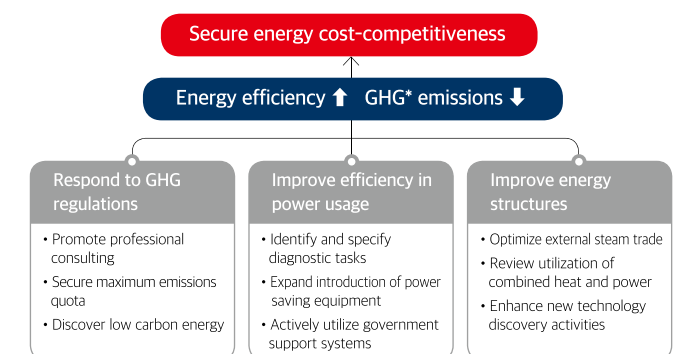


### Company-wide response to climate change



#### Response to greenhouse gas regulations

LFC has established targets for greenhouse gas emissions, energy usage, and energy efficiency, and has been continuously improving them. Each production department establishes reduction goals through the greenhouse gas emission trading scheme implemented in 2015. Internal reduction programs and trade mechanisms help to achieve emission allowance of the company-wide greenhouse gas and energy targets.



\* GHG: Greenhouse Gas



**Greenhouse gas reduction**

LFC is implementing company-wide greenhouse gas reduction activities such as third-party energy diagnosis, increases in equipment efficiency, process improvement, and new technology applications.

The company continuously strengthens the MRV (Measurement, Reporting, and Verification) system for greenhouse and energy real-time management and measuring instruments according to 'the Energy Use Rationalization Act'. In addition, LFC is working to identify greenhouse gas and energy reduction tasks centered on the executives of each production department in the company. As a result, reduction targets are assigned to each team and division, and the Production Innovation Team is managing KPI.

	Key Issue	Objective	Deadline	Outcome
Performance in 2018	Registration of chemicals in accordance with 'the Act on Registration, Evaluation, Etc. of Chemicals'	13 chemicals registration	June 2018	Achieved
	Reimplementation of the integrated chemical management system	System development	May 2018	Achieved
Goal for 2019	Advance notification of chemicals in accordance with 'the Act on Registration, Evaluation, Etc. of Chemicals'	Advance notification of manufactured and imported chemicals of more than 1 ton	June 2019	Planned
	Upgrading of harmful chemical handling facilities in accordance with 'the Chemicals Control Act'	Facility upgrades	December 2019	Planned

**Building sustainable and inclusive cities**



**Urban Box Farming Campaign**

LFC has conducted environmental conservation programs since 2005 in Ulsan, where its business site is located, and began the Urban Box Farming Campaign in 2010 to improve the urban green environment. The Urban Box Farming Campaign is LFC's leading social contribution program that provides opportunities for urban residents to cultivate and harvest agricultural products.

**Bamboo Shoot Protection Campaign in Taehwa River Grand Park's Bamboo Forest**

Taehwa River Grand Park is the leading ecological park, be called as the lungs of Ulsan city. LFC's Charlotte Volunteer Group conducts the campaign to prevent the damage and removal of bamboo shoots from mid May to June when bamboo shoots grow each year. LFC employees and their families participate in the campaign to promote and communicate the importance of natural production to citizens and to create a sustainable city.

**Happy Love House**

LFC has been carrying out home repair volunteer activities for low-income families living in poor environments in connection with the MICOS Children's Center. The company selects families in need of assistance in the local community and provides home repair services such as fixing sinks, kitchens, and boilers, doing new wallpaper, and replacing old furniture.

**Joint Enterprise Program for Social Contribution**

The Joint Enterprise Social Contribution Program was created to promote participation in 'Social Volunteer Best Ulsan', which is the brand for Ulsan's social volunteer service program. The program has the participation of 21 local companies and is providing various services for low-income families in Ulsan. The program includes 'Sharing Kim-chi', 'Vehicle Support for Social Welfare Facilities', and 'Making Happy Box', conducted jointly with Ulsan City Hall and the Ulsan Volunteer Service Center.

**Strengthening of upright and transparent management system**



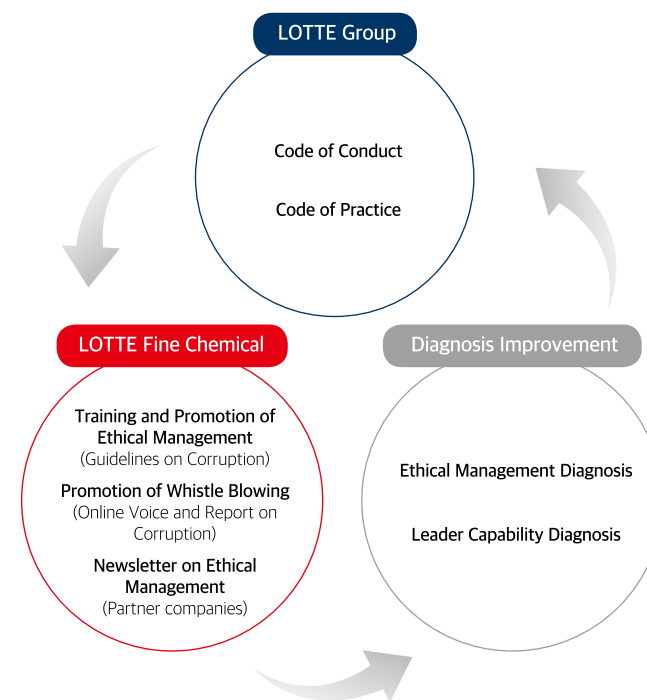
**LFC ethical management system**

LFC operates the Ethics Management Team directly under the CEO to establish the principles of ethical management and communicate them internally and externally so that ethical management becomes a corporate culture.

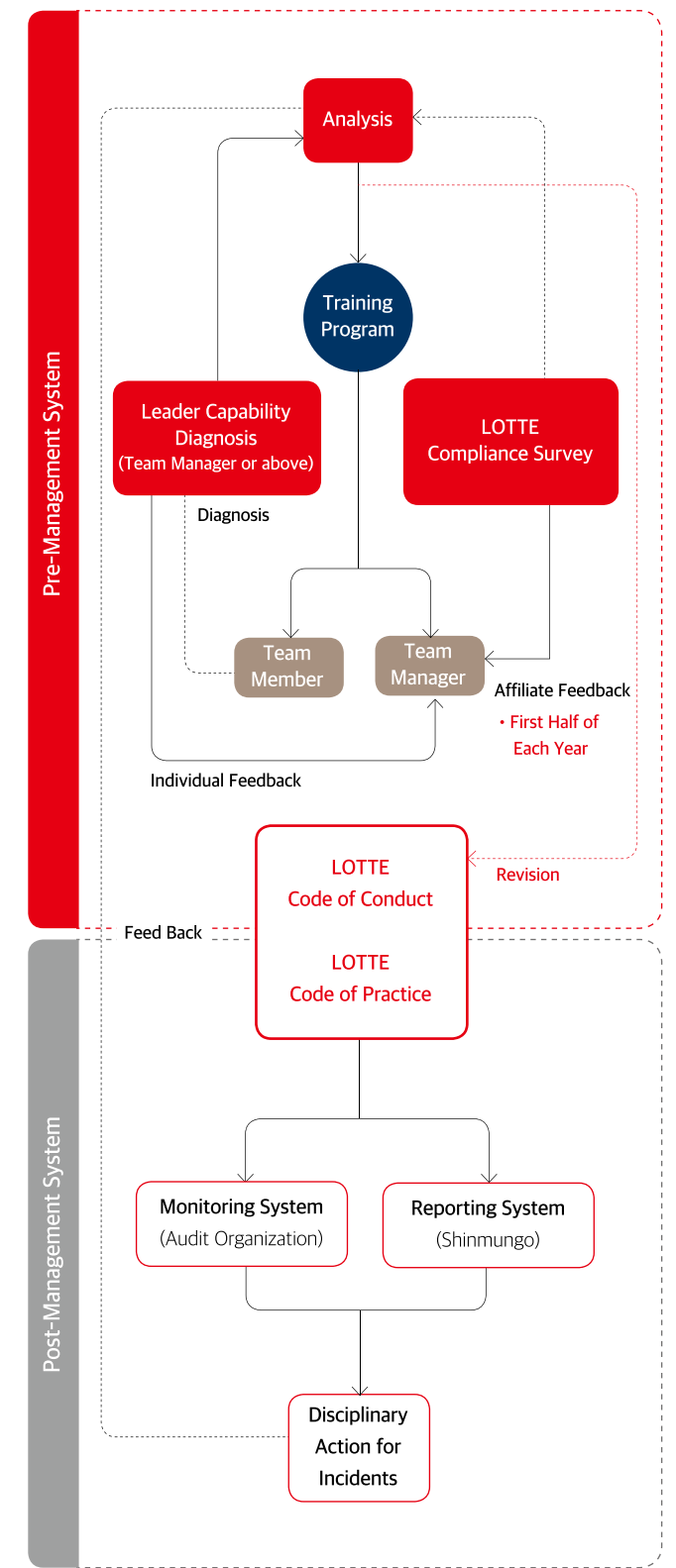
**Diffusion of ethical management culture**

LFC continuously performs training for its employees on ethical management based on the Code of Conduct and Code of Practice. It posts the employee guidelines for ethical management in its intranet portal. The company receives reports on corruption through the online voice page on its website, and conducts follow-up measures such as discipline, process improvement, and ethics management training for confirmed cases. Moreover, LFC sends a newsletter that contains the CEO's commitment to ethical management to partner companies, and strives to establish the ethical management culture across the entire company by conducting ethical management diagnosis and leader capability diagnosis for all employees.

**Ethical management implementation system**



**Ethical Management System**





# Stakeholder Engagement

## Stakeholder and engagement channels

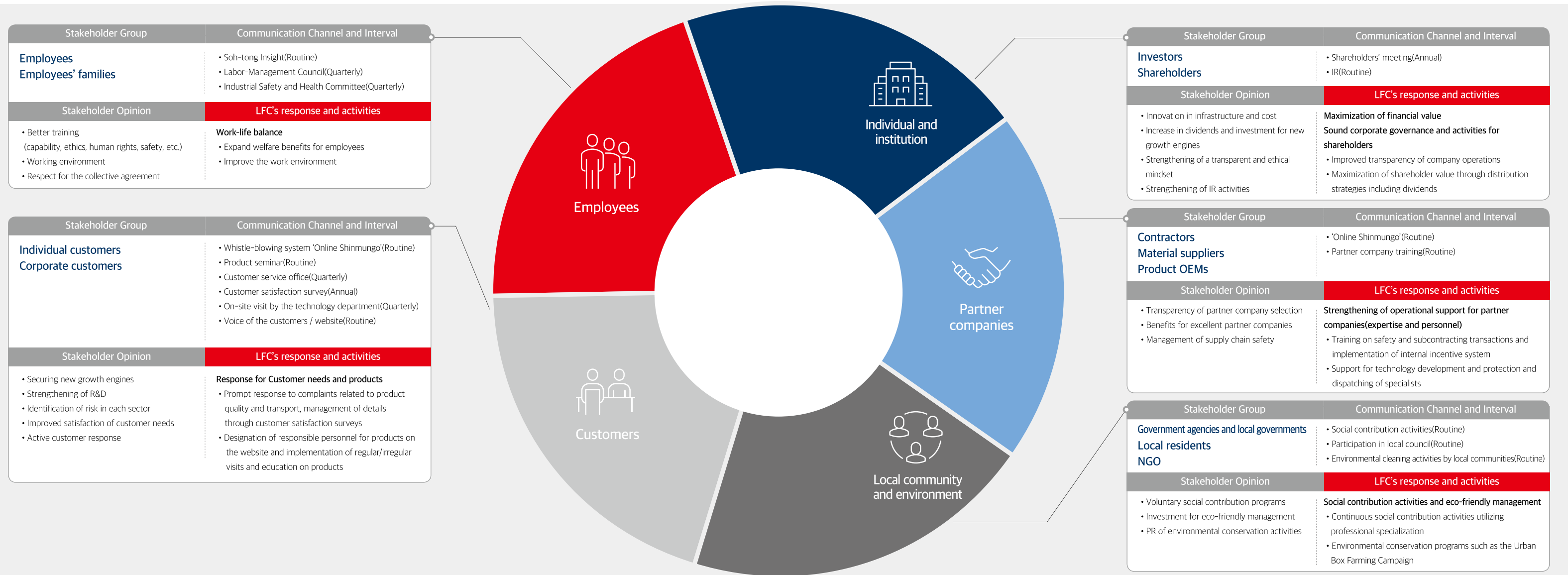
LFC defines the employees, customers, shareholders and investors, partner companies, government, and local communities as stakeholders. The company strives to build a positive relationship with stakeholders

by collecting their voices through various communication channels and reflecting their opinions and requests in its business and management activities.

## Stakeholder engagement opinion

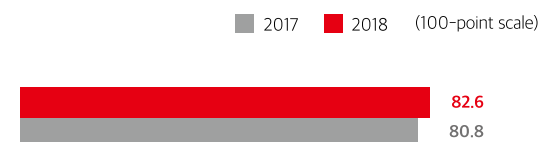
LFC conducted interviews of internal and external stakeholders to understand their awareness of the company's sustainability management and key topics. Awareness of LFC's sustainability management among stakeholders in 2018 increased by 1.8% from 2017, and the area with

the highest awareness was that LFC is a company that complies with regulations and fulfills its social responsibility. The interviews of stakeholders on each issues are described in the reporting pages respectively.

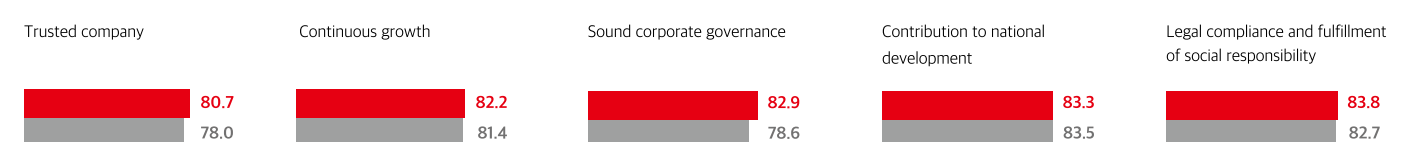


LFC intends to communicate with its stakeholders from the planning stage of sustainability. The company strives to build a positive relationship with stakeholders by reflecting their opinions and requests in its management activities and creating sustainable value together. LFC will continue to enhance its brand value based on the positive awareness of sustainability management.

### Awareness of sustainability management



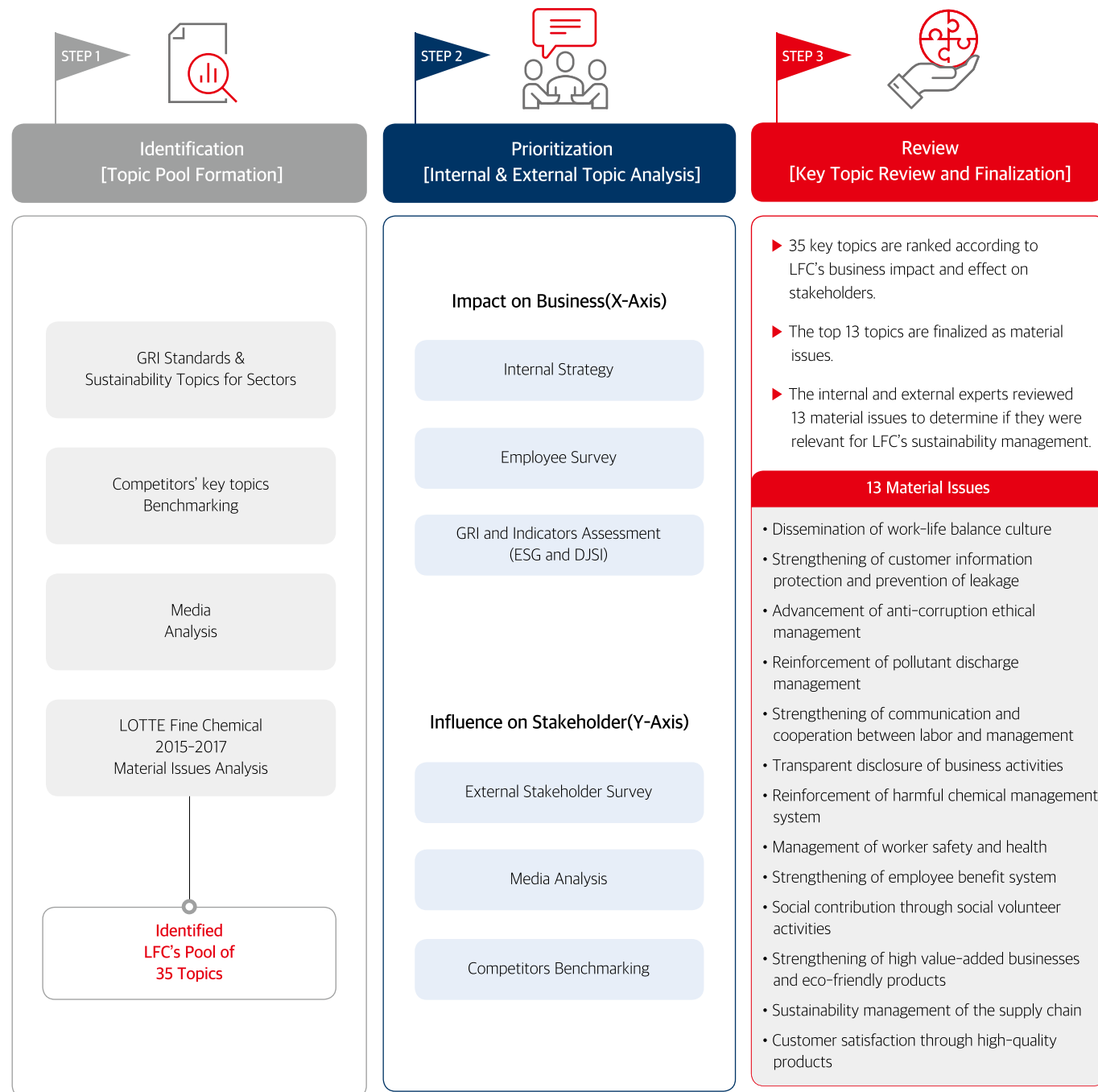
### Awareness of each subject



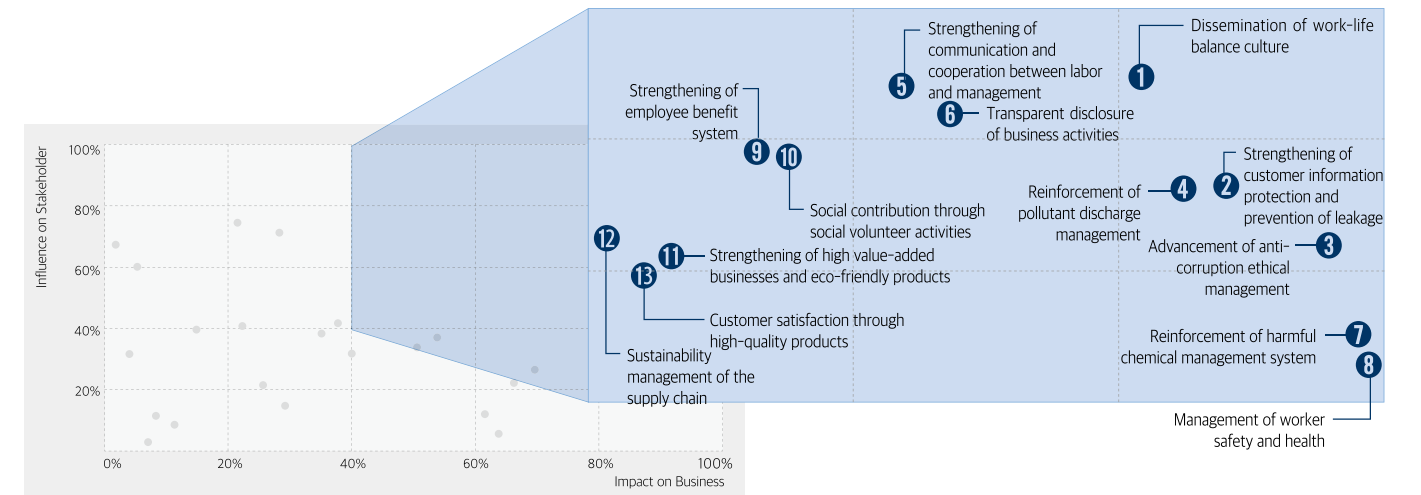
# Materiality Assessment

## Materiality Assessment Process

LFC conducts materiality assessment according to the Global Reporting Initiative (GRI) process and selects key issues with consideration for internal and external impact and interest level. The company reports on the activities and outcome of selected key topics and commits to managing material issues systematically.



## Identification of material issues

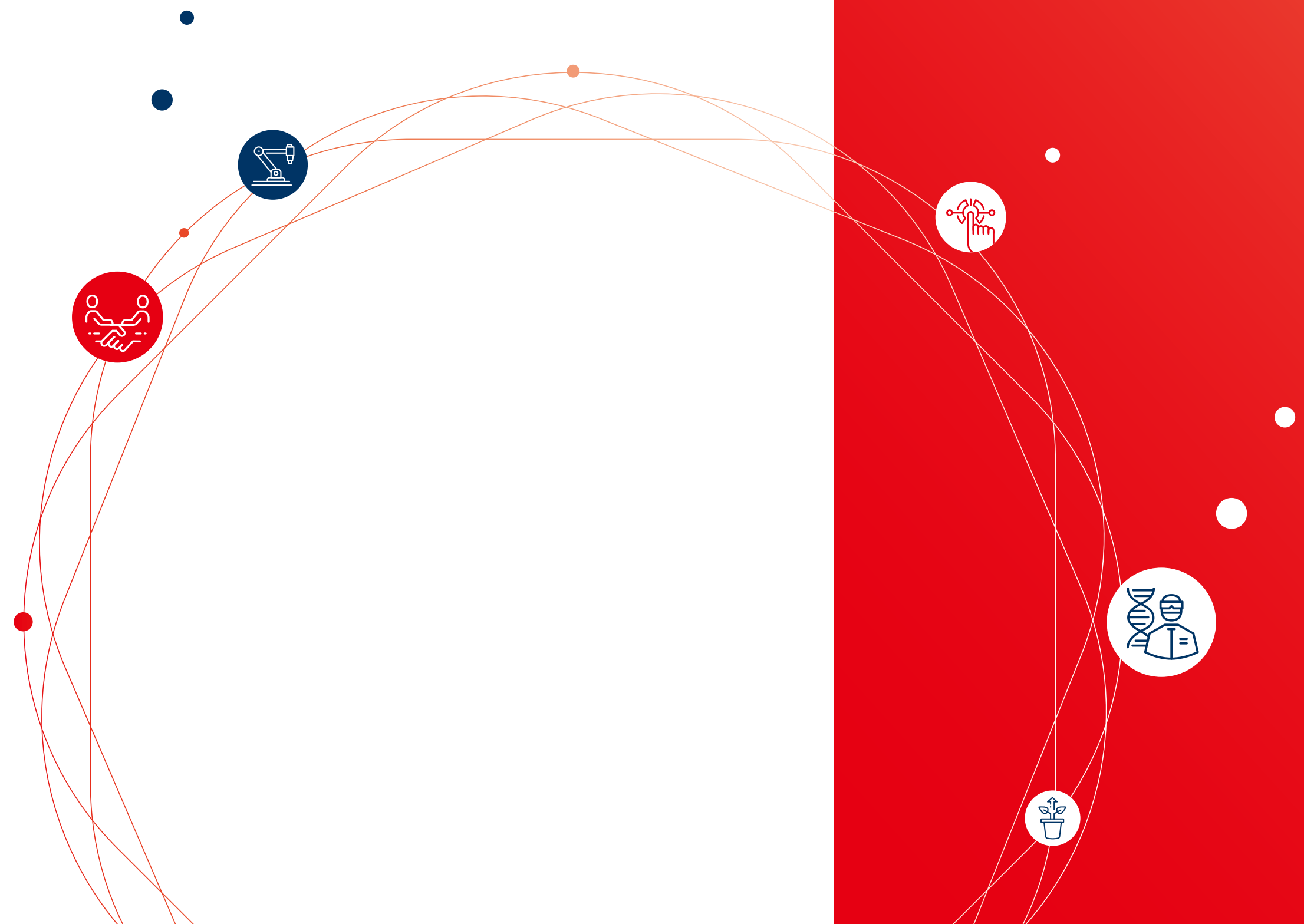


2018 Rank	Material Issues	Core Areas	Report Boundary					
			Internal		External			
			Employees	Government and Local community	Partner companies	Customers	Shareholders and Investors	
1	Dissemination of work-life balance culture	Establishment of transparent corporate culture through an ethical mindset	●					
2	Strengthening of customer information protection and prevention of leakage	Securing corporate growth through sharing and win-win growth				●		●
3	Advancement of anti-corruption ethical management	Establishment of transparent corporate culture through an ethical mindset	●	●	●			
4	Reinforcement of pollutant discharge management	Eco-friendly management with enhanced safety and health			●			●
5	Strengthening of communication and cooperation between labor and management	Establishment of transparent corporate culture through an ethical mindset	●		●			
6	Transparent disclosure of business activities	Establishment of transparent corporate culture through an ethical mindset	●					●
7	Reinforcement of harmful chemical management system	Eco-friendly management with enhanced safety and health			●		●	●
8	Management of worker safety and health	Eco-friendly management with enhanced safety and health	●		●			
9	Strengthening of employee benefit system	Establishment of transparent corporate culture through an ethical mindset	●					
10	Social contribution through social volunteer activities	Securing corporate growth through sharing and win-win growth	●	●				
11	Strengthening of high value-added businesses and eco-friendly products	Strengthening of business competitiveness through R&D and projects	●		●		●	●
12	Sustainability management of the supply chain	Securing corporate growth through sharing and win-win growth	●		●			●
13	Customer satisfaction through high-quality products	Securing corporate growth through sharing and win-win growth	●				●	

\* The key issues selected through the materiality assessment are discussed based on domestic business sites.

## Growing into a socially responsible company

Eco-friendly management through enhanced safety and health	34
Establishment of transparent corporate culture grounded on ethical mindset	40
Securing corporate trust through sharing and win-win growth	48
Strengthened competitiveness through R&D and projects	56





# Eco-friendly management through enhanced safety and health



“LFC’s safety improvement programs are exemplary to other businesses from the worker’s point of view.”

LFC’s workplaces include risk factors such as chemical factors<sup>ethylene oxide, ECH, etc.</sup>, physical factors<sup>noise and vibrations</sup>, and ergonomic factors<sup>musculoskeletal hazards</sup>. Accordingly, LFC measures working environment twice a year to examine the concentration of chemical substances at worksites and evaluate the exposure of workers to harmful substances and to use the data for the improvement of workplaces. The safety and health activities at the site focus on improvement from the worker’s point of view by linking workers with the safety and health manager. This linking takes the form of optimal improvement activities conducted by the safety and health manager immediately after a site worker reports a safety or health issue to the Safety Management Team. The recent safety and health activities focus on systematic management to help workers to avoid mistakes rather than dealing with issues of individual responsibility. In the future, LFC plans to implement additional measures to minimize accidents by segmenting the risk assessment currently applied by LFC.

**Jae-Hwan Lee**

Working Environment Measurement Team Manager, Pusan National University Yangsan Hospital

The Department of Occupational Environmental Medicine has a program to prevent occupational diseases of workers and to establish a comfortable working environment by predicting, recognizing, assessing, and managing the hazardous factors of work processes. It has visited LFC’s Ulsan complex since 2017 to examine the work environment and assess the exposure of workers to hazardous factors.



## Highlights of Performance in 2018



KRW **6.151** billion

Total Investment in Environment  
(Noise, Water Quality, Air, Etc.)



KRW **2.198** billion

Green Purchasing



**P**

Process Safety Management  
(PSM) Rating of Ulsan complex



**6,567** cases identified  
**87.7%** improved

Deficiencies in Safety and Health

## Sustainability Context

LFC’s efforts to establish a safe work environment and to manage the chemicals and contaminants generated by production processes can improve the employees’ health and reduce the environmental burden of the company. The company intends to assure the safety of people and the environment throughout the entire process, from planning to disposal stages, by expanding the scope of safety and health to partner companies following the recent increase in social interest in industrial disasters and exposure to hazardous working environments.

## LFC Approach

LFC establishes a safety and health strategy based on respect for human dignity, and spreads a safety culture led by employees through regular safety training. It supports the safety and health management of partner companies so that more people can be healthier while working in safer worksites. It manages contaminants strictly to minimize the environmental impact of production processes on air, water, and soil, and preemptively responds to climate change by establishing voluntary greenhouse gas reduction targets and KPI from the aspect of risk prevention.

## Next Step

LFC plans to minimize environmental impact by establishing goals regarding green management, investing in environmental improvement, and by complying with regulations. Moreover, it intends to strengthen the safety and health culture by upgrading the safety and health management system.

## A Leap Forward to Become an Eco-Friendly Company

### Pollutant discharge management

#### Air pollutant

LFC established its target for nitrogen oxide (NOx) and sulfur oxide (SOx) discharge to 117 kg/day or less and 10.6 kg/day or less respectively, which represents a reduction of more than 20% from the discharge record in 2017, following the emergency reduction measures issued after 'the Special Act on Fine Dust Reduction and Control' was enacted on February 15, 2019. The company surpassed its NOx reduction target with discharge of 36.8 kg/day by increasing the use of preventive chemicals, and eliminated the discharge of SOx by always using clean fuel for boilers.

#### Air pollutant emissions

Type	Unit	2016	2017	2018
Nitrogen oxides (NOx)	kg	41,458	17,563	16,775
Sulfur oxides (SOx)		19,206	1,048	19.3

\* The total discharge of air pollutants is based on the discharge from all business sites, including the amounts discharged from all processes not only for boiler use.

\* In 2018, LFC minimized SOx discharge by using only clean fuel (LNG) that did not contain sulfur in the fuel for boilers.

#### Water quality

LFC established a monitoring system for wastewater generation by production processes to manage wastewater on a daily basis. It also improved contaminant removal capabilities by installing a multimedia filter to reduce contaminants in the final treated water in the plant. LFC strengthened the internal standard for water pollutant discharge to 50% of the allowable regulatory limit, and makes efforts to reduce pollutant discharge by managing the discharge concentration of wastewater generated by production processes.

#### Water pollutant discharge status

Type	Unit	2016	2017	2018
COD	kg	235,714	236,578	350,076
BOD		-	-	58,772

\* LFC measured BOD (Biological Oxygen Demand) in 2018 for the first time.

#### Wastewater

Wastewater discharged from the Ulsan complex is treated by the wastewater treatment system in the plant and transported to the Yongyeon Sewage Treatment Plant operated by Ulsan City. Some of it is discharged to the shore through the multimedia filter. LFC sets the reduction target for each source of wastewater and improves the processes that can recycle the wastewater in order to reduce overall wastewater generation.

#### Wastewater discharge status

Type	Unit	2016	2017	2018
Total wastewater discharge	tons	8,200,790	8,415,900	9,100,200

#### Waste

LFC manages the entire process of waste treatment with an online system and conducts investment and TF activities to reduce waste generation by setting waste discharge targets each year.

The efforts to manage resources efficiently have resulted in increasing the recycling rate from 44% in 2017 to 71% in 2018 through continuous recycling of landfill wastes.

#### Waste discharge status

Type	Unit	2016	2017	2018
Total waste	tons	61,749	67,540	79,950

### Energy management

LFC establishes energy reduction targets and manages energy usage. The company finds and implements the measures according to company-wide targets for energy usage and reduction.

#### Energy usage

Type (EFO BD)	2016	2017	2018
<b>Direct energy consumption</b> All energy sources except for purchased electricity and steam	480	355	2,458
<b>Indirect energy consumption</b> Purchased power usage (MW) and purchased steam (EFO BD)	12,678	13,806	14,607
<b>Total (TJ)</b>	13,158	14,161	17,065

\* EFO BD: Equivalent Fuel Oil Barrels per Day or TJ

### Greenhouse gas management

LFC responds to various environmental changes in Korea and abroad, such as the government regulation following the greenhouse gas emission trading scheme enacted in 2015. LFC established the greenhouse gas reduction target and conducts various reduction activities.

#### Greenhouse gas emissions

Type	Unit	2016	2017	2018
GHG	tCO <sub>2</sub> eq	652,170	621,707	673,468

#### Segmented greenhouse gas emissions

Type	Unit	2016	2017	2018
Direct GHG emissions (Scope 1)	tCO <sub>2</sub> eq	71,508	100,713	78,073
Indirect GHG emissions (Scope 2)		578,162	520,994	595,396

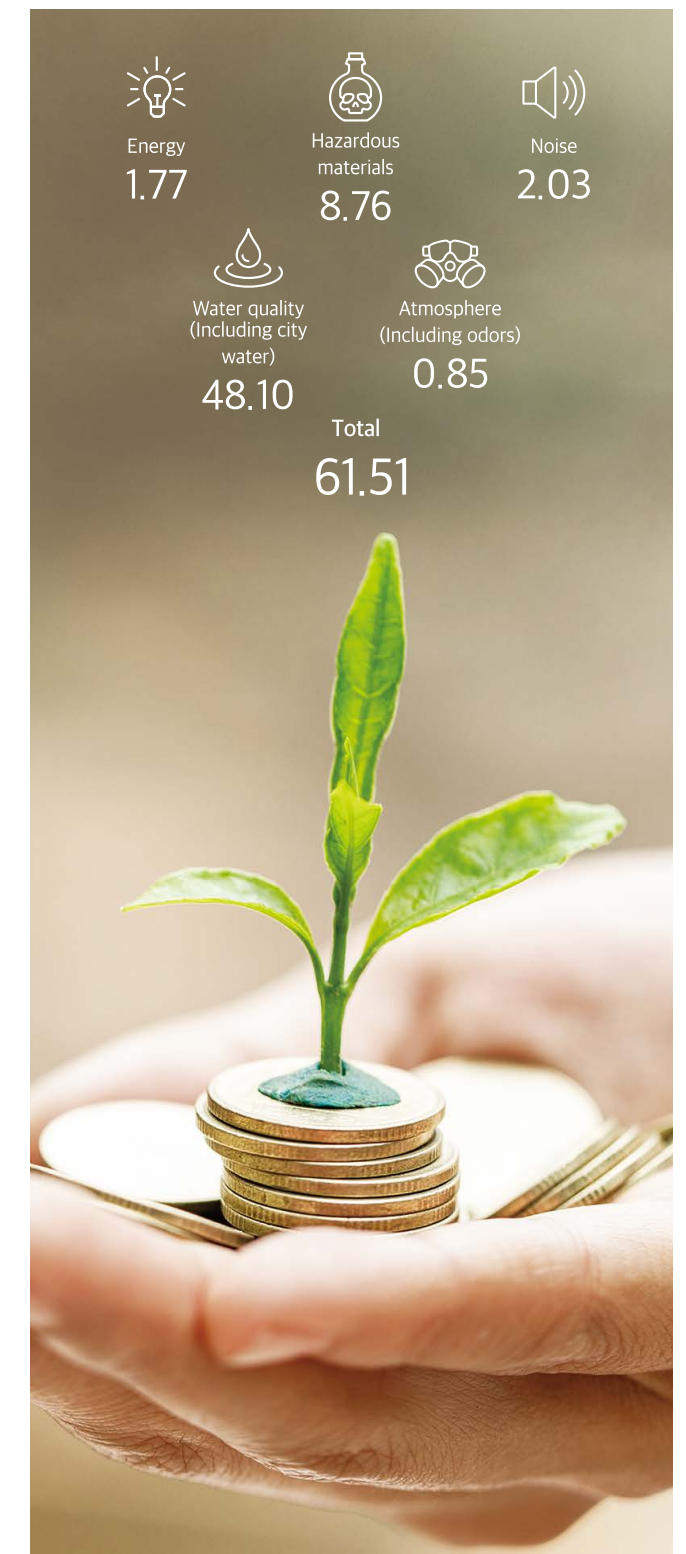
#### Environmental expenditure and investment

LFC is considering the installation of incinerators to reduce emissions of hydrocarbons into the atmosphere, and is engaged in ongoing investment activities to reduce the precursors that generate fine dust. The company preemptively responds to water quality risks such as increased production rates, stricter regulations, and aging water quality management facilities, and invests in the improvement of direct discharge facilities for stable wastewater treatment. At the same time, the company installs an emergency barrier membrane in the path of rainwater runoff to prevent environmental accidents in advance. Additionally, it is reviewing methods for construction improvement and wastewater reuse.

The company invested KRW 2.198 billion in low-power LED, low-power electrode, and low-power separation membranes to reduce energy consumption and minimize standby power at business sites.

### Investment in the environment

(Unit: KRW 100 million, Based on 2018 Business Report)





## Internalization of Safe and Healthy Culture

### Direction of safety and health policy

#### Organization and strategy implementing safety and health

LFC operates the Safety-Environment Division independently to strengthen the safety and health system and to continuously manage them. The Safety Management Team manages safety and health at the company's business sites.

The company intends to create "safe, competitive, and happy business sites" based on the environment and safety management system. Moreover, it has received ISO14001 (environmental management system) and OHSAS18001 (safety and health management system) certifications from international certification bodies based on the consensus of the company and all of its employees regarding the importance of safety and environmental management. As a result of management according to the international standards, the Ulsan complex received a P rating in Process Safety Management (PSM).



#### Establishment of safety culture at business sites

LFC operates various councils to increase the awareness of environment and safety among all employees and to provide incentives for voluntary environment and safety management. It forms consensus regarding safety and establishes a safety-first culture to prevent human error. LFC conducts regular safety education of employees with a monthly theme and discussion of safety-related issues. Moreover, it discusses safety, environment, and health through internal communication channels and publishes the 'Environment, Safety, and Health Manual' containing information on device management, health management, and sanitation management so that workers can adequately respond to accidents (SHE

NOTICE program).

In 2018, the company held a slogan contest to build sustainable business sites, and established the "RE: Mind 50! RE: Start 100!" as the vision slogan, signifying the commitment to become a 100-year company based on the history of the last 50 years.



Safety & Health Management System Certification



Environment Management System Certification



Safety Slogan at a Business Site

#### Safety & Health related councils

Meeting	Interval	Attendee	Main Issues
Weekly CEO meeting	Weekly	CEO, Head of Production Division, and executives	Status report on the implementation of key execution programs and sharing of safety and environment issues and trends
Plant weekly meeting	Weekly	Head of Production Division, executives, and heads of departments	Status report of implementation program details
Plant safety and environment meeting	Monthly	Head of Production Division, executives, and heads of departments	Sharing of key safety and environmental KPI performance and external trends
Safety Contact	Weekly	Executives and above	Presentation of safety and environmental guides and sharing of accident cases
Supervisors' lunch discussion meeting	Monthly	Supervisors (team managers)	Sharing of safety and environmental trends, issues, and guides and briefing of the execution plan
Occupational Safety and Health Committee	Quarterly	Occupational Health committee members from labor and corporate	Discussion of safety and health policy and measures to correct deficiencies
Working level meeting	As needed	Labor unit members of the Committee and Safety Management Team	Examination and discussion of safety and environmental deficiencies

\* The Occupational Safety and Health Committee is organized of 50% from labor and 50% from corporate.

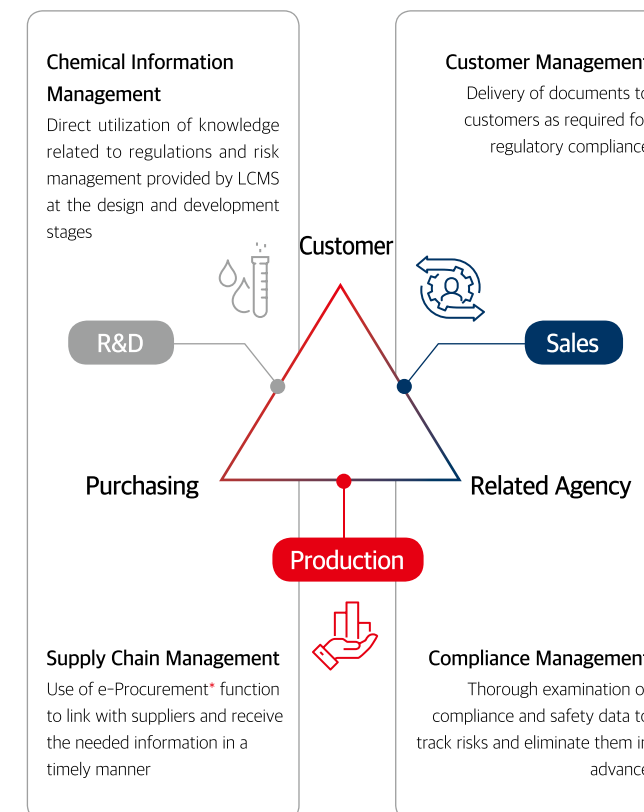
#### Reinforcing of chemical substance management

LFC collects and controls the data of all chemical substances that go in and out of the process, from raw materials to final products.

It has reestablished the management system for the entire process of hazardous substances and operates the LOTTE Chemical Management System (LCMS) to increase operational efficiency through the systematic management of chemical substance information. In 2018, LFC reimplemented integrated the chemical management system to reinforce the management of chemical substances.

In 2019, it plans to implement the advance reporting of existing chemical substances subject to 'the Act on Registration, Evaluation, Etc. of Chemicals' and the upgrade of facilities that handle hazardous chemicals subject to 'the Chemicals Control Act' to comply with both laws.

#### Chemical Substance Management System



\*e-procurement: in-house supply chain system

**Process Integration**  
Integration of regulatory compliance and safety management functions into business processes such as purchasing, manufacturing, transport, and quality management

#### Safety and health management of partner companies

The safety and health management of partner companies in addition to our employees is more important than anything in order to prevent accidents in the field. LFC has been supporting the implementation of the safety and health management system (KOSHA18001) of partner companies present in LFC's business sites since 2014 to achieve the zero-accident goal of business sites through win-win cooperation with partner companies.

The safety and health management system is the system based on Plan-Do-Check-Action, allowing the employees and organizations of each partner company to assess risk according to job scope and content and to establish countermeasures voluntarily then review the effectiveness. Between 2014 and 2018, a total of 13 partner companies received certification with support from LFC. The new partner companies are also subject to certification, and all partner companies present on LFC's business sites operate the safety and health management system. LFC provides the support for post-examination and recertification examination so that partner companies can maintain the safety and health management system.

#### Safety management activities

##### Safety Inspection Day

- LFC has designated every Monday to be the 'Safety Inspection Day', where it conducts safety inspection by theme.
- In 2018, it inspected 50 themes including wastewater, gas equipment, firefighting equipment, filling equipment, and asbestos management. As a result, it identified 2,233 problems and corrected 1,839 cases.
- It also designated the outcome of the focused inspection as one of the criteria for performance evaluation of the manager in order to increase company-wide attention to safety.
- It posts the notable matters of the results in its intranet portal 'Soh-tong Insight' for sharing, and promotes its importance through the regular training on safety and health and the company e-mail.
- In 2019, the company plans to generate and execute the detailed annual plan for the monthly theme and activities and to conduct additional training on the theme for the following month during the regular safety training in order to increase attention and participation in the activities.



# Establishment of transparent corporate culture grounded on ethical mindset



“LFC’s concerns and efforts to create a happy workplace are currently ongoing.”

LFC has formed the company-wide consensus that building happy workplaces is more important than anything for realizing sustainability management. With the consensus that the first step for the happy workplace is ‘the balance of work and life’, the HR Team formed a Corporate Culture TFT with the objective of introducing a family-friendly system, and collected various employee opinions. Among various implemented systems, the employees’ satisfaction regarding male parental leave was very high, with the feedback that it was a very important opportunity to appreciate the value of spending time with children and to facilitate the children’s growth. LFC plans to conduct programs to build an efficient work culture, such as the core time scheme and quarter-day work from the work aspect, and to spread the organizational culture of maintaining work-life balance from the life aspect to help employees to have a ‘family that can grow with their children’.

**Jin-Wook Park**  
HR Team, LOTTE Fine Chemical

LFC’s HR Team is responsible for building happy workplaces through corporate culture and systems by designing, implementing, and operating the human resources management systems and schemes so that LFC can secure, evaluate, and remunerate talented people.



## Highlights of Performance in 2018



**0** case  
Total number of corruption



**71%**  
Percentage of male employees taking parental leave



**4** persons  
Total number of female leaders



**51.0%**  
Collective agreement application rate



**1.6%**  
Ratio of welfare benefit expenditures to sales

## Sustainability Context

The ethical management and sound organizational culture are essential for building customers’ trust, and represent the factor that LFC must consider for sustainable growth. Beyond compliance with regulations, respecting the dignity and opinions of internal and external stakeholders can help to secure excellent personnel and ensure the future of the organization. Moreover, there is an increased demand for the support program and fair trading to build an ecosystem based on win-win management and to grow with partner companies.

## LFC Approach

People are at the center of LFC. LFC respects the human rights of individuals, provides welfare benefits, and supports its employees to enable them to spend more time with family so that the happiness of employees leads to the efficiency of the organization. The company safeguards the hope of the younger generation through fair recruitment processes and listens to the employees’ voices to create a transparent organization based on trust and communication. It operates a systematic program for voluntary compliance in fair trading in order to seek mutual growth with partner companies, and promotes the intention for co-prosperity as a global company.

## Next Step

LFC commits to strengthen the compliance programs and continue to operate the TFT for improvement of the corporate culture to create a sound and transparent organization. Moreover, it plans to introduce programs and systems to secure excellent personnel and to strengthen employee capabilities by establishing a corporate culture for mutual growth alongside employees.



## Strengthening Ethical and Compliance Management

### Advancement of compliance management and CP

#### Compliance management system and organization in charge

LFC operates the Legal Compliance Team directly under the CEO. The Legal Compliance Team establishes and executes the compliance management strategy and presents the overall direction for compliance management. It continuously monitors compliance management to prevent unethical behaviors in advance. It has also set up a system to prevent recurrences by discipline of employees and conducts various programs to increase the employees' awareness of compliance.

#### Organizational status by issue

Internal transactions	Price collusion	Subcontracting	Disclosure
Financial Accounting Team	Legal Compliance Team	Purchasing Team	Corporate Management Team

#### VISION



#### Enhancement of employee awareness of compliance

LFC conducts regular compliance training each year, and conducts various programs to form a consensus among employees in order to promote voluntary compliance management and consciousness. The company also conducts mandatory training of new employees on compliance and ethical management. The compliance management training including the training on 'the Improper Solicitation and Graft Act' in 2018 had

the participation of 100% of employees to enhance their mindset of practicing compliance management (BOD participation in training on 'the Improper Solicitation and Graft Act': 50%).

LFC also monitors for the diagnosis of the compliance management code and the level of compliance management practice culture in order to reflect it in management activities so that compliance management practices can develop continuously.

#### Reinforcement of compliance management

LFC inspects compliance by department, such as sales departments and departments related to subcontracting that are vulnerable to CP, and reports the results to top management to increase the awareness by the relevant staff and to correct the problem in a timely manner. It also manages the corrective measures thoroughly after inspection.

#### Voluntary fair trading compliance program (CP)

LFC appoints and manages the compliance officer for each division based on the Legal Compliance Team for the systematic and efficient operation of the CP. The Legal Compliance Team oversees all business operations related to fair trading.

LFC introduced the CP in 2006 to voluntarily comply with the regulations related to fair trading and to prevent illegal trading. The company generates and distributes a fair trading handbook and uses it as a business manual. It also conducts regular training of worksite departments regarding legal amendments. It conducts the internal diagnosis of relevant departments, and has internal experts on fair trading review for the business processes including new businesses, sales, and purchases to inspect and prevent the possibility of legal violations.

LFC enacted the compliance work regulations after introducing the CP, and operates various training programs for each core factor. In order to strengthen its fair trading capabilities, the company systematically provides CP training for high-risk department of each task. The company provides training to high-risk departments and to personnel in charge of sales, purchasing, materials management, and personal information handlers.

In May 2018, the company proclaimed the 'Declaration of Voluntary Implementation of Strategic Materials Compliance Management' and the rules for effective strategic product management, and raised awareness for the related personnel.

### CEO Compliance Message

Dear Employees,

On the occasion of the 70th anniversary of the Constitution, I hereby declare my commitment to our law and urge you to do so.

From 2017, LOTTE Fine Chemical established and implemented a law-abiding management charter, while revising anti-corruption compliance regulations, such as anti-graft law and operating global-level of compliance programs.

As such, the company's efforts to declare and implement its commitment to law-abiding management have been made in line with social needs and global trend of "honest companies".

In fact, many regulators, both inside and outside the country, are managing and supervising the company with a focus on compliance management and transparency. The level of social censure and punishment for dishonest companies is getting stronger.

The company's efforts in compliance management is only meaningful when all the executives and employees leading the company make an effort to internalize it.

All employees have to bear in mind to follow established rules and procedures. Closing one's eyes when looking at the wrong practice can endanger not only individuals, but the entire company. You have to keep in mind that one day it will turn out obviously.

Now, companies need to continue to grow and survive for a long time. It's a time when honesty and transparency are essential. In order to make LOTTE Fine Chemical a "correct and transparent company", we ask you a few things. So please keep in mind as follows.

**First, All employees must be well aware of, and comply with, work-related laws.**

Where an employee conducts his or her job based on conjectures without correct understanding of the law, there is a high chance of violating the law.

**Second, As for any matter of which the legality is debatable or is uncertain, all employees must check such matters.**

All employees, when uncertain, must inquire of the Legal Compliance Team and support departments and thus prevent legal risks in advance.

**Third, Not only violating the law directly but also instructing, approving, assisting or tolerating the foregoing must not be allowed**

All employees violating the law or internal regulations shall be held strictly accountable.

Dear employees!

We will be stronger and our survival base will be established, when the company and all employees comply with the laws and principles and be honest and transparent in daily life.

Let's make a foundation for LOTTE Fine Chemicals to make a fresh leap forward, by establishing compliance management culture based on "honesty and transparency".

Thank you.

July 17, 2018

CEO of LOTTE Fine Chemical **Hong-Yul Lee**



Training on laws related to subcontracting | Training on laws related to the prevention of overseas corruption

#### Declaration of Voluntary Implementation of Strategic Materials Compliance Management

Recognizing the importance of controlling the export of strategic materials for the purpose of enhancing the corporation's reputation and ensuring sustainable growth, we declare the following.

**First,** we will strive to ensure that all executives and employees clearly recognize and understand that the proper implementation of an export control system for strategic materials is our corporation's responsibility to society, and it is essential to uphold this system in order to maintain international security and world peace.

**Second,** we will proactively establish an organizational and managerial structure suitable for the autonomous management of strategic materials.

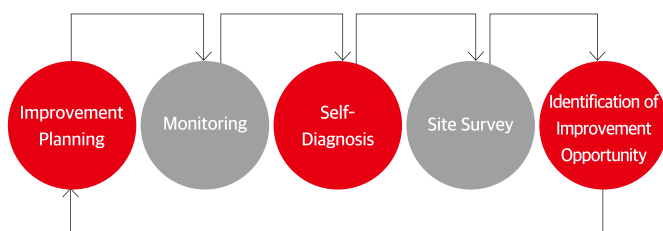
**Third,** we will put forth our best efforts for the purpose of complying with the government's strategic material export policies and do our best to prevent any violations of foreign trade laws, such as the illegal export of strategic materials.

## Guarantee of Basic Rights of Employees

### Human rights management system

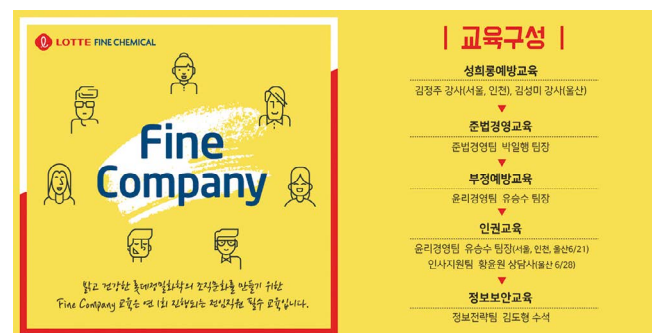
LFC practices the respect for human rights of individual employees according to human dignity as stated in the constitution and the corporate philosophy of respect for individual human rights of employees. It prohibits forced labor and child labor, complies with 'the Labor Standards Act', and strictly prohibits discrimination based on academic background, region of origin, gender, age, religion, or race. The company guarantees fair treatment of all employees in the HR system and welfare benefits, from hiring to assignment, promotion, wages, training, and retirement. There was no case of discrimination during the reporting period in 2018, and there is no business area that may severely infringe upon the freedom of association and collective bargaining. In 2018, the company set up human rights training conducted by a psychological counselor during the legal training course for all employees for the prevention of verbal violence.

### Working conditions and human rights risk management process



### Percentage of employees having received human rights training

Type	Unit	2017	2018
Training on prevention of sexual harassment	%	99.2	96.4
Other human rights training		0	96.4



Fine Company training

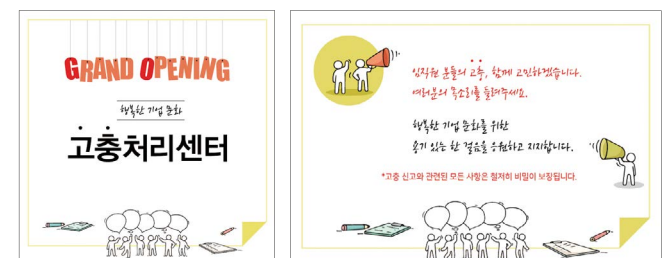
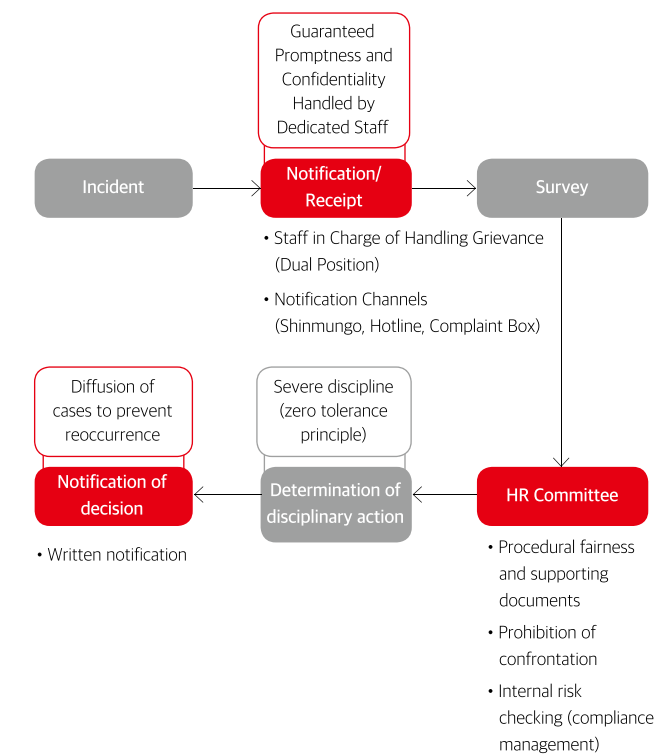
### Fair evaluation and remuneration

LFC operates a transparent and fair performance management system to motivate employees and to provide fair feedback, and has established a system that enables fair compensation according to the performance evaluation of individuals and organizations.

### Operation of Grievance Center

LFC opened the Grievance Center in 2018 to hear and resolve various grievances of its employees and to receive reports through the whistleblowing channel. It also assigns a grievance counselor at each site to respond to the reports quickly and proactively.

### Grievance/Sexual Harassment Prevention and Handling Process



Setup of grievance handling center

### Work-life balance

#### Flexible work system

LFC operates a flexible work system that enables employees to select their working times according to their needs, such as for parenting and self-development, in order to increase job satisfaction and work efficiency.

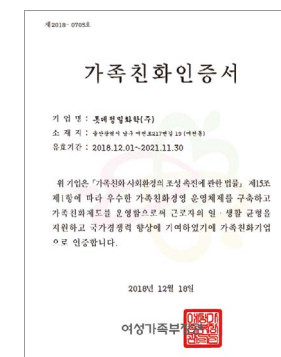
Moreover, the company is creating an environment to reduce late-night work and to avoid business contact after work hours according to the '10 Pledges to Action for Work Innovation' issued by the Ministry of Employment and Labor. The company introduced the 'Mobile-off' system in April and 'PC-off' system in December to increase work time efficiency.



PC-off system

#### Maternity protection system

LFC actively recommends maternity leave and parental leave for employees to ensure conditions for employees' long-term work and to resolve the social issue of low birthrates. The company offers a work-hour reduction system and checkups during pregnancy to support safe delivery, and provides five days of paid paternity leave to spouses. In particular, LFC operates a policy through which talented women can be confident in displaying their abilities with the prevention of unequal treatment and any disadvantages in employment, pay, and career path by the use of maternity leave.



Family-friendly Company Certification

In 2018, 64% of qualified employees used the female parental leave system, and 53% of qualified employees used the male parental leave system (71% cumulative over two years). Moreover, female employees who have a child

entering elementary school within one year can use the leave of absence to care for their child's school admissions in order to promote the balance between work and life.

The company also operates the 'Daddy School' program to help educate male employees before they take a parental leave of absence, as well as 'Mom's Healing' program to help educate female employees who are about to return to work after parental leave.

#### Medical expense support system

LFC supports medical expenses of not only employees but also spouses for actual expenses to reduce the burden of medical expenses for employees and to promote health. The support for expenses related to pregnancy and childbirth and complimentary gifts, in particular, are highly satisfactory to employees. The annual medical checkup for employees is changed to a comprehensive medical examination when an employee reaches 30 years or older, offering a precision examination program along with the regular 100 items.

#### Cultural life support system

LFC provides support for cultural activities when employees form a club that meets the criteria in order to increase the job satisfaction of employees. There are currently 21 active clubs for scuba diving, performance arts appreciation, soccer, bowling, and other interests.



Leports club

Baseball club

#### Psychological counseling

LFC provides channels to help to effectively mitigate different types of stress that occur in daily life from work and home through 'the Do Dream Center', a counseling center. The company regularly presents information regarding mental health through a monthly internal mail and online bulletin board, and conducts a psychological test and a meditation program, offering visiting counseling sessions at least once a month to promote family counseling.



## Internalization of Fair Organizational Culture

### Fair hiring and opportunity

LFC strives to create high-quality jobs and offer equal opportunity to all, and selects excellent personnel through a fair hiring process.

#### Hiring Process



### Strengthening of human resource development

LFC trains its employees to become 'business leaders' through a wide range of systems from recruitment to human resources development. The company strives particularly to develop female human resources through the special lecture for female leadership, support for self-development for female managers, support for participation in forums for networking, and programs for female employees returning from parental leave. LFC invests about 43 hours and a total of KRW 1.03 billion in education and training expenses annually for the cultivation of personnel.

#### Training time per person

(Unit: hours)

Type	2016	2017	2018
Training time per person	45	47	43

(Company-wide training performance for general employees)

### Training on job function

LFC supports the participation of its employees in training provided by outsourced professional organizations and acquisition of job-related qualifications to strengthen the competencies required for each job. The company also holds a systematic on-site training technology academy to ensure safety and manufacturing competitiveness and to secure a knowledge base. The company also trains in-house experts for engineering education using internal instructors. It supports its engineers to enter the graduate school of engineering of Seoul National University, and operates education programs in management strategy, purchasing, accounting, and finance to improve capabilities in the supported jobs.

### Training on global competency

LFC supports the improvement of the global competence of its employees through internal language courses and external language support. The company introduces language incentive programs such as language funding and linguistic allowances, and creates an organizational culture that promotes and motivates language learning. In addition, LFC operates learning programs for the research of global markets including the United States and China to expand its understanding of cross-cultural issues and to equip its employees with global business capabilities through training for prospective resident employees and local hiring personnel.

### Knowledge training program

LFC strengthens the basic competencies of its employees by providing education on subjects such as the prevention of sexual harassment and improving awareness for the disabled. The company also supports the employees to enable various online programs and learning for issues such as digital transformation, and blockchain in order to grasp the latest management and social trends and network business. Moreover, it supports participation in forums of various topics to understand the latest business and social issues and to develop insight, and invites outside experts for special lectures for the employees to freely attend.

### Communication culture

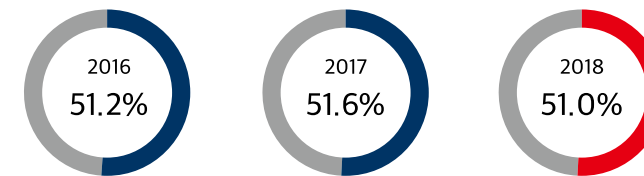
LFC strives to create a work environment where the employees can work freely based on an open culture by expanding online and offline channels for a culture of communication between the company and employees.

### Cooperative labor-management culture

Since its establishment in 1971, the labor union of LFC has built up great trust and communication while building a 'creative partnership', and has continuously implemented joint programs for win-win relationships between labor and management.

With 414 members as of the end of 2018, all employees below the assistant manager position are eligible for membership. About 69% of eligible employees are members of the labor union. The company strives to promote communication by sharing organizational management, duty management, and accident cases through the weekly labor-management council meetings.

### Collective Agreement Application Rate(2016~2018)



\* Collective agreement application rate:  
Number of labor union members / Average number of employees (excluding executives)



Labor-Management Council Meeting

### Mentoring program

LFC offers the in-house mentoring program for new graduates and experienced new employees so that they can quickly adapt to company operations. Each new employee experiences various internal and external activities with a mentor selected in consideration of duty and position to help the new employee to better understand the company and their duties. The reverse mentoring program also enables sharing and communicating insight between generations.

### Discussion meeting at each business site

LFC holds discussion meetings with female employees and worksite employees for direct communication to form consensus and exchange opinions with each other.

### Workplace innovation program

LFC operates 'the in-house Suggestion Square' as a workplace innovation program to collect employees' ideas related to work to increase job efficiency. The company is expanding the culture to share cases that the employees experienced personally and to suggest new ideas to build an active organizational culture.

### Family participation program

LFC operates programs such as group outings to baseball games, volunteer services by employees' families, tours for parents, winter ski camp, and 'the Hanmaeum Festival' for employees and their families to participate together and to share the sound and flexible organizational culture.



Hanmaeum Festival

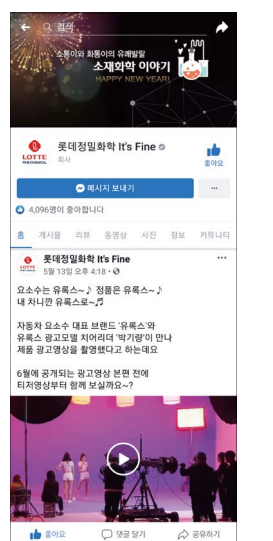
Group outing to a baseball game

### Soh-tong Insight Channel

LFC shares management and company news, useful information, and family events and club events through an internal communication portal called 'Soh-tong Insight'. In particular, LFC's employees can communicate frankly with the company and resolve difficulties through the 'Soh-tong Avatar' (anonymous bulletin board). The company also uses social media to communicate with customers and potential employees.



LFC Blog



LFC Facebook



# Securing corporate trust through sharing and win-win growth



“Participating in meaningful programs to facilitate the self-sufficiency of unwed mothers and provide a bright future for their children”

LFC has been participating in volunteer services for low-income unwed mothers through the Social Welfare Society (SWS) since 2018. The 'HANDS ON' volunteer services that the company conducts four times a year include classes such as leather crafting and candle crafting instructed by unwed mothers who are preparing for economic and social independence, while building their experience and confidence. The craft products made by the employees of LFC are sold through 'the Dream Workshop', which is a business site that helps unwed mothers to become socially independent, supporting the children of unwed mothers. The lecture by unwed mothers is one of the ways to improve their self-confidence and to help them to become economically independent in a society that is not that favorable to unwed mothers. We appreciate that LFC employees pay attention to unwed mothers who are vulnerable in terms of human rights. The social approach to families headed by a low-income unwed mother is to support the children who dream of a better future in a broad sense. We hope for continued cooperation for the expansion of LFC's various social contribution activities such as the emotional support and education for children of unwed mothers so that more families can be self-sufficient.

**Yun-Yung Gi**  
Social Welfare Society

The ultimate goal of SWS is the sound adaptation to society and the emotional and economic self-sufficiency of families headed by unwed mothers. SWS has provided a wide range of support since 2002, such as childcare services, medical service, emotional psychology, education services, self-sufficiency, and other services for the children of low-income families headed by unwed mothers.



## Highlights of Performance in 2018



93.7%

Employees' participation in community service activities



KRW 334.2 billion

Partner company transactions



84.5 points

Partner company satisfaction



0 case

Total number of loss or theft of customer information

## Sustainability Context

Respect for local communities within the influence of the organization and forming a partnership with them is the basis of a sustainable organization and the fulfillment of its social responsibility. The recent trend of social contribution is a shift from discrete volunteer services by employees to solving social issues and contemplating growth as a corporate citizen. To this end, LFC promotes mutual growth with local partner companies to contribute more actively to regional development and raises customer satisfaction with top-quality products and services.

## LFC Approach

LFC conducts volunteer and ongoing social contribution activities in Ulsan, Seoul, and Incheon where it operates its business sites. The company focuses on strategic and efficient volunteer services and donation activities according to 'Happy Family, Dreamy Future, and Warm Companion', which are LOTTE Group's three core values for social contribution. It utilizes its capability as a large company to provide financial support to local small businesses and helps partner companies to establish safe business sites by lending expertise and experience. It continuously monitors its social contribution with the priority on the safety of customer information and the highest product quality, and responds promptly to the customers' voice.

## Next Step

LFC intends to practice balanced sharing with local communities through strategic social contribution activities and to identify programs for win-win growth with partner companies.



## Social Contribution of LFC

### Social contribution strategy

#### Social contribution organization and strategy

LFC conducts ongoing and strategic social contribution activities with the goal of expanding its sharing management with local communities. The company added 'Clean Environment' to 'Happy Family, Dreamy Future, Warm Companion', LOTTE Group's three core values for social contribution, and has conducted donation activities linked with the Group.

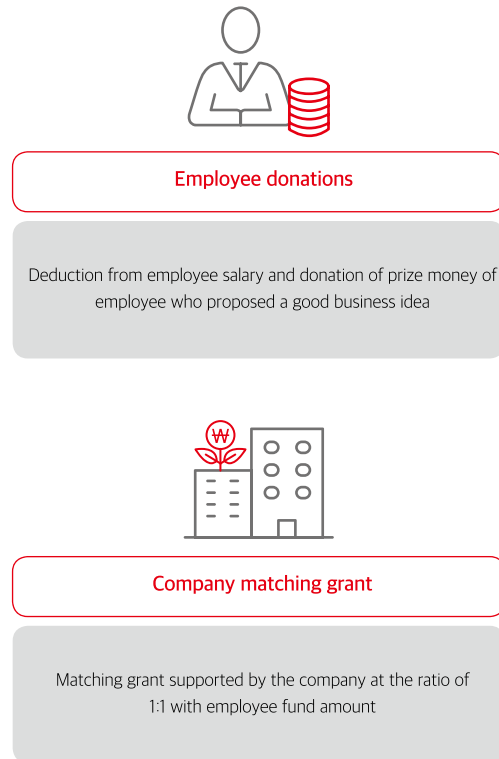
In 2019, the company plans to focus its activities on key local programs based on the '3+1 Specialization Strategy.' As such, it operates the volunteer team at each volunteer center to conduct the activities efficiently, while the CSR Secretary is in place to operate the funding and establish the strategy for social contribution.

#### Operational strategy for each business site

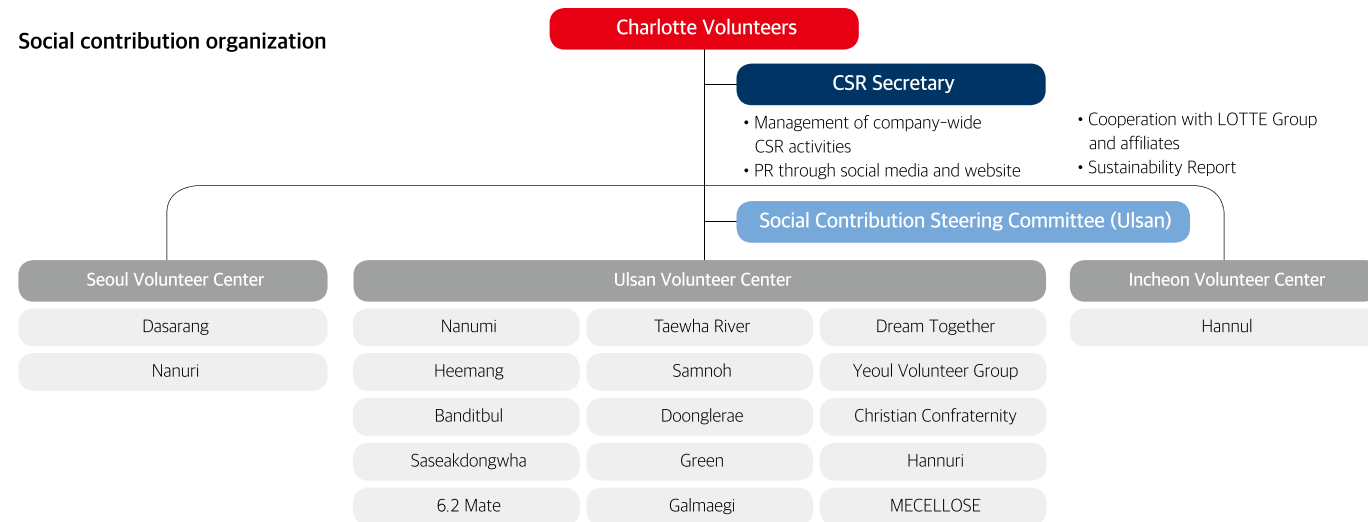
Business site	Description
Ulsan	<ul style="list-style-type: none"> <li>Strengthening of leading social contribution activities</li> <li>Implementation of volunteer services with the participation of employees and families</li> <li>Implementation of social contribution activities linked with LOTTE Group</li> <li>Identification of new social contribution activities</li> </ul>
Seoul	<ul style="list-style-type: none"> <li>Expansion of support programs for women and children</li> <li>Expansion of donations and social contributions linked with LOTTE Group</li> </ul>
Incheon	<ul style="list-style-type: none"> <li>Ongoing projects for disabled children</li> <li>Strengthening of participation of employees</li> </ul>

#### Social contribution fund

LFC's social contribution fund is divided into the funds raised by employees and the matching grant made by the company.



#### Social contribution organization



### Community contribution program

#### Fund expenditures



#### Volunteer Participation by employees



#### Happy Family

##### Happy Love House activities

The Charlotte Volunteer Group conducts home repair volunteer activities for families living in impoverished environments by selecting one family each year in connection with the MICOS Children Center. The Group continuously works to form clean and safe living environments for the families by wallpapering rooms and replacing furniture and light bulbs in their homes.



Love House Volunteering Activities

##### 'Do Dream' goods support and volunteer activities

LFC conducts the 'Do Dream' program jointly with the Samdong Welfare Foundation and group affiliates in Ulsan to practice consistent social contribution. In 2018, the employees visited vulnerable households in Nam-gu, Ulsan to improve the residential environment and to become companions.

#### Dreamy Future

##### Support for 'Ulsan Swings', a Little League baseball club

LFC organized Ulsan Swings, a Little League baseball club, jointly with the Nambu Police Agency and the Nam-gu Multicultural Family Support Center to help the children of multi-cultural families to design a bright future with dreams and hope. In 2018, the company supported the training expenses of the baseball club, cooperated with the LOTTE Giants to conduct a baseball academy, and invited the employees' families to watch the baseball game.



Friendly Little League Baseball Game

##### Donation of books and promotion of reading

LFC donated science books to local schools, selected to help students to learn and read, and conducted book concerts to promote reading. The company expects the donation of the books to increase the understanding of the chemical business and science.



Book Concert at Muryong Elementary School

##### 'HANDS ON' volunteer service

The 'HANDS ON' program is a volunteer service in which LFC employees and their families can participate. It has produced 200 pop-up books and distributed them to multi-cultural families and local child centers and made solar cell lanterns to be distributed to Malawi in Africa.





### Warm Companion

#### Joint Enterprise Program for Social Contribution

'Social Volunteer - Best Ulsan' is the social contribution brand for Ulsan formed by enterprises based in Ulsan City to practice sharing management for expansion of a participatory culture. It conducts programs such as Dream-Ket production and home repair. In 2018, 21 companies cooperated to make Happy-Boxes for the holidays and shared them with their local communities.

#### Blood donation campaign

LFC cooperated with the Korean Red Cross Ulsan Blood Center to donate blood in the summer and winter seasons when the blood supply runs low. LFC employees, as well as partner company employees, participated in the blood donation campaign to share their caring hearts.



Joint Enterprise Program for Social Contribution



### Clean Environment

#### Urban Box Farming Campaign

The Urban Box Farming Campaign is LFC's leading social contribution program with the participation of residents to share seedlings and saplings to promote the importance of urban greenery and nature.

In 2018, it cooperated with Ulsan Forest for Life and Ulsan KBS to distribute fig and herb seedlings and conducted other events to communicate with residents. It has become the region's leading social contribution program through ongoing sharing activities.



Urban Box Farming Campaign

#### Bamboo shoots protection campaign in Taehwa River Grand Park's Bamboo Forest

Taehwa River Grand Park is a bamboo forest that is nature-friendly park represents Ulsan City. LFC has implemented a campaign from May to June to protect the bamboo shoots in Ulsan's Taehwa River Grand Park since 2005. In 2018, employees and their families participated in the program and held a drawing contest for the children.



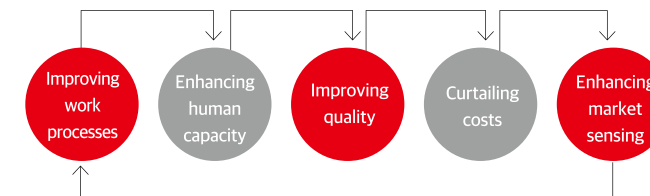
Bamboo shoots protection campaign in Taehwa River Grand Park's Bamboo Forest

## Win-win Growth with Partner Companies

### Win-win growth with partner companies

LFC maintains fair cooperative relationships with its partners through various efforts for mutual benefit. They include the signing of fair trading agreements and improvement of the contract system based on the five key strategies of 'improving work process, strengthening human capacity, improving quality, reducing cost, and strengthening market sensing'. The company uses the standard contract approved by its compliance department for any changes in terms or conditions in order to ensure fair and transparent transactions with partner companies.

#### Implementation Strategy



#### Adoption of LOTTE Group Compliance Committee Guidelines

LFC is solidifying its foundation for shared growth with partner companies based on the Group's policy for win-win cooperation and mutual growth. In particular, in January 2018, the company proactively adopted the Group Compliance Committee's recommendation and fully revised procurement management regulations, thereby maintaining a virtuous circle of partnerships with its partners and actively working for win-win cooperation.

#### Financial support for partner companies

LFC pays out all of the transaction prices in full in cash instead of bills so that payments can be made quickly to partners, and especially for SMEs, the company pays the price within 15 days after issuing tax invoice. In addition, LFC has introduced an early payment system for business partners that need urgent funding at the end of the year, for the New Year, and at major holidays.

### Satisfaction survey for win-win growth

LFC's partner companies are mostly responsible for the supply of raw and intermediate materials, equipment construction, and assuring safe environments. Most of them cooperate with the Ulsan complex.

In August 2018, the company conducted the satisfaction survey for partner companies to examine the satisfaction with transactions and the status of the fair trading process and to collect their opinions for improvement. The survey asked questions to 30 partner companies in the three areas of trade relations, cooperation, and operation systems. LFC received high marks for verbal ordering and dual contract signing in the trade relations area, support for employee technical capabilities and response to inquiries in the cooperation area, and monetary response and legal compliance in the operation systems area. It received a total of 84.5 points.

### Safety management activities for business partners

Given the characteristics of the chemical industry, it is very important to ensure safety in manufacturing processes. LFC holds a weekly safety meeting and a monthly safety advancement conference with its partners to manage the safety of the employees of its partners. Through the safety advancement conference attended by the plant manager, representatives of partners, and managers, the company shares major notices, accident cases, and activities for pursuing safety and health for its partners, and offers a place to discuss it. Moreover, LFC offers special safety training on unsafe behavior and conditions, accidents, forklift safety, and risk assessment, and also offers health training such as regarding wearing of air respirators and CPR through briefings on measurement results of the work environment.



Awarding a Partner Company for Safety

Moreover, it inspects the partner companies quarterly to provide incentives and award for outstanding cases so that the partner companies can focus more on safety and health management.

## Maximization of Customer Satisfaction

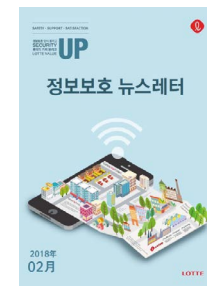
### Customer information protection

#### Customer information protection activities

LFC operates a dedicated information protection organization in order to strengthen its information protection activities, and has taken the highest level of protection measures in accordance with 'the Personal Information Protection Act' and 'the Act on Promotion of Information and Communications Network Utilization and Information Protection, Etc.'. Moreover, the company conducts regular training, management, and supervision for all employees to raise awareness of information protection and to collect, store, use, provide, and dispose of personal information safely. It has designated the first Monday of each month as 'Information Protection Day' to share the precautions, and the first Friday as 'Clean Office Day' to conduct physical information protection activities.

#### Monitoring of customer information leakage

LFC has maintained the ISO 27001 certification, the international standard for information protection, after acquiring it in 2017. The company monitors personal information handlers to prevent the leakage or alteration of personal information. Upon the occurrence of an incident, the company immediately notifies the customer and establishes and implements an accident response plan to minimize the related damage.

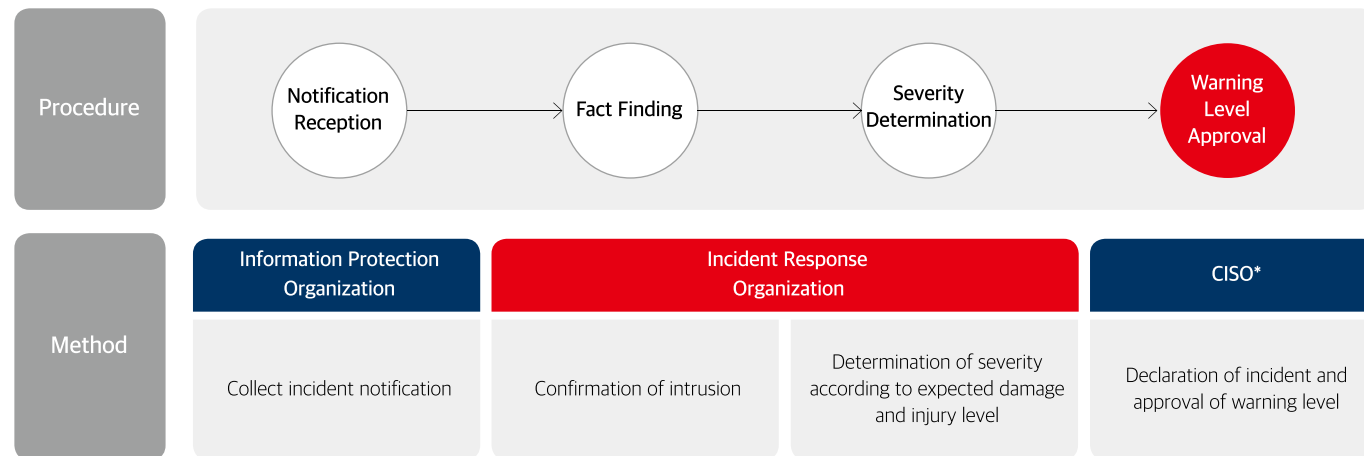


Newsletter for 'Information Protection Day'



'Clean Office Day'

#### Response to Information Protection Breach

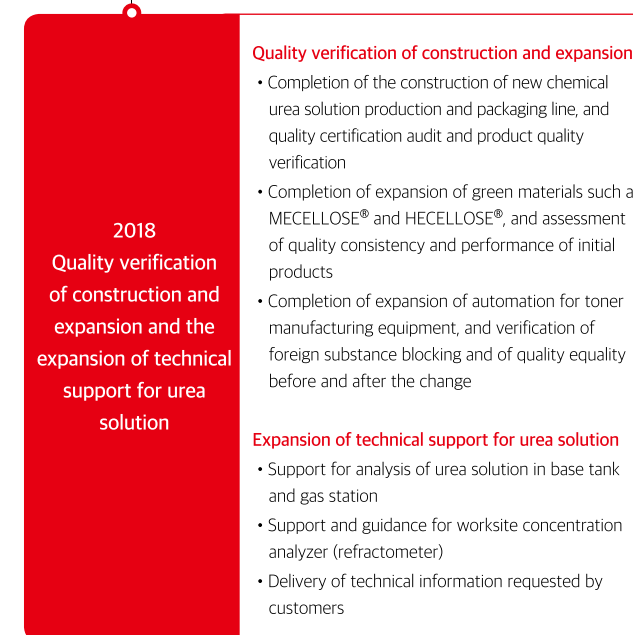
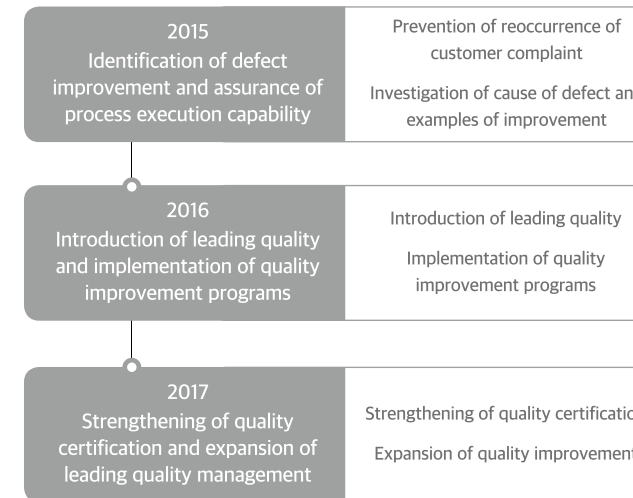


\* CISO: Chief Information Security Officer

### Customer satisfaction management

#### Quality management performance and core areas

LFC renewed the quality management system certification (ISO9001) in 2018 and has conducted various activities such as the establishment of processes, implementation of the quality assurance system, and identification of cases for defect correction to secure quality competitiveness. The company plans to implement programs such as for reinforcing leading quality management and improving quality competitiveness.



#### Process audit

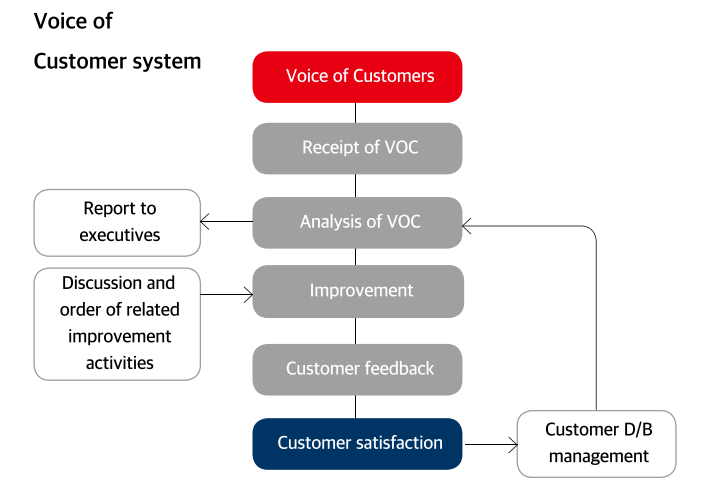
LFC conducts process audits to review the response system for customer complaints and to improve any non-compliant activities. The process audit helps LFC to inspect the reliability of products and services delivered to customers and to establish a culture where employees work based on the standards and processes. LFC plans to consistently perform intensive improvement activities by selecting a main theme determined each quarter through the process audit.

#### Strengthening of quality assurance of raw and intermediate materials

Each business division manages the quality of raw and intermediate materials, chemicals, and catalysts by categorizing them under Inspection<sup>1</sup>, Report substitution<sup>2</sup>, and No inspection<sup>3</sup>. LFC plans to expand the acceptance inspection of raw and intermediate materials and apply it to the new material and supplier certification process to verify the quality of raw materials and products at the beginning of their introduction.

#### Responding to the voices of customers

LFC responds promptly to customer complaints through its voice-of-the-customer system, which is linked to sales, production, and quality. The company surveys customer satisfaction and brand awareness to provide better services.



- 1 Inspection: The raw material whose quality changes after warehousing and seriously affects the product quality
- 2 Report substitution: A raw material that has no quality problems and has stable quality upon inspection after one year or longer
- 3 No inspection: An intermediate material that has no quality problem upon inspection after two years or longer and is involved in raw material or process operations



# Strengthened competitiveness through R&D and projects



“CJ Logistics has been reborn as an eco-friendly company by partnering with LOTTE Fine Chemical.”

CJ Logistics is transforming from a delivery company with the highest discharge of NOx from its diesel trucks into an eco-friendly company, and is pleased to do it with LFC. All of our SCR trucks use only EUROX®, which is the eco-friendly urea solution from LFC. It not only improves the air quality, but also prevents increases in truck maintenance costs from using low-quality urea solutions. Using the products has resulted in two positive effects, reducing environmental impact and extending life of vehicle. I believe that LFC's proven technologies can help the company to lead the expansion of eco-friendly products like the odorless ethanol washer solution or the additives that reduce fuel consumption, carbon monoxide, and hydrocarbon. Moreover, I hope that LFC can continue to grow into a company that can provide full service to drivers by improving customer awareness through continued marketing, enhanced product competitiveness, and immediate follow-up to quality issues.

**In-Cheol Gil**

General Manager, CJ Logistics

CJ Logistics was the first distributor of LFC's leading product EUROX®. LFC and CJ Logistics are collaborating to expand the market for small package products targeted for SUV vehicles as part of the strategy to expand the new product group, and intend to cooperate to create customer value by establishing diverse distribution channels.



## Highlights of Performance in 2018



KRW **11.9** billion  
Investment in R&D



KRW **352.3** billion  
Sales of eco-friendly products



**83** countries  
Export of green materials



KRW **214.9** billion  
Net profit

## Sustainability Context

An enterprise contributes to the national economy and society by leading the domestic and overseas markets through continuous R&D. As environmental expectations for the industries have increased, enterprises are actively investing in R&D for eco-friendly products. Moreover, a trusted enterprise provides accurate information to consumers and improves brand value through fair marketing activities.

## LFC Approach

LFC invests in specialized R&D based on its experience and accumulated expertise in specialty chemicals. The company intends to focus on green materials and pharmaceutical products to preemptively respond to the higher requirements of the market and consumers and to lead the future market. It promotes competitive products to the public and increases company recognition through differentiated marketing activities.

## Next Step

LFC intends to expand the use of existing products by strengthening the product portfolio. It also plans to strengthen marketing and improve the brand image to solidify market domination for the existing business.

## Strengthening of Global Manufacturing Competitiveness

### R&D organization and strategy

LFC's R&D professionals in its four R&D organizations conduct a wide range of research projects based on their experience and capabilities accumulated in the specialty chemical fields of fine chemicals such as the amine relatives and chloride relatives, as well as cellulose ether polymers for industrial, food, and pharmaceutical applications. For research and development, LFC has striven to achieve a corporate vision by enhancing the competitiveness of existing businesses, reinforcing the implementation of new business, and furnishing customers with differentiated technologies.

#### R&D Strategy

##### R&D DIVISION MISSION

Providing differentiated technology power to make a quantum leap for the company

##### Focused strategies

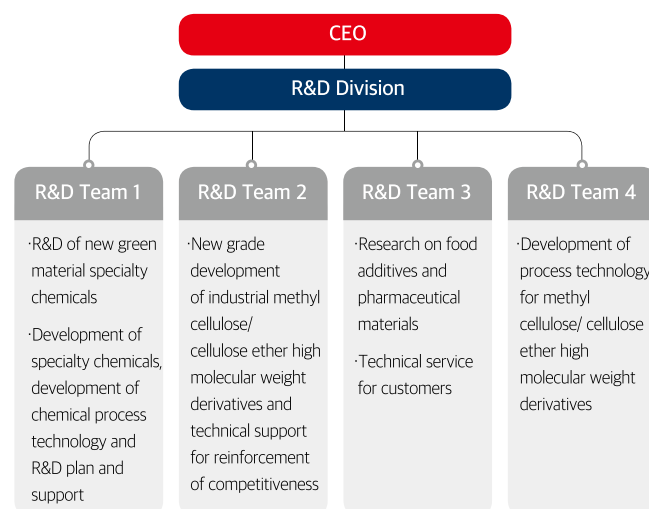
Enhancing and expanding competitiveness of existing businesses

Development of new business technology platforms and assurance of execution capabilities

- Diversification of product portfolio and development of value-added use
- Competitiveness in cost and quality and enhancing customer networking
- Research of fundamental technologies to secure mid to long-term competitiveness

- Ensuring base technology for new businesses and identifying new items
- Optimization of technology being introduced and in development

#### R&D Division Organization

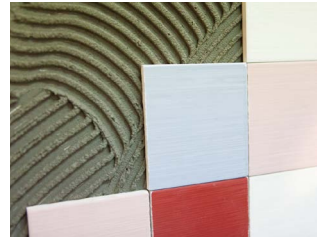


### R&D performance

#### Green materials R&D

##### Expansion of high functional additive MECELLOSE® HIEND for construction

With the trend of using large tiles for decoration and wall finishing, the demand has been growing for quality tile cement with excellent adhesion strength. LFC continues to develop and expand its MECELLOSE® HIEND series product, a high functional additive for construction that enhances slip resistance, adhesion strength, and adequate open time for tile cement work to meet such market demands.



##### Expansion of MECELLOSE® ETC standard for general purpose architectural additives

The general purpose specifications have been steadily in demand in the construction additive market. As such, LFC developed the MECELLOSE® ETC series products that were favorably received by the market, as they are more than just for general purpose, but also for specialized functions. The ETC specification is different from general purpose products, since it improves the adhesive strength as well as the open time for tile cement work and extends its application to finishing products such as for rendering and plastering. The company intends to continue to extend the ETC specification series to develop better properties and universality to strengthen its position in the general purpose market.



#### Development of high-performance MECELLOSE® for cement extrusion

Demand is increasing for cement-extruded panels due to increased demand for buildings such as houses, public offices, stadiums, and shortening of construction periods. As such, a viscosity agent with high extrudability and shape retention is



required for high-temperature working conditions and various shapes to improve the performance and productivity of cement extruded products. LFC has developed MECELLOSE®, which is optimized for cement extruded panels based on these technical requirements, to contribute greatly to the productivity improvement of its various extruded products. The MECELLOSE® series products are expected to be widely applied to interior and exterior building materials to support construction jobs for the 2020 Tokyo Olympics and the 2022 Beijing Winter Olympics.

#### Continued fundamental R&D of cellulose derivatives

LFC is focusing its development capabilities in the development and commercialization of various cellulose derivatives to meet increasingly segmented and specialized customer requirements. The company is currently researching new cellulose derivatives that are widely used in the food, medicine, personal care, and construction industries, developing eco-friendly, moisture-absorbing materials using cellulose derivatives, and developing non-cellulose thickening agents to improve workability and work quality by increasing the viscosity of paints. It intends to continue the development of high-quality and value-added products to meet customer requirements.



#### R&D activities for food and pharmaceutical materials

##### Food and pharmaceutical materials development and research

Recently, three grade excipients of HPMC developed for tablet in western countries have proven to be suitable HPMC carriers in the generic and incrementally modified drug (IMD) fields, which are expected to grow steadily in the global pharmaceutical market.

LFC has focused on pharmaceutical materials research in the form of various open innovations such as joint research and entrusted technology development, and develops products and professional technical services that meet the needs of major pharmaceutical companies.



#### Development of functional mixed products for food

Food requirements in the food market are also rapidly changing as customer needs become more diversified. AnyAddy® functional blended products enhance user convenience, with the customized standards leading these trends. LFC intends to continue to provide differentiated products and services through the development of customer-specific products.



#### Chemical R&D

##### R&D for amine and chlorine-based chemical process technology

LFC strives to secure competitiveness by generating research outcomes under increasingly competitive chemical business conditions through technology integration and advancement. The company has conducted research since 2016 to enhance the quality of EUROX®, the NOx reducing agent for diesel vehicles, in order to secure the highest quality and performance differentiation, and provides reliable technical support to customers. It has been conducting joint research with national research institutes in 2018 and 2019 to develop new manufacturing technologies for the advancement of methyl chloride (MC) processing and has shown visible outcomes. LFC intends to become the technological leader in the competitive chemical product business by continuing to develop new process technologies.





## Strengthening marketing activities

### Fair marketing activities

LFC complies with regulations such as ‘the Act on the Consumer Protection in Electronic Commerce, Etc.’ and ‘the Act on Management of Outdoor advertisement, Etc.’ in relation to product marketing and communication and product supply. As a result, there was no violation of laws relating to communication of products and services in 2018.

### Corporate advertisement

LFC conducted its first printed advertising to raise awareness of the company and its products.

The company also initiated advertising in partnership with LOTTE Global Logistics, KLPGA, LPGA, and Vietnamese TV to enhance the corporate image in diverse areas.



Corporate advertisement



Advertisement by LOTTE Global Logistics

### ChinaPlas 2018

LFC and three other LOTTE chemical companies (LOTTE Chemical, LOTTE Chemical Titan, and LOTTE Advanced Materials) participated in ChinaPlas 2018 held in Shanghai, China from April 24 to 27. ChinaPlas 2018 is the Asia’s largest plastics and rubber exhibition. The four participating companies demonstrated the identity of LOTTE Group by displaying the symbol on the ceiling and presenting the technology as a global integrated chemical company.



2018 ChinaPlas

### Participation in the marketing forum ‘Package Design 2018’

LFC participated in the package design exhibition in the 2018 LOTTE Marketing Forum event held in the Jamsil LOTTE Hotel from November 19 to 20. A total of 21 LOTTE affiliates including three chemical companies participated in the exhibition to share the products and new services introduced by each company.



2018 Marketing Forum

## High value-added green material products

### CPhi Worldwide

LFC participated in CPhi Worldwide 2018, the largest exhibition of the industry, held in 2018 from October 9 to 11. CPhi Worldwide is the largest industrial exhibition for the pharmaceutical industry, and was held in Madrid, Spain in 2018. A total of 2,500 companies from 150 countries participated, and LFC participated in the exhibition to increase brand awareness and promote the outstanding features of AnyCoat®.



CPhi Worldwide

### ChinaCoat 2018

LFC participated in ChinaCoat 2018 held in Guangzhou, China in 2018 from December 4 to 6. ChinaCoat is one of the three largest global exhibitions for paints and coatings. The industrial exhibition links the markets in China, Asia-Pacific, Europe, and the Middle East.



ChinaCoat 2018

A total of 36,000 people from 91 countries attended the exhibition, with many of them visiting LFC’s booth and showing a strong interest in HECCELLOSE® and MECCELLOSE®.

## High value-added eco-friendly product

### 3rd APAC International Conference on Urea Solution

LFC participated in the International Conference on Urea Solution held by Integer Research, a UK research organization specializing in emissions, in Tokyo in 2018 from March 14 to 15 to share information on gas emissions regulations and the status and forecast of the urea solution industry. Government officials and commercial vehicle manufacturers worldwide participated in the conference to discuss the current status and future prospects of emissions regulations and the urea industry.

### Ranked No. 1 in urea solution by K-BPI



Ranked No. 1 in urea solution by K-BPI

EUROX® from LFC was ranked No. 1 in urea solution by the Korea Brand Power Index (K-BPI) sponsored by KMAC in 2019. K-BPI is Korea’s leading brand survey for confirming brand influence on consumers. It conducts 1:1

interviews with 12,000 people, men and women between 15 and 60 years of age on major industrial brands in Korea to select the best brand in each sector.

### Introduction of 3.5L PET product

LFC introduced a premium 3.5L PET product for passenger vehicles and SUVs to keep up with the increasing demand for urea solution following stricter environmental regulations. The company is expanding the sales channel of EUROX® to supermarkets and online malls in addition to gas stations to make it easier for customers to purchase.



Introduction of small package

Advertisement for EUROX®

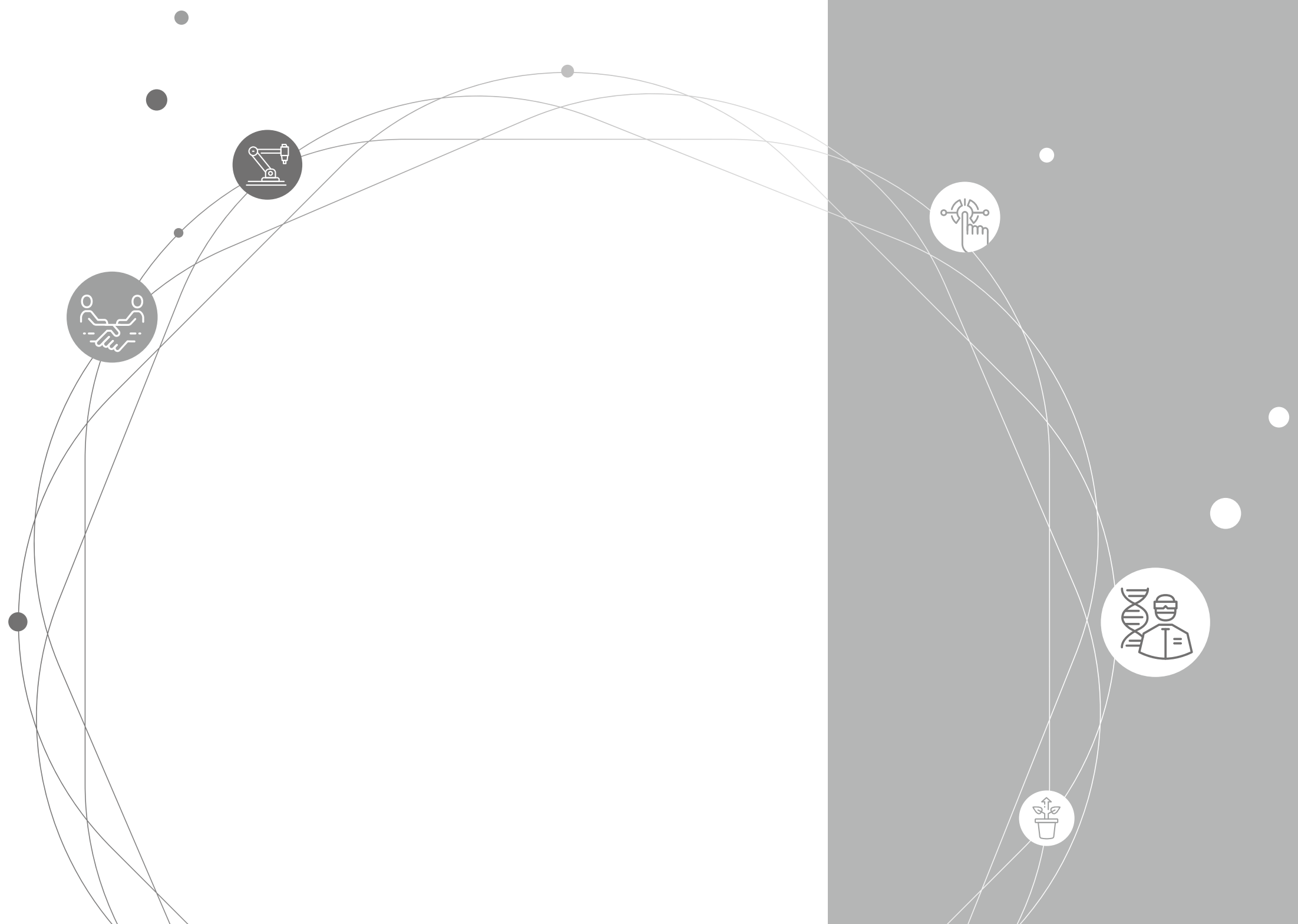
### Sponsoring of the 50th anniversary event of the Korea Expressway Corporation



Sponsoring of Korea Expressway Corporation

LFC sponsored the 50th-anniversary event of the Korea Expressway Corporation to express its appreciation for EUROX® remaining no. 1 in sales and to commemorate the 50-year history of the Korea Expressway

Corporation. THE EUROX®, sponsored by LFC will be delivered to truck drivers. The company plans to continue its campaign that recommend to use a genuine urea solution for truck drivers and clean air.



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## Facts & Figures

### Economic Performance

(Unit: KRW million)

Classification	2016	2017	2018
Current assets	569,184	697,028	716,359
Cash and cash equivalents	210,111	131,712	6,827
Short-term financial instruments	30,000	225,000	50,000
Fair value through profit or loss	-	-	260,742
Held-to-maturity financial assets	109	89	-
Derivatives and financial assets	0	0	-
Accounts receivable	162,887	186,081	215,390
Other current financial assets	20,696	6,855	4,698
Other current assets	8,570	8,644	6,668
Inventories	136,811	138,647	172,033
Non-current assets held for sale	-	-	-
Non-current assets	961,754	944,276	983,671
Long-term financial assets	31	25	25
Fair value through other comprehensive income	-	-	12,056
Held-to-maturity financial assets	112	50	-
Other non-current financial assets	3,189	4,100	1,847
Available-for-sale financial assets	26,180	23,516	-
Investment in joint venture	168,660	191,700	241,927
Property, plant and equipment	717,133	708,100	701,983
Intangible assets	24,130	15,096	25,818
Other non-current assets	897	1,112	15
Deferred income tax assets	21,422	577	-
Total assets	1,530,938	1,641,304	1,700,030
Current liabilities	202,786	354,565	228,509
Non-current liabilities	216,488	94,033	93,623
Total liabilities	419,274	448,598	322,132
Equity attributable to owners of the parent	1,111,664	1,192,706	1,377,898
Capital stock	129,000	129,000	129,000
Capital surplus	302,905	302,905	302,905
Other components of equity	18,802	18,802	18,802
Accumulated other comprehensive income	(134)	(247)	(18,778)
Retained earnings	661,091	742,246	945,969
Non-controlling interests	-	-	-
Total equity	1,111,664	1,192,706	1,377,898
Sales	1,110,704	1,159,511	1,371,696
Operating profit (loss)	29,750	111,125	210,714
Net profits	(43,547)	89,231	214,923
Profit attributable to	-	-	-
Owners of parent	(43,547)	89,231	214,923
Non-controlling interests	-	-	-
Earnings per share	(1,710)	3,503	8,438
Number of companies subject to consolidation	3	3	2

### Distribution of Economic Value

(Unit: KRW million)

GRI Index	Classification	2016	2017	2018
102-37, 201-1	Shareholders	7,641	20,376	43,299
	Employees	96,775	110,476	122,912
	Government/Public institutions	19,494	11,807	60,892
	Local community	388	561	1,096
	Business partners	319,442	368,530	449,578

### Environmental Performance

GRI Index	Classification	Unit	2016	2017	2018	
301-1	Product	Production volume	Ton	2,221,727	2,362,891	2,613,306
301-1, 2	Energy	Direct energy consumption	TJ	480	355	2,458
		Indirect energy consumption	TJ	12,678	13,806	14,607
		Total energy consumption	TJ	13,158	14,160	17,065
301-4, 5		Energy consumed per unit production	TJ/Product-Ton	0.006	0.006	0.007
303-1	Water	Reduction in energy consumption	TJ	401	234	100
		Water consumption	Ton	11,163,890	12,111,430	12,451,795
303-1	Water withdrawal by source	Water consumed per unit production	Ton/Product-Ton	5.025	5.126	4.765
		Streams	Ton	11,163,890	12,111,430	12,451,795
305-1, 2	Greenhouse gas (GHG)	Total emissions	tCO <sub>2</sub> eq	652,170	621,707	673,468
		GHG emissions per unit production	tCO <sub>2</sub> eq/Product-Ton	0.22	0.26	0.26
		Direct emissions (Scope 1)	tCO <sub>2</sub> eq	71,508	100,713	78,073
		Indirect emissions (Scope 2)	tCO <sub>2</sub> eq	578,162	520,994	595,396
305-7	Other air pollutants	Reduction in GHG emissions	tCO <sub>2</sub> eq	34,944	5,902	4,387
		NOx emissions	kg	41,458	17,563	16,775
306-1	Wastewater	SOx emissions	kg	19,206	1,048	19.3
		Total weight of wastewater	Ton	8,200,790	8,415,900	9,100,200
306-1	Water pollutants	Wastewater discharge per unit production	Ton/Product-Ton	3.691	3.562	3.482
		Total weight of COD	kg	235,714	236,578	350,076
		COD discharge per unit production	Kg/Product-Ton	0.106	0.100	0.134
306-2	Waste materials	Total weight of BOD <sup>1</sup>	kg	-	-	58,772
		Total weight of waste	Ton	61,749	67,540	79,950
		Waste discharge per unit production	Ton/Product-Ton	0.028	0.029	0.031
		Specified waste	Ton	891	1,306	848
		Regular waste	Ton	60,858	66,233	79,103
		Incineration	Ton	298	1,443	1,200
		Landfill	Ton	42,860	35,447	22,310
417-1	Environmental investment	Others	Ton	724	705	24
		Recycling	Ton	17,868	29,944	56,416
		Recycling rate	%	29	44	71
		Total environmental protection expenditures and investments	KRW million	6,176	10,046	6,151
		Green procurement	KRW million	2,926	3,756	2,198
		Noise	KRW 100 million	0.24	-	2.03
		Waste materials	KRW 100 million	1.15	5.97	-
		Hazardous chemicals	KRW 100 million	13.14	45.59	8.76
		Energy	KRW 100 million	13.93	98.60	1.77
		Water quality	KRW 100 million	27.94	33.29	48.10
-	Environmental education	Air quality (including odour)	KRW 100 million	2.96	4.93	0.85
		Accident prevention	KRW 100 million	2.40	0.82	-
-	Environmental education	Percentage of employees having received environmental education	%	-	-	100
-	Sales of eco-friendly products		KRW 100 million	3,038	3,265	3,523

<sup>1</sup> The first measurement of BOD in 2018

Social Performance

GRI Index	Classification	Description	Unit	2016	2017	2018	
102-8	Total	Total No. of employees	Person	822	820	840	
		Male	Person	739	734	752	
		Female	Person	83	86	88	
	By type	Permanent	Person	804	800	808	
		Temporary	Person	18	20	32	
	By age	Under 30	Person	94	110	91	
		30-50	Person	651	635	635	
Over 50		Person	77	75	114		
401-1	Newly hired employee	Total No. of newly hired employees	Person	20	27	38	
	Employee turnover	Employee turnover rate	%	1.7	0.5	0.2	
401-3	Parental leave	No. of employees covered by parental leave	Person	16	13	22	
		No. of employees on parental leave	Person	9	10	14	
		Parental leave rate	%	56.3	76.9	63.6	
		No. of employees over 12months after returning to work	Person	-	-	14	
403-2	Employment	Industrial accident	No. of industrial accidents <sup>1</sup>	Case	0	1	4
			Industrial accident rate	%	0	0.16	0.61
		Hours of work lost	Hour	0	888	1,872	
404-1	Employee education and training	Total hours of employee training	Hour	36,911	38,700	34,731	
		Training hour per person	Hour	44.9	47.2	43.0	
		Training expense per person	KRW 10 thousand	93	104	127	
-	Wages and benefits	Length of service	Average years of service	Year	-	-	14.8
Benefits expense		Percentage of welfare cost to sales	%	0.9	1.8	1.6	
405-1	Diversity	Female	No. of female leaders	Person	-	-	4
			Persons with disabilities (accumulated)	Person	22	21	23
		Minority groups	Recipients of patriots & veterans benefits (accumulated)	Person	43	41	42
			Foreigners (accumulated)	Person	1	2	2
		Hours of human rights training	Hour	1	1	1	
412-2	Investment	Human rights training	Percentage of employees having received human rights training	%	100	100	100
205-2	Anti-corruption training	Percentage of executives having received anti-corruption training	%	100	100	100	
		Percentage of employees having received anti-corruption training	%	100	100	100	
205-3	Anti-corruption	Incidents of corruption	No. of incidents of corruption	Case	0	0	0
		Incidents of corruption and actions taken	No. of disciplinary actions or dismissals due to corruption	Case	0	0	0
			No. of contracts terminated, or not renewed, due to corruption	Case	0	0	0
416-1	Health and safety	Safety and health assessment	Percentage of product/service categories having received industrial safety assessment	%	100	100	100
		Regulatory compliance	Violation of industrial safety regulation	KRW million	0	0.74	0
403-3	Health and safety	Deficiencies in safety and health	No. of cases identified	Case	-	1,016	6,567
			No. of cases improved	Case	-	972	5,756
		Percentage of improvement	%	-	95.7	87.7	
		Safety training	Safety training hour per person	Hour/Person	-	24	24

<sup>1</sup> All industrial accidents in 2018 were minor injuries of full-time employees

GRI Index	Classification	Description	Unit	2016	2017	2018	
417-2, 3	Marketing communication	Regulatory compliance	Fines for non-compliance with regulations concerning marketing communications, including advertising and promotion	KRW million	0	0	0
			Incidents of non-compliance with regulations concerning marketing communications, including advertising and promotion	Case	0	0	0
418-1	Customer privacy	Complaints	Complaints received from the external agency or government concerning leakage of customer privacy	Case	0	0	0
			No. of identified leaks, thefts, or losses of customer data	Case	0	0	0
-	PSM Rating	Ulsan complex	Process Safety Management Rating	Rating	S	P	P
		Incheon plant	Process Safety Management Rating	Rating	S	S	S
102-41	Labor union	Labor union	No. of labor union members	Person	-	413	414
			Percentage of union members compared to eligible employees	%	-	77.2	69.2
			No. of full-time union members	Person	-	3	3
			Collective agreement application rate <sup>2</sup>	%	51.2	51.6	51.0
413-1	Social contribution	Social contribution	Percentage of community engagement	%	89.5	85.5	93.7
			Social contribution fund	KRW 10 thousand	269	427	956
			Hour of volunteer per person	Hour	3.5	3.2	3.1
			Support for business partners	Partner company satisfaction	Point	-	84.1
-	Supply chain management	Partner company purchase	Amount of purchase(transaction)	KRW 100 million	2,542	2,870	3,342
			Chemical business	%	43.0	-	56.2
		Green materials business	%	32.5	-	27.2	
		Percentage of business partners' purchase	Others	%	14.9	-	4.6
			Packaging supplies	%	5.4	-	4.1
			Utility	%	2.9	-	3.2
		Chemicals	%	1.2	-	4.6	

<sup>2</sup> Collective agreement application rate: 414(No. of labor union members) / 812(No. of average employees in 2018(829) - No. of executive members in 2018(17))



# GRI Content Index





## Universal Standards


### GRI 102: General Disclosures

GRI Standard	Disclosure	Page in report	Verification	UN SDGs	
Organizational profile	102-1	Name of the organization	10p	●	
	102-2	Activities, brands, products, and services	18-23p, 74-75p	●	
	102-3	Location of headquarters	77p	●	
	102-4	Location of operations	77p	●	
	102-5	Ownership and legal form	10p	●	
	102-6	Markets served	6-7p, 19p	●	
	102-7	Scale of the organization	10p	●	
	102-8	Information on employees and other workers	10p, 66p	●	
	102-9	Supply chain	6-7p, 53p	●	
	102-10	Significant changes to the organization and its supply chain	No significant change	●	
	102-11	Precautionary Principle or approach	25p, 36-37p	●	
	102-13	Membership of associations	76p	●	
	Strategy	102-14	Statement from senior decision-maker	5p	●
Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	24-27p, 42-43p	●	
	102-17	Mechanisms for advice and concerns about ethics	44p	●	
Governance	102-18	Governance structure	12-14p	●	
Stakeholder engagement	102-40	List of stakeholder groups	28-29p	●	
	102-41	Collective bargaining agreements	47p	●	
	102-42	Identifying and selecting stakeholders	28-29p	●	
	102-43	Approach to stakeholder engagement	28-29p	●	
	102-44	Key topics and concerns raised	30p	●	
Reporting practice	102-45	Entities included in the consolidated financial statements	64p, See LFC Business Report 2018	●	
	102-46	Defining report content and topic boundaries	31p	●	
	102-47	List of material topics	31p	●	
	102-48	Restatements of information	No significant change	●	
	102-49	Changes in reporting	No significant change	●	
	102-50	Reporting period	2p	●	
	102-51	Date of most recent report	2p	●	
	102-52	Reporting cycle	2p	●	
	102-53	Contact point for questions regarding the report	2p	●	
	102-54	Claims of reporting in accordance with the GRI Standards	2p	●	
	102-55	GRI Content Index	68-71p	●	
	102-56	External assurance	72-73p	●	




## Topic-specific Standards








### GRI 200: Economic Disclosures

GRI Standard	Disclosure	Page in report	Verification	UN SDGs	
<b>Procurement Practices</b>					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary			
	103-2	The management approach and its components	49p	●	
	103-3	Evaluation of the management approach			
Procurement Practices	204-1	Proportion of spending on local suppliers	67p	●	
<b>Anti-corruption</b>					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary			
	103-2	The management approach and its components	41p	●	
	103-3	Evaluation of the management approach			
Anti-corruption	205-1	Operations assessed for risks related to corruption	17p, 41p (Total No. of corruption: 0 case)	●	
	205-2	Communication and training about anti-corruption policies and procedures	27p, 42-43p (BOD participation in training on 'the Improper Solicitation and Graft Act': 50%)	●	
<b>Anti-competitive Behavior</b>					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary			
	103-2	The management approach and its components	41p	●	
	103-3	Evaluation of the management approach			
Anti-competitive Behavior	206-1	Operations assessed for risks related to corruption	No violation	●	
<b>GRI 300: Environmental Disclosures</b>					
GRI Standard	Disclosure	Page in report	Verification	UN SDGs	
<b>Energy</b>					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary			
	103-2	The management approach and its components	35p	●	
	103-3	Evaluation of the management approach			
Energy	302-1	Energy consumption within the organization	36p	●	
	302-4	Reduction of energy consumption	25p	●	
	302-5	Reductions in energy requirements of products and services	25p	●	
<b>Emissions</b>					
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary			
	103-2	The management approach and its components	35p	●	
	103-3	Evaluation of the management approach			
Emissions	305-1	Direct (Scope 1) GHG emissions	37p	●	
	305-2	Energy indirect (Scope 2) GHG emissions	37p	●	
	305-5	Reduction of GHG emissions	25p	●	
	305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	36p	●	

GRI Standard	Disclosure	Page in report	Verification	UN SDGs
<b>Effluents and Waste</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Effluents and Waste	306-1	Water discharge by quality and destination	●	
	306-3	Significant spills	●	
	306-4	Transport of hazardous waste	●	
<b>Supplier Environmental Assessment</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Supplier Environmental Assessment	308-1	New suppliers that were screened using environmental criteria	●	

**GRI 400: Social Disclosures**

GRI Standard	Disclosure	Page in report	Verification	UN SDGs
<b>Employment</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Employment	401-1	New employee hires and employee turnover	●	
	401-3	Parental leave	●	
<b>Labor/Management Relations</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Labor/Management Relations	402-1	Minimum notice periods regarding operational changes	●	
<b>Occupational Health and Safety</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Occupational Health and Safety	403-1	Workers representation in formal joint management-worker health and safety committees	●	
	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related	●	
	403-3	Workers with high incidence or high risk of diseases related to their occupation	●	
<b>Training and Education</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Training and Education	404-1	Average hours of training per year per employee	●	
	404-2	Programs for upgrading employee skills and transition assistance programs	●	

GRI Standard	Disclosure	Page in report	Verification	UN SDGs
<b>Diversity and Equal Opportunity</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	●	
<b>Non-discrimination</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	●	
<b>Human Rights Assessment</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Human Rights Assessment	412-2	Employee training on human rights policies or procedures	●	
<b>Local Communities</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	●	  
<b>Marketing and Labeling</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	●	
	417-3	Incidents of non-compliance concerning marketing communications	●	
<b>Customer Privacy</b>				
GRI 103: Management Approach 2016	103-1	Explanation of the material topic and its boundary		
	103-2	The management approach and its components	●	
	103-3	Evaluation of the management approach		
Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	●	



## Independent Assurance Statement

To the Stakeholders of LOTTE Fine Chemical

THE CSR was requested by LOTTE Fine Chemical (hereinafter “LFC”) to verify the “2018 LFC Sustainability Report” (hereinafter “Report”) for assurance. THE CSR submits the results of its review of the publication process and the contents of the Report to the management and stakeholders of LFC.

### Assurance Standards

We performed the assurance evaluation by reviewing whether the Report complies with the AA1000AS (2008) assurance standard and reporting principle of the GRI Standards that are internally used for assurance.

- Application of principles of stakeholder inclusivity, materiality, and responsiveness for AA1000AS (2008)
- Fulfillment of the principles for defining report content and report quality of the GRI Standards
- Fulfillment of Core Option of GRI Standards

### Assurance Level

For the assurance, we performed the Type II, moderate assurance level by applying the principles of AA1000AS (2008) and conducted a limited level site interview. The assurance process includes the following major activities.

- Review of the feasibility of the materiality assessment process
- Review of reporting based on criteria for selected material issues
- Review of stakeholder participation
- Review of linkage with business report
- Review of mandatory report index on material issues

### Limitations

THE CSR has confirmed the reliability of the Report through the limited level interviews and document reviews. However, this does not infer that the Report is 100% accurate.

### Independence

THE CSR is an independent third-party institution and presents its opinions with ethical and independent status secured.

### Opinions

THE CSR submits the following opinions after a series of processes to verify compliance with the assurance standards of AA1000AS (2008) and the principles of the internationally recognized reporting guidelines.

#### Fulfillment of Core Option of GRI Standards

THE CSR reviewed whether LFC’s Sustainability Report was consistent with the conformity method of GRI Standards, which are the international guidelines for reporting a publication, and confirmed that the 7 topics that were applicable to the GRI Standards among the 13 core topics derived from the requirements of management disclosure and the materiality assessment met the report requirements. The following table shows the assurance indexes of the seven core topics confirmed through the assurance procedure.

**Economy** Not applicable

- Environment**
- Reinforcement of pollutant discharge management\_306-1~5
  - Reinforcement of hazardous chemical management system\_306-1~5
  - Sustained management of supply chain (related to environmental index)\_308-1~2

- Society**
- Advancement of anti-corruption ethical management\_205-1~3
  - Strengthening of labor-management communication and cooperation\_402-1
  - Management of worker safety and health\_403-1~10
  - Personal information protection\_418-1
  - Sustained management of supply chain (related to social index)\_308-1~2

Application of principles of AA1000AS (2008)

THE CSR confirmed that the Report applied three principles of AA1000 accountability standards.

### Inclusivity

Does LFC adhere to the principle of stakeholder engagement in order to ensure a responsible and strategic response in advancing sustainability management?

THE CSR verified LFC’s stakeholder selection process and did not find any significant stakeholder groups that were intentionally omitted in the stakeholder participation process conducted by each department.

### Materiality

Does LFC report the issues that are important to stakeholders?

THE CSR verified LFC’s procedure for identifying the issues to report and reviewed the materiality assessment procedure, and did not find any problems.

### Responsiveness principle

Does LFC respond appropriately to stakeholders’ requirements and expectations?

THE CSR confirmed that LFC had acknowledged the impact of its business decisions on stakeholders and that the Report appropriately described crucial issues of sustainability.

### Recommendations

Many global chemical companies strive to examine risks and opportunities and solve various environmental and social issues through supply chain collaboration externally in addition to conducting economic, environmental, and socially responsible activities internally for sustainable management. LFC also recognizes sustainable management of its supply chain as the core topic of sustainable management. As such, we recommend LFC to build a more comprehensive and effective foundation for sustainable growth by establishing the long-term strategy and systematizing collaboration measures from the supply chain environmental and social aspects and by establishing and implementing the phased execution strategy in addition to existing supply chain sustainability management.

### Eligibility of the Assurance Agency

THE CSR requested by LFC to assure the Report is a specialized global sustainability assurance institution and has the AA1000AS (2008) assurance license officially certified by Accountability of the UK, which is the global sustainability management standard firm and is a Gold Community Member of the Global Reporting Initiative (GRI). Multinational CSR experts with CSR research achievements in many countries including Korea, the US, the UK, and Germany participate as members of THE CSR Expert Committee.



June 2019  
CEO of THE CSR **Se-woo, Jung**

## List of Products

Category	Product Name	Abbreviation	Chemical Formula	CAS No.	Characteristic / Purity
Chlor-Alkali Derivatives	Sodium Hydroxide		NaOH	1310-73-2	Liquid, 25%, 50% ap. solution
	Sodium Hypochlorite	HYPO	NaOCl	7681-52-9	Colorless or slightly yellow liquid, 12% solution
	Hydrogen		H <sub>2</sub>	1333-74-0	Gas, 99.99%
	Hydrochloric acid		HCl	7467-01-0	Liquid, 35% aq. solution
	Methyl Chloride	MC(Methyl Chloride)	CH <sub>3</sub> Cl	74-87-3	Colorless, liquefied gas, 99.9% min.
	Methylene Chloride	MCL	CH <sub>2</sub> Cl <sub>2</sub>	75-09-2	Colorless, clear, volatile liquid, 99.9% min.
	Chloroform	CFM	CHCl <sub>3</sub>	67-66-3	Colorless, clear, volatile liquid, 99.9% min.
	Epichlorohydrin	ECH	C <sub>3</sub> H <sub>5</sub> OCl	106-89-8	Colorless, clear, 99.9% min.
	S-Quata® (3-chloro-2-hydroxy PropylTrimethyl Ammonium Chloride)	PTAC	C <sub>6</sub> H <sub>15</sub> Cl <sub>2</sub> NO	3327-22-8	Colorless liquid, 65% min. (S-Quata 885), 69% min. (S-Quata 889)
Cellulose Ethers	MECELLOSE®	MC(Methyl Cellulose)		9004-67-5	White or yellowish powder
		HPMC		9004-65-3	
		HEMC		9032-42-4	
	HECELLOSE®	HEC		9004-62-0	
	AnyCoat®	HPMC		9004-65-3	
		HPMC-P		9050-31-1	
		HPMC-AS		71138-97-1	
	AnyAddy®	MC		9004-67-5	
		HPMC		9004-65-3	
Ammonia Derivatives	Monomethylamine	MMA	CH <sub>3</sub> NH <sub>2</sub>	74-89-5	Colorless liquid, 40% min.
		DMA	(CH <sub>3</sub> ) <sub>2</sub> NH	124-40-3	Colorless liquid, 50%, 60% min. gas, 99.8%
	EUROX®		(NH <sub>2</sub> ) <sub>2</sub> CO	57-13-6	Colorless urea solution, 32.5% and 40%
	Ammonia		NH <sub>3</sub>	67-56-1	Colorless liquid, 99.5% min.
	Tetramethyl Ammonium Chloride	TMAC	(CH <sub>3</sub> ) <sub>4</sub> NCl	75-57-0	Colorless solution, 58% min.
	Tetramethyl Ammonium Hydroxide	TMAH	(CH <sub>3</sub> ) <sub>4</sub> NOH	75-59-2	Colorless solution, 20% or 24.9% min.

Packing	Application	Others
Tank lorry, Bulk vessel, Pipe	Chemical agent, Pulp & Paper processing	
Tank lorry	Bleaching agent, Disinfectant	Domestic only
Pipe	Hydrogen peroxide raw material, Hydrodesulfurization	Domestic only
Cylinder, Tank lorry	Agrochemicals, Pharmaceuticals	Domestic only
940Kgs Cylinder	Agrochemicals, Organic synthesis, Quaternary ammonium salt	
250Kgs Steel drum, ISO-Tank, Tank lorry, Bulk vessel	Electronic material processing, Pharmaceuticals, Metal cleanser, Urethane foaming	
250Kgs Steel drum, ISO-Tank, Tank lorry, Bulk vessel	Pharmaceuticals, Solvents, Fluorocarbon refrigerants (R-22)	
240Kgs Steel drum, ISO-Tank, Tank lorry, Bulk vessel	Epoxy resin, Synthetic glycerin, Water treatment chemicals	EU REACH registered
230Kgs PE Drum, 1.1MT IBC, Flexibag, Tank lorry	Additives for starch, High-quality pulp, Personal care product	EU REACH registered
20kg: Paper bag with PE inner liner 350kg: PP Jumbo bag with PE inner liner	Tile adhesives, EIFS/ETICS, Plasters & Renders, Ceramic & Cement extrusion, Joint compounds, Paints & Coatings	
25kg: Paper bag with PE inner liner 450kg: PP Jumbo bag with PE inner liner	Paints & Coatings, Personal care, Joint compounds, Oil field, Emulsion polymerization, Detergents, Construction applications	
20kg, 25kg: Fiber drum with PE double inner bag	Film coating, Binder, Sustained release, Formulation, Capsule making	Kosher, ISO 9001
20kg, 25kg: Fiber drum with PE double inner bag or PE inner liner	Foods, Dietary supplements	Certificate: FSSC22000 (GFSI)
170Kgs Steel drum, 20MT ISO-Tank	Pharmaceuticals, Alkylalkanolamines (MDEA), Soil fumigant, Pesticide	
160Kgs Steel drum, 19MT ISO-Tank, High pressure ISO-Tank	Rubber vulcanization accelerator, Agrochemicals, Surface active agent, Water treatment,	
10L PET, 3.5L PET, EBD V1.5, Bulk Vessel	Selective catalytic reduction (De-Nox) in diesel engine (32.5% for automobile, 40% for industry)	
Tank lorry, Pipe	Urea, Caprolactam, Acrylonitrile, Hydrazine	
20MT ISO-Tank, Tank lorry	TMAH raw material, Oil & Gas industry	
190Kgs PE drum, 20MT ISO-Tank, Tank lorry	Photoresist development, Anisotropic etchant	



## Membership

### List of Association

Korea Electric Engineers Association	Korea Customs Logistics Association	Korea Hydrogen Industry Association
Korea Chemicals Management Association	Green Company Council	Korea Responsible Care Council
Korea Industrial Technology Association	Korea Industrial Technology Association	Korea International Trade Association
Korea Fair Competition Federation	The Federation of Korean Industries	Korea Management Association
Korea Institute Chemical Engineers	Korea Chlor Alkali Industry Association	Korea Food Industry Association
Korea Specialty Chemical Industry Association	Korea Listed Companies Association	Ulsan Electric Association
Ulsan Shipper Logistics Council	Ulsan Chamber of Commerce and Industry	National Emergency Plan Association
Ulsan Industrial Security Council	Ulsan Civil Defense Working Council	Ulsan Prosecutor's Office Environmental Protection Association
Ulsan Environmental Engineering Association	Ulsan Yecheon Safety Association	Korea Fire Safety Association
Korea Industrial Safety Association	Southern Fire Safety Promotion Council	Ulsan Safety Communication Committee
Korea Gas Safety Corporation Information Member	KISANHYUP	Korea Association of Occupational Health Nurses
Korean Nurses Association	Incheon Environmental Volunteer Association	Incheon Environmental Engineering Association

### Task Force Members for the 2018 LOTTE Fine Chemical Sustainability Report

Kyoungha Kang	Ilwoo Nam	Kyungwon Lee
Chulhong Kyung	Dongkyun Noh	Seungwon Lee
Yeseom Kwon	Yoonjung Park	Jonghyun Lee
Ohchon Kwon	Ilhaeng Park	Chikyu Lee
Kyungsoo Kim	Hyunwook Park	Kyunwoo Jang
Dohyung Kim	Kwangtae Baek	Namjoo Jang
Sangyob Kim	Yusik Seo	Minje Jang
Jaehwang Kim	Susan Sung	Changwon Jeon
Jungmin Kim	Hyotaek Ahn	TaeHo Jung
Jaehoon Kim	Kyoungyoul Yang	Hyoungseok Cho
Jiyoung Kim	Dongho Oh	Yuri Ju
Haesik Kim	Seungsoo Yu	Nakwoon Choi
Hyejung Kim	Kyeonghee Yun	Wooseok Choi
Dongchul Kim	Changbong Han	Ho Han

**Main Number** Seoul Office +82-2-6974-4500  
Ulsan Complex +82-52-270-6114

### Address

Ulsan Complex 19, Yecheon-ro, 217beon-gil, Nam-gu, Ulsan, South Korea  
Seoul Office 26th and 27th Fl., Glass Tower Building 534, Teheran-ro, Gangnam-gu, Seoul, South Korea  
Incheon Plant 4L, 129B, 47, Namdong-daero, 79beon-gil, Namdong-gu, Incheon, South Korea  
LOTTE Fine Chemical Trading (Shanghai) Co., Ltd. Rm1515, Shanghai International Trade Center, No.2201, Yan'An Road, Shanghai, China 200336  
Europe GmbH Ober der Roeth 4, D-65824 Schwalbach/Ts. Germany  
T/S Center C/O Technologie-und Innovationszentrum Giessen GmbH, Winchesterstrasse 2, 35394 Giessen, Germany  
America Office 840 Gessner Road, Suite 500 Houston, Texas, USA (77024)