LG Chem has published Sustainability Report every year since 2006. The 12th Sustainability Report outlines LG Chem’s sustainability management activities and performance in depth.

This Sustainability Report complies with the Core Option in accordance with the GRI (Global Reporting Initiative) Standards, which is an international guideline for sustainability reporting. Also, the report complies with some of the principles and concepts provided by IIRC (International Integrated Reporting Council). In addition, the report reflects the 10 principles of the UNGC, ISO 26000, and core requirements of RBA (Responsible Business Alliance). The financial information in this report complies with the standards of K-IFRS.

The relevant period for this report spans from January to December 2017, and some of the major achievements include progress made until June 2018. To enable time series analysis, the report includes data from the previous three years (2015–2017).

The report covers the 13 domestic production plants in Yeosu, Daesan, Ochang, Changju, Osong, Naju, Ulsan, Onsan, Gimcheon, Paju, and as well as the head office in Seoul and three technical research centers in Daejeon, Magok, and Gwacheon. Overseas subsidiaries include the following production corporations: 10 production corporations in China including LGCCI, LGCNJ, LGCNA, LGCTJ, LGCBT, LGCBH, LGCBJ, LGCGZ, LGCYX, LGCCQ, LGCHZ, etc., LGCTW in Taiwan, LGCMI in U.S.A, LGCVH in Vietnam, LGCVZ in India, and LGCWR in Poland, etc. (except corporations founded and operated recently or in preparation during 2017). Economic data covers all consolidated companies. Some social and environmental data sets of a different reporting scope are indicated separately.

To secure reliability, Lloyd’s Register implemented independent assurance based on the principles of AA1000AS (2008). LG Chem publishes Sustainability Reports in Korean and English. They are also available at LG Chem’s Website (http://www.lgchem.com).
LG Chem’s products are almost ubiquitous in our daily lives. Most electronic goods, such as smartphones, laptops, and credit cards, and office supplies, such as post-its, are chemical products. Even the lenses in eyeglasses people wear contain chemical materials. These chemical products benefit our society and are used to create new ideas.

Apart from its existing business of making petrochemical products, LG Chem has entered into a number of new businesses for the environment, such as water, biotechnology, energy, etc. LG Chem will do its best to take on the challenge of making a better and brighter future for humanity.
Making Smart life

It is no exaggeration to say that every material in the world is composed of elements. Air, water, and soil, which constitute the natural environment, are chemical substances. Proteins that make up our bodies and nutrients that we take are also chemical substances.

The development of chemistry has led to numerous compounds, and these new materials have benefited humanity greatly. In fact most of the necessities that we consider integral to our modern lives are made of chemical compounds. Utilizing the limitless possibilities of chemical substances, LG Chem has developed a variety of chemical products that are used as materials for children’s toys, clothes, OLED TVs, and ESS, and make life more convenient.

ABS for Developing Imagination of Children

Acrylonitrile-Butadiene-Styrene (ABS) is a highly-functional plastic known for its strong heat resistance and impact resistance. It is highly processable and can be manufactured in various colors.

Caustic Soda for Uniform Dyeing

Caustic soda, also known as sodium hydroxide, is used to eliminate impurities and to brighten cotton fiber or improve the process of dyeing. Its aqueous solution is colorless and odorless and highly alkaline.

PVC for Silk Wallcovering

PVC wallcovering can be manufactured in various designs, lasts longer than synthetics, is resistant to stains, and used for water-proofing and thermal insulation.

OLED, Realizing Ultra Definition TV

An OLED TV can realize ultra-fine picture quality and produce colors comparable to natural ones. Also, it can present the same color quality at any viewing angle.

Expanded Polystyrene (EPS) is comprised of a large amount of air layers, due to this characteristic, it has thermal insulation, impact absorption, water repellency, and sound insulation properties.

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Styrene Butadiene Rubber (SBR) is a synthetic rubber made by performing low-temperature emulsion polymerization on styrene and butadiene. Compared to natural rubber, SBR boasts uniform quality and excellent heat/wear resistance. It is widely used to manufacture tires, shoes and industrial goods.

Work-life balance has become an important factor in determining the quality of life in present society. As the importance of leisure time increases, the demand for sports equipment, smart mobility, and drone has also been growing. These changes in lifestyle have led to the utilization of various chemical products. Sporting goods are mostly made of chemical substances, and functional sports clothing and equipment made of new materials are drawing much attention.

Smart mobility, such as electric bicycle, electric wheel and electric scooter, is an eco-friendly means of transportation using electric power and has become very popular among those who enjoy leisure activities in recent years. Also, drone, an unmanned aerial vehicle, is making a sea change in our daily life while being used in capturing images, delivering goods, collecting information, and even helping agricultural activities. These electronic goods need light but powerful batteries with high power density. Our IT & New Application batteries are widely adopted for smart mobility, drone, etc., and we will contribute to enriching people’s lives through our advanced chemical technologies.

**Fostering Active Future**

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**SBR for Shoes Material**

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**PVC for Durable Soccer Ball**

Polyvinyl Chloride (PVC) is one of the most widely used thermoplastics and its properties such as robustness or durability can be changed or maintained according to the type of additives being used in the processing process. Thanks to these characteristics, PVC is selectively used in a variety of areas from sporting goods to household commodities.

**EVA for Sole of Shoes with Elasticity**

Ethylene Vinyl Acetate (EVA) is a copolymer of ethylene and vinyl acetate. Its elasticity, heat sealing temperature, durability and permeability vary depending on the content of vinyl acetate monomer. It is used in a variety of areas from value-added products such as photovoltaic sheets to shoe soles, life vests, and more.

**Polyester for Sports Clothes**

Polyester is a synthetic fiber derived from petroleum, etc. It is a polymer, or a long chain of repeating chemical units, hence it does not absorb moisture. It does not stretch out of shape.

**Lithium-ion Battery, Supplying Power for Drone**

Drones need batteries so that they have the power to be operated wirelessly. Lithium-ion batteries are used for drones because they are light and have high energy density but no memory effect, which enables them to last longer.

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To the Stakeholders

I would like to extend my deepest gratitude to all of you for your continued interest in and support for LG Chem. Last year, LG Chem achieved the highest performance since its foundation, with sales of KRW 25.698 trillion and operating profit of KRW 2.929 trillion, despite the uncertain environment caused by factors such as prolonged low growth and rising protectionism across the globe.

In the Basic Materials & Chemicals Division, we achieved strong sales performance by reducing costs and expanding high value-added businesses. In the Energy Solutions Division, we turned a profit thanks to the sales growth of the automotive battery and ESS (Energy Storage System) battery as well as the improvement of the business structure of the IT & New Application Battery. The IT & Electronic Materials / Advanced Materials Divisions also saw an increase in sales and profitability through the enhancement of product competitiveness. In particular, the merger with LG Life Sciences following the takeover of FarmHannong has enabled us to begin the red bio business, where we are solidifying the future growth strategies and action plans of the bio business.

In the coming years, we will have a lot of challenges ahead in the business environment, such as rising protectionism around the world and increasing price volatility of major raw materials including oil prices and exchange rates. In addition, there will be a stronger need for corporate social responsibility than ever before, including mandatory disclosure of CSR information and responsible management of supply chains all over the world.

LG Chem will put effort into prudently overcoming the crisis and taking full advantage of this opportunity. We will absolutely eliminate old practices and enhance the business structure, strengthen the compliance with quality standards and safety and environmental management, and fulfill our social responsibilities as a corporate citizen, so as to secure competitiveness in the rapidly changing global business landscape.

“We will provide differentiated customer value through the enhancement of our business structure.”

We will continue to pursue the bio-growth strategy that we have been pursuing since last year, and actively discover and promote new businesses in the fields of energy, water, and inorganic materials. In our core businesses, we will make thorough preparations to maintain high profits and secure fundamental competitiveness. Especially, as the scale of investment and number of global businesses increase for the expansion of high value-added businesses and the response to orders for automobile batteries, we will make every management decision based on ‘value’.

While we build upon the capacity for the improvement of R&D productivity at LG Science Park, we will aggressively expand open innovation with other organizations. Moreover, we will strive to comprehend the current level of our manufacturing competitiveness and management system and to implement relevant tasks for innovation.

“We will comply with stringent quality standards and enhance safety and environmental management activities.”

We will manage the quality of products and also safety and environment, which are the basis of customer trust, without making any mistakes or compromise. We understand that even a single accident can destroy the foundation of business, and thus we will continuously foster the corporate culture of complying with established standards and principles.

“We will become a company that grows together with society.”

As a corporate citizen, we will conduct a variety of activities to achieve ‘mutual growth’ beyond ‘social contribution’. We will strive to establish a healthy ecosystem where we can grow together with our partners while maximizing values in economic, social and environmental aspects and transparently disclosing our efforts and achievements to our customers, shareholders, investors, suppliers and local communities.

LG Chem has grown constantly for more than 70 years thanks to numerous economic and social players who have been with us as well as our own efforts. We will do our best to conduct every business activity in a fair and transparent manner and meet the expectations of customers and society. I ask for your continued support and encouragement. Thank you.

J. S. Park

June 2018
CEO and Vice Chairman of LG Chem

LG Chem is fully committed to growing together with society while putting customer value first.”
As a global chemical company, LG Chem has established worldwide networks for production, sales, and R&D and provided products with global competitiveness. Under the vision of ‘A Global Leader that Grows Together with Customers by Providing Innovative Materials and Solutions’, LG Chem will fulfill its social and environmental responsibility throughout the whole process of management.

### Business Areas

Our businesses consist of Basic Materials & Chemicals, Energy Solutions, IT & Electronic Materials, Advanced Materials, and Life Sciences. By selecting and promoting ‘Energy/Water/Biotechnology’ fields as new growth engines, we are laying the foundation for sustainable growth.

#### Basic Materials & Chemicals

After going through the process of crude oil refining and cracking, ethylene and propylene, which are basic raw materials of petrochemicals, are produced and used to manufacture materials of plastics that we use in our daily lives, such as PE, ABS and synthetic rubber.

#### Energy Solutions

Automotive batteries for eco-friendly electric vehicles, ESS batteries for renewable energy storage, and IT & New Application batteries for smartphones and laptops are manufactured based on lithium-ion battery technology to provide energy solutions.

#### IT & Electronic Materials

High technology-intensive materials that are unseen but play a key role in completing final products, such as materials for displays, semiconductors, and automobiles. In addition, RO membranes, a water treatment filter, is utilized in providing a variety of high-quality products to secure clean water.

#### Advanced Materials

Display materials and rechargeable battery materials were spun off as a separate business unit. Active investments and R&D activities are being carried out to secure material source technology in the display and battery fields, which are the new industries of the future.

#### Life Sciences

LG Chem merged with LG Life Sciences in 2017 and Life Sciences is considered as a future growth business which is to be promoted in the mid to long term. Life Sciences has secured a competitive edge in the biotechnology market based on superior technology and R&D capacity in terms of medicine, vaccines, and fine chemicals.

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LG Chem’s sustainability management covers all management activities in alignment with corporate strategic directions. Based on its management philosophy ‘LG Way’, the company strives to achieve its vision and promote sustainability management.

**Our Strategy**

**LG Chem’s Vision and Core Values**


- **Vision**
  - To Be a Global Leader
  - Growing with Customers
  - Innovative Materials
  - Innovative Solutions

**LG Way**

The LG Way is the way LG employees think and act. We promote the corporate management philosophy of ‘Customer Value Creation’ and ‘People-Oriented Management’ based on the code of conduct ‘Jeong-Do Management’ to achieve the vision ‘No. 1 LG’.

- **Global Leader**
  - We strive to be a company that is trusted and admired by our customers, employees, shareholders, and society around the world.

- **Growing with Customers**
  - We grow with our valuable customers by delivering maximum customer value from their viewpoint.

- **Innovative Materials**
  - We deliver the best materials with unrivaled prices and technologies by engaging in one-to-one collaboration with customers’ products and goods, and corporate business in business.

- **Innovative Solutions**
  - We identify problems in customers’ businesses, including costs, and by focusing on core technologies, providing our services and know-how into products and solutions in alignment with customers’ individual needs.

**Value**

- **Customer Value Creation**
  - We believe that substantially improves customer performance and competitiveness. We act to reinforce customer value with its customers consistently and to deepen understanding of both our customers and the market.

- **Strong Implementation**
  - Strong implementation is essential to bring corporate objectives and strategies to fruition. It is a systematic process that requires an objective view of reality, thorough analysis, and concrete planning to achieve its goals.

- **Mutual Respect**
  - Mutual respect plays a vital role in building harmonious and the capacity to make shared throughs. This foundation, strengthened by mutual recognition and respect, is what empowers us to achieve our goals.

**Sustainability Management Aligned with SDGs**

As a member of the UN Global Compact, LG Chem actively supports the Sustainable Development Goals (SDGs). LG Chem will contribute to the sustainable development of the world by aligning its business with the SDGs.

**Sustainability Management System**

Under the vision of ‘Sustainable Chemistry for Human and Environment’, LG has promoted sustainability management based on 4 principles and 10 key tasks in the areas of economy, environment, and society.

- **Vision**
  - Sustainable Chemistry for Human and Environment

- **Principles of Sustainability**
  - We Abide by the Principles of Sustainability to Create Sustainable Value
  - We contribute to the growth of communities using our capabilities.

- **Tasks**
  - Economic
    - Expanding markets and increasing sales
    - Improving customer value
  - Environmental
    - Improving product responsibility
    - Respecting climate change and reducing energy use
  - Social
    - Respecting human rights and developing society
    - Strengthening compliance with fair trade

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Our Business Models

Economy

- Financial Capital: Domestic and overseas economic condition, response to governmental regulations, assets, and M&A.
- Manufactured Capital: Domestic and overseas operations, manufacturing facilities.
- Intellectual Capital: Core technologies, intellectual property rights, patents.
- Corporate tax: KRW 541.9 billion
- Shareholder and investor dividends: KRW 460.1 billion
- Patents in Korea and overseas: 46,976
- The percentage of new products in total sales: 35.1%

Environment

- Environmental Capital: Natural environment, energy, water, electric power, etc.
- GHG emissions intensity: 0.454 tCO2-eq/product ton
- Environmental investment: KRW 41.4 billion
- Energy saving: KRW 55 billion

Society

- Human Capital: Professionalism of employees, vocational experience and capabilities, ethical awareness.
- Social Capital: Local community, government, customers, supplier.
- Community investment: KRW 36.3 billion
- Injury rate: 0.23%
- Annual wages of employees: KRW 1,508 billion
- 1,151 of new jobs created

Value Chain

1. R&D
   - We are raising customer value based on the continued investment in R&D and technology.
   - R&D and Technology Innovation

2. Raw Materials
   - In the process of purchasing global raw materials, we are examining the sustainability of raw materials and suppliers and formulating purchase agreements in accordance with fair procedures.
   - Supplier Partnerships

3. Manufacture
   - We are expanding investment in manufacturing facilities. In addition, we are striving to create a safe working environment.
   - Response to Climate Change
   - Quality Management
   - Occupational Safety, Health, and Environment

4. Sales
   - We are providing our customers with quality products and improving their performance.
   - Collect customer requirements and make improvements
   - Disclose product information

5. Recycling/Disposal
   - We are promoting process advancement to increase the use of recycled resources.
   - Minimize the environmental impact of waste
   - Support social enterprises that have a resource recycling model

Business and Product

- Basic Materials & Chemicals
  - NCC
  - PO
  - PVC/Plasticizer
  - ABS
  - EP
- Acrylate/SAP Rubber/Specialty polymer
- Automotive Battery
  - ESS Battery
  - IT & New Application Battery
- Optical Materials
  - Advanced Functional Materials
  - LCD Glass Substrates
  - RO Membrane
- Display Materials
- Rechargeable Battery Materials
- Pharmaceuticals
  - Vaccine
  - Fine Chemicals

INPUT

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VALUE ADDED BY LG CHEM

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OUTCOMES OF BUSINESS

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Stakeholder Engagement

LG Chem communicates with stakeholders through a variety of communication channels. The collected opinions are reflected in management policies and the outcomes are shared with stakeholders.

Stakeholder Communication Channel

LG Chem communicates with direct and indirect stakeholders including shareholders & investors, customers, employees, suppliers, NGOs & local communities, academia & experts, industrial associations & organizations, media, and government agencies. While regularly communicating with its key stakeholder groups, such as shareholders & investors, customers, employees and suppliers, the company listens to their objective opinions regarding its major business activities and sustainability management.

Stakeholder Groups

- Shareholders & Investors
  - Long-term growth
  - Creating and distributing profits
  - Transparency
- Customers
  - Open communication
  - Improving product quality and safety
- Employees
  - Improving the corporate culture
  - Cooperative labor-management relationship
  - Promoting employee benefits
  - Reinforcing employee safety and health
- Suppliers
  - Supporting suppliers and providing training
  - Fair-sharing performance with suppliers
- NGOs & Local Communities
  - Strategic social partnerships
  - Local CSR activities by overseas subsidiaries
  - Investing in local community
- Academia & Experts
  - Industry-academic cooperation
  - Technological development
- Industrial Associations & Organizations
  - Responding to new regulations
  - Chemical management
- Media
  - Creating and distributing profits
  - Technological innovation
- Government Agencies
  - Shared growth
  - Occupational safety and health
  - Fair trade and compliance

Expectation

- Communication Channel
  - Corporate presentations
  - General shareholders’ meetings
  - Financial information disclosure
  - Credit rating
  - Open communication
  - Product liability monitoring
  - Listening to opinions such as survey
  - Supplier presentations
  - Shared Growth Committee
  - Business and technical support programs
  - CSR Committee
  - Employee Committee
  - Safety and Environmental Committee
  - Labor-Management Committee
  - Company magazines
  - Employee satisfaction survey
  - Consulting activities
- Stakeholder Groups
  - Listening to opinions such as survey
  - Cooperation in region where CSR activity takes place

Commentary from Vice President of Corporate Affairs Department

LG Chem identifies the expectations of stakeholders through diverse channels including Stakeholders Meeting, and reflects them in its sustainability management activities. Also, the identified issues are systematically managed in a close cooperation with relevant departments and the results are disclosed in Sustainability Reports. These efforts for communication and internal management will lay the foundation for LG Chem to emerge as a global leading chemical company. LG Chem will continue to promote sustainability management and create sustainable values in every business activity to fulfill its social and environmental responsibilities.

Stakeholder Opinions and Responses

LG Chem listens to the opinions of stakeholders through diverse channels including meetings and surveys. The key opinions among those suggested at the meetings are reflected in the management activities, and follow-ups and the results are included in sustainability reports.

Listen to Stakeholders’ Opinions

- Product sustainability is important for sustainable development.
  - In recent years, product social responsibility as well as product quality have become more important than ever. Accordingly, both LG Chem and its suppliers need to have a sense of responsibility for the entire supply chain from raw material mining to finished battery products. We need to strive to reduce the environmental impact, such as carbon emissions, air pollution and water use, in all production stages, and to comply with all due diligence rules in accordance with the assessment of child labor and human rights violations in the supply chain. R

- Supports for outstanding partners should be strengthened.
  - LG Chem has been actively promoting mutual growth with its partners and programs for mutual growth are well operated. To foster cooperation culture, screening of suppliers need to be strengthened and policy for supporting the outstanding partners is needed. Also, the support program needs to be more actively promoted through communication channels such as meetings. R

- LG Chem is required to manage risk while growing its business.
  - To secure future growth engines, LG Chem is implementing energy, water, bio businesses. If the diversification of LG Chem’s business portfolio brings changes in the scale of profit, it will have a positive effect. When it comes to investment risks, the policy on raw materials, which are less affected by oil prices, needs to be consistently managed, and the transparency of management needs to be more enhanced to maintain trust from the public. R

- We expect to see the continued CSR activity for youths and education.
  - Through the Fun Chemistry Park program, we have developed a positive awareness of LG Chem’s social contribution activities. Both schools and students are highly satisfied with the experiential science (chemistry) education contents that are provided in the form of outreach programs since individual schools are not capable enough to provide such contents. We hope to see the continued operation of the program with more participants in the future. R

Customer

Investment Institution

Partner

Local Communities
Subject

• Evaluation on LG Chem’s sustainability management, and making up for the weak points
• Direction of LG Chem’s sustainability management and social value that LG Chem should create

Chae-Ki Kwak, professor

One of the emerging issues in the chemical industry is safety. Although LG Chem’s products are not directly delivered to end users, the company needs to manage customer safety in a proactive manner. Along with this, the company’s business portfolio has been reorganized to focus on energy, water and biotechnology and thus created various environmental values. Also, the government has recently been focusing on the creation of social values. In this regard, LG Chem needs to increase investment in new businesses to create more jobs, and improve the quality of employment through the management of supply chains.

Kyeong-Sin Kim, professor

Considering the characteristics of its business, LG Chem should do everything possible to ensure the complete safety of workplaces. It is positive that its sustainability reports highlight the EHS section. To become more trustworthy, LG Chem needs to reestablish its sustainability management strategies from a long-term perspective. To that end, the company needs to execute quantitative measurements of economic, environmental, and social performance, and manage its management activities in alignment with the UN SDGs. Furthermore, employees also need to internalize sustainability management and have loyalty to the company.

Eun-Kyeong Lee, senior researcher

Along with changes in its business portfolio, LG Chem has pursued to create environmental values by increasing energy efficiency and decreasing environmental load. In order to actively communicate with stakeholders on business directions, the sustainability reports need to be prepared in alignment with the UN SDGs and highlight not results but impacts on the society. Furthermore, LG Chem not only needs to comply with environmental laws and regulations; it also needs to take the lead in meeting non-legal requirements. Also, as a large energy user, LG Chem needs to make voluntary efforts to improve its workplace environment, such as using of renewable energy sources.

Jae-Seong Noh, research commissioner

In fact, LG Chem’s sustainability reports have been significantly improved, in terms of reporting quality and system, by proactively reflecting the opinions suggested at the meetings of stakeholders. The reports would be improved even more if there were a clear explanation on how its energy, water, and biotechnology businesses are aligned with the UN SDGs. Since the UN SDGs are too comprehensive, the company does not need to deal with every issue. Most of all, LG Chem needs to minimize negative impact and maximize positive impact on its business areas. Also, regarding the SDGs, the company needs to focus on the issues with a considerable impact in its future businesses, and estimate the long-term KPI and impact.

Jin-Seong Kim, team leader

Although the BOD is considered as the main pillar of the company, the sustainability reports have failed to show a clear connection between the BOD and business units. Since LG Chem has a stable ownership, external investors do not have much influence, which ensures a corporate stability but also means less external stimulus. Therefore, LG Chem might lag behind others if it does not change efforts to improve its workplace environment, such as using of renewable energy sources.

Opinions from Stakeholders Meeting and Plan for Reflecting in Management

Key Opinion

<table>
<thead>
<tr>
<th>Description</th>
<th>Progress and Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Expansion of communication from the perspective of customers</td>
<td>• Explain to consumers how LG Chem’s products are used in finished products</td>
</tr>
<tr>
<td>2. Creation of environmental values</td>
<td>• Emphasize with subtitles in the report (e.g. company that create environmental values)</td>
</tr>
<tr>
<td>3. Creation of social values</td>
<td>• Report on the environmental values of businesses with regard to business innovation</td>
</tr>
<tr>
<td>4. Improvement of LG Chem’s sustainability management</td>
<td>• Highlight the long-term goal of creating jobs for the youth, women, and underprivileged</td>
</tr>
</tbody>
</table>

Overview

Date: March 29, 2018 (Wednesday)
Location: Floor 31, Meeting hall, headquarters of LG Chem
Participants: Chae-Ki Kwak, professor (Eongju University), Jin-Seong Kim, team leader (Korea Corporate Governance Service), Kyung-Sin Kim, professor (Sungkyunkwan Women’s University), Jin-Seong Kim, research commissioner (Business Institute for Sustainable Development), Eun-Kyeong Lee, senior researcher (SUN Global Compact Network Korea)
LG Chem has conducted a materiality assessment to effectively reflect internal and external business environments and various expectations and interests of stakeholders in the sustainability management reports. The 2018 Sustainability Report was prepared in compliance with the guidelines on report content and format suggested by the GRI (Global Reporting Initiative) Standards. At the 2018 materiality assessment, stakeholders’ influence as well as strategies and financial impact in the aspect of LG Chem’s business were analyzed and reflected in deciding material topics. The process of materiality assessment is described as follows:

### Materiality Assessment Process

**Step 1: Identification**
- **Issues Raised by Stakeholders**
  - Issues raised by key stakeholders, including investors, government, and media, were examined to select keywords related to LG Chem and the chemical industry in 2017.
  - National dailies, Internet newspapers, TV news, economic dailies, etc.
- **International Guidelines**
  - The international standards and guidelines regarding sustainability management and chemical industry.
  - UNGC, GRI Standards ISO 26000, GRI-IIR Framework, DJSI Questions, RSA, UN SDGs, etc.
- **Analysis of the Industry**
  - Successful cases of domestic and foreign companies were benchmarked to identify key issues in the chemical industry.
- **Global chemical and top companies, chemical companies in Korea, etc.**

**Step 2: Assessment**

**Issue Pool**
- Stakeholders
  - Listening to Stakeholder Opinion
    - On and offline surveys targeting internal and external stakeholders were conducted to measure the materiality of LG Chem’s reporting topics.
    - LG Chem gathered opinions of stakeholders and implemented an analysis of business impact.
  - Analysis of Stakeholder Impact
    - Strategic alignment and financial impact were comprehensively analyzed and evaluated from a business perspective.
  - Analysis of Business Impact
    - Strategic alignment: achieving mid-term and long-term goals and analyzing business relevance.
    - Financial impact: considering profit generation and opportunity factors; cost increase and opportunity factors; severity of cost increase; and response occurrence.

**Prioritization Analysis**
- Prioritizing material topics according to the analysis of stakeholder impact and the analysis of business impact.

**Step 3: Prioritization**
- Selection of Material Topic
  - Applying GRI Standards
  - Validation process and prioritization for the 21 material topics

### Result of Materiality Assessment

21 topics were deducted through matrix analysis which considers business impact and influence on stakeholder, and 9 topics were selected as LG Chem’s material topics.
INNOVATION FOR A BETTER FUTURE

To lead the chemical industry in the rapidly changing business environment, we concentrate our capacity on future growth businesses and reorganize our portfolio with a focus on high value-added businesses.

BACK TO BASICS

We put a priority on product quality and safety and comply with domestic and international regulations on chemical substances. Also, we prevent potential accidents by promoting safety in workplaces.

GETTING ENGAGED WITH PARTNERS

We promote mutual growth throughout the entire business value chain. We support the growth and global competitiveness of our partners, and ensure the responsible procurement of resources through suppliers CSR management.

PROTECTING OUR PLANET

We are actively engaged in reducing GHG emissions to prevent environmental risks and manufacturing eco-friendly products to enhance our business competitiveness.

RESPECTING HUMAN DIGNITY

Based on our management philosophy ‘People-Oriented Management’, we fully support the international standards for human rights and labor, and strictly comply with labor laws in every country and region of our business operation.

GIVING BACK TO COMMUNITIES

We make investments in local communities to increase social values. We are engaged in protecting the environment and resolving the issues of local communities, and we also calculate the SROI by measuring the effectiveness of these activities for efficient implementation.
Industry Trends: Change & Response

As global trade protectionism is expected to grow higher than ever, the overall business environment is facing a bumpy road ahead due to increased volatility in oil prices, exchange rates, and major raw materials prices. In particular, the increased volume of North American petrochemical products based on shale gas and the growth of the European and Chinese battery market will intensify the competition for orders.

When it comes to LCD and OLED materials, global technology leaders have been leading the market expansion, and the functional film and RO membrane market is also expected to keep growing for years to come. While demographical factors are affecting the biotechnology market, red bio is expected to maintain an annual growth rate of 6.5% due to the aging population, innovative life science technologies, and consequential development of new treatments. The anticancer and immune disorders sector is leading the growth with active release of new drugs. The green bio market is continuously increasing to deal with the risk of food shortage in the future. Genetic engineering technology and precision agriculture solutions are accelerating the expansion of green bio market, and global entities are focusing on large-scale M&As, strengthening their market-leading positions and, taking the lead in industrial innovations.

Strategy: Risk & Opportunity

LG Chem chose to fundamentally innovate its business structure and method to be a leader in the fast-changing industry, not a mere survivor. The company has concentrated on the future growth areas of energy, water, and bio, and restructured its portfolio with a focus on high value-added businesses to enhance competitiveness. We have expanded our business portfolio to include ‘green bio’ (seed/crop protection), ‘red bio’ (medicines), and ‘battery materials’ through M&As with FarmFlannong, LG Life Sciences, and GS EM. In the long run, LG Chem is striving to be ‘a company with strong fundamentals that can sustain a steady growth in sales and profits despite the rapidly changing and uncertain business environments’.
Innovation for a Better Future

Improving Business Structure

LG Chem has established a company-wide growth strategy by designating energy, water, and bio as core future businesses, and has raised competitiveness by restructuring its portfolio with a focus on high value-added businesses. The business portfolio has also been expanded to include green bio, red bio, and battery materials through M&As with FarmHannong, LG Life Sciences, and GS EM, respectively. We aim to be one of the ‘Global Top 5 Chemical Companies’ with a balanced business portfolio by 2025. To that end, we will expand new businesses to increase the sales of non-petroleum-based materials (including battery materials) to 40% by 2020.

Future Business Growth Strategy

LG Chem is focusing energy, water and bio as mid to long-term growth engines since these three areas are expected to witness an increasing demand owing to population growth in the future. We aim to be a leader in the global future business growth strategy in energy, water, and bio by 2020. The business structure is focused on developing innovative new drugs, and for green bio, we have raised competitiveness by restructuring its portfolio with a focus on high value-added businesses. The business portfolio has also been expanded to include green bio, red bio, and battery materials through M&As with FarmHannong, LG Life Sciences, and GS EM, respectively. We aim to be one of the ‘Global Top 5 Chemical Companies’ with a balanced business portfolio by 2025. To that end, we will expand new businesses to increase the sales of non-petroleum-based materials (including battery materials) to 40% by 2020.

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by more than 20% every year, and higher portions of investments are allocated to businesses relevant to new growth engines, such as producing mid to large-sized batteries, securing raw materials, and raising the competitiveness of cathode material products, and basic materials.

Key R&D Performance

| Basic Materials & Chemicals R&D |
| Developing Highly-modified SBBR (Solution Styrene Butadiene Rubber) | The demand for eco-friendly tires has been increasing due to the tire grading system and CO2 emission control implemented in many European countries, which was followed by rising demands for the development of fuel-efficient and highly-modified SBBR that is applied to eco-friendly tires. The highly-modified SBBR developed by LG Chem has improved fuel efficiency by 20% compared to existing products by maximizing reactivity with silica through the development of denaturation technology and high-performance denaturants.

| Energy Solutions R&D |
| Developing Free Form Battery for Smart Phones | We have developed a free form battery beyond the existing pouch/cylindrical type batteries, opening a new horizon for miniaturized/high-performance smart devices. This battery applies the Lamination & Stacking technology instead of the conventional winding method, which helps to maximize the internal space efficiency of the device and thereby allow batteries to come in the forms desired by customers.

| Advanced Materials & Devices R&D |
| Developing High Energy Density ESS Standard Module with Long-life Battery | We have developed a world top-level high energy density standard module with long-life battery. It is applied to the most miniaturized and lighter solar cell-type residential ESS products. In particular, stand-alone battery modules are equipped with a battery management system (BMS) and are designed to increase the maximum amount of power to 65kWh by easily connecting up to 10 basic modules of 6.5kWh in order to meet the various needs of customers.

Sales of New Products (Unit: KRW billion)

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>7,146.7</td>
<td>7,086.4</td>
<td>9,021.8</td>
</tr>
</tbody>
</table>

* The performance of FarmHannong and Life Sciences division is included in data from April 2015 and January 2017 accordingly

Increasing R&D Capacity

To align its R&D strategies with business strategies, LG Chem specifies the company-wide R&D strategies and preparations for the future by adjusting and integrating the R&D strategies, the resource input propriety, and the future preparations of each division. In particular, we established an organization under the control of the Chief Technology Officer (CTO) in 2017, driving business results by aligning with corporate strategies, strengthening project management, promoting open innovation, and creating synergy among affiliates. While we manage 11 key future tasks, we are striving to improve R&D performance and research capacity through the gate review of key tasks and the examination of corporate tasks.

Securing Patent Competitiveness

LG Chem promotes strategic patent management in all stages from product development to commercialization. The company also makes efforts to secure strategic patents and to develop response strategies to other companies’ patents in each stage of product development. LG Chem has built its patent portfolio by focusing on new businesses, such as bio and the advanced material field, and discovering excellent related patents through IP & R&D. As of 2017, LG Chem holds some 45,976 intellectual properties, of which 20% belong to the future growth engine field and the information & electronics material field, and 41% belong to the battery field. In 2017, we also secured a number of bio patents thanks to the merger with LG Life Sciences, and we will continue to strengthen patent competitiveness in bio and other future business areas.
Securing and Nurturing Talents

R&D and human talent serve as the root of corporate value creation in the chemical industry. Securing excellent talents is critical for successful business innovations, in areas such as advanced business structure and innovation in manufacturing and R&D divisions.

Securing Talents

Securing R&D Talents

It is of paramount importance to secure and nurture professional R&D talents to lead future businesses, especially in the areas of rapid growth such as rechargeable batteries. LG Chem conducts various recruitment activities at home and abroad to raise competitiveness and support the early commercialization of future tasks. The company also recruits talents needed in the new research fields such as bio through industry-university cooperation programs with good universities in the country and conducts promotion activities about R&D back-up personnel through exchange meetings, industry-university workshops, and Lab Tour, where researchers visit major research teams in the country.

Advancing Procurement of Talent

LG Chem supports the grant of scholarships for future human resources, provides them with job opportunities, and secures talented people in advance through the ‘Advance Procurement Talent’ consisting of R&D Scholarship, Industry-University Cooperative Program, Global Internship, Industry-University Cooperative Internship, etc. The ‘Securing the Talent’ program is a win-win recruitment method, as the company can evaluate the potential and capability of applicants while at the same time the applicants can experience the growth vision and organizational culture of the company.

Fostering Talents

Fostering Talents for Leading the Market

LG Chem conducts training for the future entrepreneurs of HPI (High Potential Individuals), the next-generation global business leaders, and a pool of division leader candidates to polish the talents of those who can lead the market. In 2017, LG Chem strengthened 1:1 coaching for division head candidates and next-generation global business leaders to develop insight on organizational operations and business performance capabilities. We are also strategically fostering core talents by revising the HPI training system in accordance with the reorganization of the HPI system.

Fostering R&D Talents

LG Chem implements R&D common/ professional capacity and management capacity education to build the R&D capacity of researchers. The company also conducts a mentoring program and orientation for new researchers. It helps researchers to develop professional knowledge in polymer chemistry, organic chemistry, analytical chemistry, material engineering, electrochemistry, and optics through invitation lectures of experts and e-learning. In addition, LG Chem implements HPI (High Potential Individuals) talent management and education to solve problems to enhance R&D capability, and supports them to develop professional knowledge by contacting latest technology trends through seminars and academic conferences.

Furthermore, the company continuously conducts education related to R&D management such as accounting, marketing, research tasks management, and commercialization to create outcomes through R&D connected to each division’s strategy. In the case of researchers who execute many overseas businesses, LG Chem provides them with customized language education to work smoothly.

Innovative Organizational Culture

Creating an organizational culture that allows employees to work pleasantly is very important for sustainable management, as it motivates people to focus on their work. We pursue a horizontal organizational culture and open communication that enables employees to realize their full potential and enhances work efficiency through value-based decision makings and business process improvements. In addition, we support the work-life balance of our employees to create a happy and healthy workplace.

Innovative Work Method

LG Chem is pushing for work method innovation to place a greater focus on value-oriented tasks that create customer value, by providing enterprise-level guidelines and detailed activities for each business division/sector.

Implementing Value-Oriented Tasks

LG Chem intends to put its focus on tasks that create customer value and enhance the autonomy of its employees, by innovating work methods which are irrelevant to customer value creation. In addition, various efforts to improve the culture of reporting and meetings are being made to enable employees to focus on key tasks.

Simplifying Job Grading System for Horizontal Organizational Culture

In 2017, a new job grading system was introduced to respond to changes in the business environment and to spread a horizontal and creative organizational culture. We have simplified the grading system for office employees, including researchers, from a 5-stage system based on ‘position and seniority’ to a 3-stage system based on ‘rank’. Also, in order to provide more opportunities for young and capable talents and to strengthen the dynamism of the organization, we expanded the pool of team leader candidates include senior-level managers.

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Innovation for a Better Future

Predictive maintenance
Simulation
Zero defect
Manufacturing
Field Work
Collective Bargaining
Realtime tracking

In 2006, LG Chem was the first in the LG Group to introduce selective welfare policies. Since then, LG Chem has continuously strived to establish a corporate culture that promotes work-life balance. Since July 2017, the application of flex-time was extended from several divisions to all office employees in the company. When an employee applies for flex-time, he/she can choose anytime between 7-10 am to start working, and leave between 4-7 pm as long as 8 working hours are served for each day. The company is also actively reducing overtime and holiday work and encouraging employees to take leaves for refreshment and for higher productivity at work.

LG Chem introduced a selective flexible work system which allows employees to work 40 hours on average and 52 hours in maximum per month. As a result, employees can focus and work more when they have work to do and work less when they are not very busy. After reorganization of the system, for the employees who work more than the basic working hours on weekdays and public holidays, LG Chem offers them 1.5 hours of holiday for each hour of extra work to enable them to take a rest. Also, LG Chem adopted ‘Working Hour Management System’ on LG Chem intranet, which allows employees to systematically monitor and manage their working hours. To operate the system successfully, meetings were held for administrative and technical employees. In addition, LG Chem has put effort into eliminating the culture of overtime work to do its best to establish a system and culture for work-life balance.

Work-life Balance

In order to foster a routinized communication, we operate a ‘Speak-Up Table’, where employees freely express their opinions and the CEO responds, together with the Employee Council and groups of common interest. Lastly, we run the Employee Council to promote the organizational culture, and to create a working environment where employees can share their voices and focus on their work.

Communal Labor-management Relationship

LG Chem promotes a horizontal labor-management relationship in which the role of each employee is respected and labor and management are on equal footing. Based on management principles, ‘Customer-value Creation’ and ‘People-oriented Management’, LG Chem practices labor-management partnership with participation and cooperation. Through this, the company creates continuous outcomes, achieves world-level competitiveness, improves the quality of life of employees, and takes the idea that communal labor management can contribute to social development as its vision. For this, LG Chem is running its own labor-management cooperation model at three levels: corporate management, the worksite, and collective bargaining. On the level of corporate management, LG Chem raises the value of the company and its members by increasing trust in the management and strengthening communication. On the level of worksite, the company raises productivity by systematically training technical talents in the field and complying with basics and principles. On the level of collective bargaining, the company is building a business-oriented labor-management partnership through a reasonable and productive negotiation culture and labor-management participation and cooperation.

Open Communication Culture

Strengthening On-site Communication

LG Chem has strengthened its on-site channels for communication with the CEO to promote the downstream implementation of the corporate vision, core values and management strategies, and also to establish a horizontal communication culture. We strictly adhere to the basics and principles to earn the trust of our customers, and provide unique discipline guidelines including the Focus on Leading the Market Board and monthly letters for the executives and employees at home and abroad.

LG Chem has been operating 10 PoC* tasks as a part of the company-wide implementation of intelligent manufacturing. We have set predictive maintenance of facilities, optimization of big data, and AI/Deep learning as improvement areas with the use of enhanced data analytics and are collecting BIP cases for each area. The introduction of a data analysis platform is also being reviewed for the effective dissemination and maintenance of best practice models.

Supporting Efforts to Strengthen Manufacturing and Analytical Capacity

To support the establishment and utilization of a big data platform, we are running the ‘Data Scientist’ program to nurture data experts. In addition, we are promoting the construction of high-efficiency production systems that manage the KPIs for manufacturing innovation, expand modular designs, and digitize designs at all business sites.

LG Chem Sustainability Report 33

Carrying Forward Manufacturing Innovation

Utilizing or creating smart systems that apply big data to the process, ranging from raw material supply to production to consumer feedback, is a global trend of manufacturing innovation. LG Chem is pursuing smart manufacturing by applying various ICT technologies to its existing production lines. Based on the information system, facility operation technology, and automation equipment, we seek to acquire more meaningful big data by combining the core technologies of the 4th industrial revolution, including IoT, 3D, Sensor, Robot, Cloud, VR/AR, etc. Analyzing this data will lead to development in many manufacturing areas and will strengthen business competitiveness through higher productivity and quality.

Concept of LG Chem’s Smart Factory

Measurement sensors placed strategically throughout our facilities collect and analyze data in real-time, and provide a clear picture of every situation in the plant. Moreover, analyses in the process contribute to raising the level of productivity, quality and safety environment, and also enable self-diagnosis and judgment.

Operating Industry 4.0 Secretariat

For effective cooperation and communication in pursuing intelligent manufacturing at the corporate level, an integrated secretariat is being operated to collaborate with business divisions, data optimization project teams, and organizational culture and business innovation teams. The secretariat also runs the LG Chem Info-In program to promote convergence and culture of sharing. In addition, meetings of intelligent electronic manufacturing leaders are held to share the best uses for new technology and to discuss ways to promote intelligent manufacturing.

Securing Intelligent Reference

LG Chem is pursuing the construction of high-efficiency production systems that manage the KPIs for manufacturing innovation, expand modular designs, and digitize designs at all business sites.

Innovation for a Better Future
Industry Trends: Change & Response

The uncertainty of the current business environment is higher than ever before. The emergence of new technology and fierce competition have led to the co-existence of risks and opportunities. Under these circumstances, we need to focus more on the value of ‘basics’. The basics that LG Chem should keep to are ‘quality’ and ‘safety’.

Poor management of manufacturing processes in the chemical industry can result in chemical accidents or product defects. This will cause extensive damage to the environment and safety of local communities, and negatively affect the company in terms of finance and image.

Since our products are used as materials for finished goods, such as electronic products, automobiles and constructions, they can create a ripple effect throughout the industries. Accordingly, we need to double check the safety and quality of our products. The chemical industry has already entered a rapid growth period and is highly competitive. In this regard, LG Chem not only needs to meet the market expectations for high quality, but also to ensure the quality of market-leading products.

Moreover, as the global market has turned its focus toward green industries, LG Chem’s stakeholders including clients are demanding that the company obtain more eco-labels and comply with environmental regulations.

Strategy: Risk & Opportunity

LG Chem has pursued fundamental innovation in its business structure and practices, not to survive but to lead the industry in this rapidly changing business environment. The company is making an all-out effort to provide solutions that satisfy customers with better quality.

In addition, the international regulations on chemical substances have also been strengthened. Accordingly, LG Chem proactively responds to such regulations on chemical substances/products, and establishes safety management systems to take the lead in accountability management activities. The company strives to prevent safety accidents by promoting the culture of safety and health in our workplaces. Also, we will focus on creating a safe working environment by preventing various safety accidents, such as leakage of toxic chemical substances, fire, and explosion.

Evaluation

<table>
<thead>
<tr>
<th>Year</th>
<th>Injury Rate in Korea (Unit: %)</th>
</tr>
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<tbody>
<tr>
<td>2015</td>
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<td>2016</td>
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<td>2017</td>
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<td>2018</td>
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<tr>
<td>2019</td>
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<tr>
<td>2020</td>
<td></td>
</tr>
</tbody>
</table>

* Figures are increased due to high approval rate for industrial accident in 2015
Ensuring Product Safety

LG Chem, as a manufacturer and supplier of materials and products that are closely related to our life, strives to reduce the influence of our products on the health of customers and the environment. We share information on our chemical substances with customers to ensure transparency in product safety.

Strengthening Product Safety System

LG Chem strictly verifies substances subject to control according to product environmental management skills from raw materials for all products. The company classifies substances subject to control into three phases according to the risks associated with hazardous substances and has organized a business system through which all materials can be purchased after their control forms are verified. The company reviews the guarantees to control products through the chemicals management system of resources and products, CHARMs (Chemical Assurance and Regulation Management System). It verifies maleficence and the risk of materials by building a computer network through which the MSDS (Material Safety Data Sheets) for all materials can be reviewed, and supports the issuance of the product environmental guarantee within the system.

Promoting Chemical Substance Management System

LG Chem established CHARMs in 2014 to prevent safety accidents and comply with regulations throughout the entire process from the purchase/warehousing to use/delivery/disuse of chemical substances, and it has improved the system to comply with regulations, ensure product safety, and strengthen accountability.

With regard to all the raw materials purchased through CHARMs, LG Chem acquires information on chemical components before a purchase order is made and examines the information on toxic properties and legal actions to prevent any possible risks. Combining the acquired information on raw materials with the BiH of McMOS (Biological, Chemical, Health, and Environmental) of our products, we conduct the integrated management of information on products that used the purchased raw materials.

In 2017, we established a system to manage the information on the composition of raw materials for articles, such as batteries, and of chemical products. This helped increase trust in the safety of the composition of raw materials for articles, such as batteries, and conduct complete enumeration of imported materials. In addition, LG Chem joined the consortium of the Korea Petrochemical Industry Association and acts as the representative of a joint registration consultative group. LG Chem plans to complete joint registration of 17 of its manufactured substances by June 2018 through the procurement and sale of data used to evaluate maleficence and risk. Furthermore, LG Chem has responded to the Chemicals Control Act by building and running a system to restrict procurement and examine the reported import quantity of toxic substances.

Sharing Meetings to Respond to Chemical Regulations among Suppliers

LG Chem held sharing meetings to respond to chemical regulations to share information on trends of various domestic and foreign chemical regulations in order to strengthen response and support procurement suppliers’ compliance with chemical regulations. In 2017, 267 employees from 211 suppliers met in response to chemical regulations to share their understanding of the Act on Registration, Evaluation, etc. of Chemicals, MSDS evaluation method, global product & environment regulation, and LG Chem’s material ingredients system. In the future, LG Chem will actively and continuously support suppliers in their efforts to take appropriate actions in response to chemical regulations.

Conducting Global Level Management of Chemical Substances

LG Chem comprehensively responds to global regulations by preparing a response manual for global product environmental regulations to reduce risks related to regulations on chemical substances in performing global business. After Development and Management of Eco-friendly Products was revised and notified Management of Product Environment, the company now subdivides the criteria for product component management into each material and regulation, including restrictions on and the prohibition of harmful substances designated at home and abroad. LG Chem also provides the activity guidelines across product development, production and supply to efficiently respond to the demand of customers and suppliers from different countries. Furthermore, the company provides the latest MSDS of enterprise products in 33 languages through the IT system and reflects the requirements of global client companies and the latest trends of laws on a form to guarantee issuance. In addition, LG Chem shares global regulation trends with suppliers by holding the sharing meeting to respond to regulations on chemical substances.

Enhancing Customers’ Right to Know

As part of the efforts to enhance customers’ right to know and transparency, LG Chem operates a product website (www.chemwide.co.kr) where customers can access product specifications, such as purposes of use, characteristics and material properties, Material Safety Data Sheet (MSDS) and environmental certifications. Particularly, the MSDS is a basic document that guarantees the legitimate management of chemical substances by customers and workers’ right to know, and provides information on the environment and health for those who might be exposed to those substances. To reduce safety, environmental and health risks that might occur due to missing information, we will continue to provide information that customers need when purchasing products through the website.

Improving Product Quality

LG Chem’s products are used as materials for finished products. Since the quality of our materials affect that of finished goods, we strive to provide products of better quality for the development and success of our customers. We are also making efforts to increase customer value through quality improvement of our products.

Promoting Product Responsibility

LG Chem contributes to a sustainable future by providing customers with eco-friendly and competitive materials and solutions to increase customer value. For this, the company conducts various activities with its vision of becoming ‘Eco-Product Solution Partner’ to derive customer value. For this, the company conducts various activities with its vision of becoming ‘Eco-Product Solution Partner’ to derive customer value.

Training Product Responsibility for All Employees

Recognizing the importance of product responsibility among employees, LG Chem conducts various education activities to comply with the social and environmental responsibility of products in business activities. The education activities cover MSDS preparation and management for managers in related departments, such as purchase, development, and quality, and the Act on Registration, Evaluation, etc. of Chemicals, substance registration process, and response to trends in production environment regulations.

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Sharing Product Responsibility Information

The Safety & Environment Portal, LG Chem provides quality managers in each business sector with the newest information on global product environmental safety and hazardous substance regulations. Essential aspects of regulations by country are shared to prevent corporate and legal regulations from being violated.

Sharing Product Responsibility Information (Unit: person)

<table>
<thead>
<tr>
<th>Training Course</th>
<th>Target</th>
<th>Number of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response to global regulation on product &amp; environment and chemical substances management system</td>
<td>Purchases, R&amp;D, etc.</td>
<td>159</td>
</tr>
<tr>
<td>Chemical substances experts course</td>
<td>Safety and environment</td>
<td>60</td>
</tr>
<tr>
<td>Undermining purchase and safety audit</td>
<td>Purchases, Purchasing Academy</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>255</td>
</tr>
</tbody>
</table>
Creating Customer Value through Quality Innovation

Promoting Quality Mind-set among Employees

To secure the quality management system that lives up to its status as a global company, LG Chem has made a series of company-wide efforts. The internal quality assurance team of the corporate level was operated to enhance quality competitiveness from the perspective of customers. Also, management delivered special lectures and messages to promote quality mind-set among employees and online programs on quality mind-set were provided for employees.

Advancing Quality Management System

LG Chem has used the Failure Mode & Effects Analysis (FMEA) tool from the development stage to ensure product quality and safety. The use of FMEA was selected as an essential activity in the development process, and facilitators were nurtured and relevant IT software was introduced to support the activity. To advance the quality management system, a number of activities to manage foreign substances by plant and to ensure data reliability were intensified.

Quality Management Trend

<table>
<thead>
<tr>
<th>Quality Management Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Analysis on faulty error analysis (TFT). Also, a new overseas activities, and fostered the training of quality experts: BB (Black Belt) and MBB (Master Black Belt).</td>
</tr>
</tbody>
</table>

Quality Innovation Cases by Business Sector

<table>
<thead>
<tr>
<th>Basic Materials &amp; Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the Basic Materials &amp; Chemicals Division, we have strived to increase the sales of high value-added and eco-friendly products in alignment with business enhancement strategies by selecting tasks for improvement from the perspective of customers, and also to provide values recognized by customers by applying a data-based statistical technique and resolving issues in a systematic manner. In addition, we have leveraged the Master FMEA to prevent quality issues before mass production, and also D-Galacto to bolster quality assurance by phase of development. Also, we have utilized the results of key customer surveys and VOCs in development/plant/quality improvement activities, and fostered the training of quality experts: BB (Black Belt) and MBB (Master Black Belt).</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>IT &amp; Electronic Materials</th>
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</thead>
<tbody>
<tr>
<td>The IT &amp; Electronic Materials Division has operated the Quality &amp; Technology Committee to establish mid to long-term quality strategies and secure fundamental quality competitiveness. In addition, we have leveraged the Master FMEA to prevent quality issues before mass production, and also D-Galacto to bolster quality assurance by phase of development. Also, we have utilized the results of key customer surveys and VOCs in development/plant/quality improvement activities, and fostered the training of quality experts: BB (Black Belt) and MBB (Master Black Belt).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>At the Advanced Materials Division, we strive to improve customer satisfaction by operating a dedicated quality organization. We have upgraded the quality/innovation department under the direct control of the Division to the ‘responsible’ level organization by integrating quality and innovation functions. Also, on-site management is conducted by the head of the Division at production sites and laboratories once a week to increase the quality awareness of employees.</td>
</tr>
</tbody>
</table>

Improving Role and Capacity of Quality

As part of the efforts to improve the role and capacity of quality in the organization, the Quality Academy has provided basic, intermediate, and advanced courses on quality management to train the human resources required for quality improvement activities. The number of Master Black Belts (MBB), project leaders in key business areas, has increased from 35 to 67, and that of Black Belts (BB), sub-project leaders, has grown from 350 to 526.

In 2018, a number of quality talents will be assigned to deal with persistent quality issues. Also, a series of activities are being conducted to reduce the F-Cost by resolving those issues.

In addition, in order to strengthen the quality base required for global companies and keep pace with them, a number of activities have been conducted to constantly check and improve our quality system through a separate task force team (TFT). Also, a new overseas warranty Center will be established to strengthen our global response system. Furthermore, by establishing a standard quality contract for each business, we clarify the quality objectives, operating environment, and warranty terms of our products to ensure product reliability and customer satisfaction.

Quality Management Related Activity Analysis

<table>
<thead>
<tr>
<th>Analysis on faulty error analysis (TFT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process monitoring (SPC, equipment/maintenance)</td>
</tr>
<tr>
<td>Readiness in development stage (FMEA, reliability)</td>
</tr>
<tr>
<td>To the Future Prevention before Accident</td>
</tr>
</tbody>
</table>

Energy Solutions

The Energy Solutions Division has operated a new organization for development quality and quality management organizations responsible for automotive, ESS, and IT & new application batteries, respectively, to ensure the quality of mass products. In this way, we have carried out activities to improve quality in all phases of development, from early development to mass production, and also to enhance the completeness of development. Particularly, more specialized organizations, such as Reliability Team and Analysis Team, have been formed to develop new methods of defect inspection and to enhance big data modeling and defect analysis as part of the efforts to bolster customer confidence in our products.

<table>
<thead>
<tr>
<th>Energy Solutions</th>
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</thead>
<tbody>
<tr>
<td>To the Future Prevention before Accident</td>
</tr>
<tr>
<td>Process monitoring (SPC, equipment/maintenance)</td>
</tr>
<tr>
<td>Readiness in development stage (FMEA, reliability)</td>
</tr>
</tbody>
</table>

Improving Workplace Safety

Safety accidents in the chemical industry require extra care and attention since they can result in casualties, tarnish corporate image, and lead to financial loss. LG Chem is doing its best to maintain a safe and healthy environment for its employees.

Safety, Health, and Environment System

Safety, Health, and Environment Management System

LG Chem operates the systematic Safety, Health, and Environment System based on strategies and goals in accordance with ISO 14001, OHSAS 18001 and KOSHA 1801. In addition, the company announces its intention of the Safety, Health and Environment Management publicly and establishes the Safety, Health and Environment Policy to demonstrate the company’s steadfast commitment. Based on this, LG Chem makes company-wide regulations and work guides for each of its business sites and implements safety and environment tasks. Also, the leader’s on-site oversight and the field management activities of each organization are on progress to prevent accidents. When a safety and environment accident takes place, the incident is reflected on the employee’s evaluation.

Safety, Health, and Environment Policy

LG Chem recognizes that safety, health and environment (SHE) is the fundamental element for securing differentiated competitiveness, and will implement the following principles to continuously improve performance in safety, health and environment based on clear goals and strong executive ability.

- We will comply with laws and regulations and establish SHE rules leading the industry at home and abroad.
- We will drive continuous innovation throughout the entire life cycle of the product to supply environment-friendly products and services.
- We will provide a safe and healthy work environment, and ensure the principle-adhering corporate culture.
- We will support our suppliers and local communities in improving the SHE practices based on our social responsibility.
- We will open information transparently and sincerely communicate with stakeholders.

Safety, Health, and Environmental Governance

The Corporate Safety and Environment Committee which is in charge of decision making about safety and environment is composed of chief executives who safety and environment at each plant and members of the Management Committee. The committee is held twice a year and discusses the main issues related to safety and environment, takes action on improvement results, and future plans. LG Chem organized a labor-management Occupational Health and Safety Committee at each plant,
LG Chem contributes to establishing a safety culture by providing opportunities to benchmark best practices, and enhancing pride for the safety and environment tasks.

**Promoting Employee Hygiene and Health Management**

LG Chem is implementing activities to prevent diseases and promote health-care by eliminating health related hazards and creating a pleasant working environment. Employee health offices are operated at each workplace to provide customized health-care services for employees and provides individual counseling and health information to employees through regular check-ups. In addition, mental health care programs for employees are also available to diagnose, consult about, and treat depressive disorders. Counseling offices, in connection with special hospitals, are operated by professional therapists to provide proper assistance for employees in need of help. Also, a variety of health promotion programs are offered to spread the culture of health care among employees.

**Spreading Safety Culture**

LG Chem, in cooperation with a consulting organization specializing in global safety and environment, has been conducting a safety culture improvement project since October 2016 in order to minimize the possibility of incidents caused by poor conditions and the unstable behavior of employees who may exist in the field.

This project consists of the advancement of accident investigation methods, the development of a quantitative evaluation method for the safety and environmental management system, and the establishment of a behavior-based safety (BBS) program. After the completion of the first phase in June 2018, we will promote the project across the company to improve the level of safety management and ultimately achieve zero accidents.

**Establishing Quantitative Assessment System for Safety and Environment Management**

LG Chem has established LG CSRS (LG Chem Safety Rating System) which is a quantitative assessment system for safety and environment management to evaluate and identify tasks for improvement. This system is designed to quantitatively evaluate the status of the In-house management system, which is organically linked to safety, environment and health, according to 720 evaluation items in each field. By establishing an advanced quantitative evaluation method for safety and environment management system, we will identify and improve the safety and environmental management weaknesses at domestic and overseas sites, and thus raise our system to the global level.

**Advancement in Accident Investigation Method**

LG Chem identifies the root causes of accidents and makes improvements, and makes advancement in the accident investigation method to prevent similar accidents. LG Chem has adopted the global cause of accident analysis method, operates a program to nurture professional accident investigators, and upgrades the internal and external expert verification system for results of investigations. In 2018, we will extend the scope of accident investigations to overseas workplaces, and continue to monitor the results of investigations, nurture professional accident investigators, and share accident cases.

**Establishing Safety Culture**

**Building Safety and Environmental Capacity**

At LG Chem, a number of safety and environmental capacity building programs are provided for employees who are in relevant positions, safety engineers on sites, and safety and environment managers. They consist of Process Safety Management (PSM) expert program, chemical substance expert program, and electrical safety capacity building program. A capacity building program on working environment management will be established to deal with fire accidents/hazardous materials and improve the working environment.

**Strengthening Management Competency in Safety and Environment through SH&E Performance Conference**

LG Chem held a SH&E Performance Conference in November 2017 to share performance and activities to prevent safety and environment accidents in plants at home and abroad. 230 LG Chem employees and suppliers held a SH&E Performance Conference in November 2017 to share performance and activities to prevent safety and environment accidents. LG Chem prevents accidents that can cause severe damage to human life and property.

**Category**

- **Description**
- **Number of Participants in 2017**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Number of Participants in 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSM Expert Program</td>
<td>Business practices and practical training related to process safety management strategy and HACCP (Hazard and Critical Control Points) were carried out, through which process safety management capability is strengthened.</td>
<td>33</td>
</tr>
<tr>
<td>Chemical Substance Expert Program</td>
<td>Identification of the management standards and inspection methods for chemical substance handling facilities and practical training on external impact assessment (safety confirmation for third party damage) outside the workplace from the design and establishment of toxic chemical substance handling facilities are conducted, through which the safety environmental management capability of chemical substance handling facilities is strengthened.</td>
<td>58</td>
</tr>
<tr>
<td>Electrical Safety Capacity Building Program</td>
<td>Preventive measures for fires caused by electrical ignitions are emphasized through practical training on the management of explosion-proof equipment and static electricity, and grounding.</td>
<td>49</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>Management system, plant safety, facility work safety, firefighting and hazardous substances, review of follow-up actions from the previous inspection</td>
</tr>
<tr>
<td>Overview</td>
<td>Management system, compliance with safety and environment regulations, plant safety, facility work safety, firefighting and hazardous substances, review of follow-up actions from the previous inspection</td>
</tr>
<tr>
<td>Reliability in accident case</td>
<td>Management of accident risk and accident investigation system</td>
</tr>
<tr>
<td>Planned Fire Investigation</td>
<td>Management of facility safety, review of follow-up actions from the previous inspection, inspection, repair, maintenance, review of follow-up actions from the previous inspection</td>
</tr>
<tr>
<td>Management of emergency response system</td>
<td>Control of overall situations, management of equipment, response capability to incidents</td>
</tr>
<tr>
<td>Spacial Analysis</td>
<td>Critical disaster, critical incident, frequent accident business spot, basic cause of accident (inspection missing place in case of necessity)</td>
</tr>
</tbody>
</table>

**Promoting Behavior Based Safety Program**

LG Chem has introduced Behavior Based Safety (BBS) program to promote safe behavior and create a culture of voluntary safety management in the workplace by complying with safety standards and procedures. The purpose of this program is to promote safe behavior through praise, and change ‘unsafe behavior’, the main cause of accidents, into safe behavior through observation and coaching by co-workers. In 2018, we will promote this program throughout the basic materials & chemicals division. In 2019, we plan to spread the BBS program across the company.

**Collection of evidence**

**Reconstruction of accident**

**Key factors for cause of accident**

**Direct cause**

**Restoration to prevent similar accidents**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
<th>Step 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection of evidence</td>
<td>Reconstruction of accident</td>
<td>Key factors for cause of accident</td>
<td>Direct cause</td>
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</tr>
</tbody>
</table>

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Best Practices of Safety and Environment Management by Workplace

Innovation for Safety, Health, and Environment

Safety

Securing Safety for Outdoor Pipes through Preventative Inspection

At the Yeosu Plant, there are outdoor pipes reaching approximately 300km. The pipes were checked using Short Guided Wave equipment. Buried pipes were checked using the Intelligent PIG, and damage to sheaths was managed with an electric anti-corrosion system. Also, an early leak detection system that includes wide infrared cameras, fiber-optic hybrid sensors, and wireless gas detectors was established based on the IoT technology, allowing us to reduce the cost and time of outdoor pipe inspections and to ensure the soundness and management of facilities by eliminating the blind spots of inspection.

Ensuring the Safety of Fieldwork by Developing Customized Tools

The intensive observation of high-risk work at the Daesan Plant showed that workers were exposed to a number of potential safety risks, such as fire, explosion, and accidents. Therefore, a customized tool was developed considering the field situations and operational convenience to make substantial safety improvements. Also, innovative improvement plans were suggested, such as applying for two patents, which were shared with other plants.

Health

Operating Employee Health Promotion Programs

The glass substrate safety and environment team at the Paju Plant introduced employee health promotion programs. LG Chem has improved upon them in several ways to increase the employee participation rate and to diversify the programs. First, a survey takes place to identify needs and then an improvement of lifestyle (obesity and smoking) program is implemented with the local community for more systematic health promotion activities. Also, LG Chem started operating a variety of health promotion programs including the prevention of cardiovascular diseases and musculoskeletal disorders, and the management of job stress. As a result, more employees have paid attention to their health and participated in health promotion activities.

Environment

Reinforcing Pollution Control System to Ensure Air Quality

The Ochang Plant has made various efforts to improve air quality. The Plant strengthened the management of air pollutants by expanding the coverage of facilities under control, and it conducted an objective evaluation of the effects on air quality by operating a real-time monitoring system. Also, to deal with civil complaints from local residents and NGOs, it analyzed odor-causing substances, conducted monitoring on odors, identified odor types, and made improvements.

Responding to Stricter Environmental Regulations through Process Optimization and System Improvement

Recently, the Chinese government has strengthened environmental regulations, such as higher standards for PVC and caustic soda emissions and charges for VOCs emissions. Accordingly, LGCBH cooperated with Tianjin Environmental Protection Agency and applied the LDAR (Leak Detection and Repair). Applying the LDAR as a trial lead to the establishment of a quantitative control system for VOCs and cost reduction for VOCs.

Security, Health, and Environment Management System

Above Ground

Short Guided Wave

Check outdoor pipes with the Short Guided Wave equipment. It allows us to measure the thickness of pipes and check whether pipes are damaged or not.

Underground

Intelligent PIG

- It has 100 sensors including GPS
- It travels through pipes and checks whether pipes are damaged or not

Realtime Monitoring System through IoT

Infrared Camera
Detecting Heat
Optical Fiber Sensor
Detecting Chemical Substances
Gas Detector

Preventing Accidents of the Same Type and Establishing Safety Culture by Making Cuts by Blade

The Chongju Plant has recorded the highest accident rate in terms of cuts by a blade for the past 3 years (from 2014 to 2016) due to the heavy use of blades at the plant. To resolve this issue, operation methods and equipment at the plant were improved to eliminate or replace the jobs using blades, and workers were offered safety gloves and blades. In addition, safety experience training and cases of improvement were promoted to enhance the safety awareness of employees. As a result of these prevention activities, zero cases of being cut by a blade were reported in 2017.

De-plugging Work

Developing a 3-Type De-plugging Tool considering field situations

Cutting Work

Developing/applying a portable water jet cutter for cutting pipes/steel frames

Welding Work

Developing headgear with a welding visor to protect against fall/impact
Industry Trends: Change & Response

GHG emissions from human activities have a significant impact on climate change. As the amount of greenhouse gases, such as carbon dioxide and methane, has increased in the air, earth’s temperature has gradually risen. Climate change due to global warming brings about natural disasters, such as droughts, floods, heat waves and super typhoons, and causes damage to crops, ecosystems, and industrial facilities.

After the 2015 Paris Climate Conference, many countries around the world have put a lot of effort into reducing GHG emissions and limiting the rise in global average temperature to 2 degrees Celsius. Korea has finalized its 2030 target of reducing GHG emissions by 37 percent from business-as-usual (BAU) levels, and implemented various policies to reduce GHG emissions, such as the GHG emissions trading system.

Meanwhile, companies can be affected by the direct investment in greenhouse gas reduction and the cost of purchasing emission credits, and there may be physical risks that affect product production due to climate change, such as droughts, typhoons and natural disasters.

LG Chem recognizes these changes not only as a risk, but also as an opportunity, and it continues to deal with climate change with a focus on greenhouse gas and energy management.

Strategy: Risk & Opportunity

LG Chem is actively responding to climate change issues at home and abroad and utilizing them as opportunities to secure competitiveness. We are reducing GHG emissions by conserving energy through process improvements. We are also directly or indirectly preparing for climate change by producing high value-added products and low-energy consumption products. In addition, we utilize climate change issues as an opportunity to expand our business portfolio through various R&D projects. LG Chem is building a new business portfolio of energy, water, and biotechnology in its fossil fuel-based materials business. In particular, our electric vehicle batteries and energy storage systems (ESS) are contributing to the creation of a sustainable ecosystem that reduces GHG emissions.

Evaluation

<table>
<thead>
<tr>
<th>GHG Reduction Compared to BAU (Unit: %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
</tr>
<tr>
<td>23</td>
</tr>
</tbody>
</table>

PROTECTING OUR PLANET
Tackling Climate Change

LG Chem has identified climate change as a major issue and implemented a variety of activities while it responds to domestic and foreign regulations on energy and GHG reduction in a proactive manner.

Climate Change Response System

LG Chem is continuing its efforts for energy and GHG reduction at workplaces to cope with climate change. The company is actively engaged in the government’s climate change policies and in minimizing the impact of changes in domestic and international energy policies.

Through this effort, we intend to contribute to the achievement of the GHG reduction targets of the industry as a whole by strengthening our corporate competitiveness and supporting the energy saving investments of our partner companies.

Energy

LG Chem is making efforts to improve its energy management by establishing an energy management system (ISO 50001) at domestic and overseas business sites. By doing so, we manage the energy intensity of our workplaces every month. We also set an energy saving target every year and continue efforts to improve the process and introduce new technologies. In addition, we share examples of energy conservation at our workplaces through workplace exchange meetings and energy portals, and encourage employees to reduce GHG emissions through energy conservation. Furthermore, we offer a reward for the best practices of energy saving.

Energy Use (Unit: T.J. (GJ)) Business Prod. 2015 2016 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Korea Direct</th>
<th>Korea Indirect</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>80,257</td>
<td>55,555</td>
<td>135,812</td>
</tr>
<tr>
<td>2016</td>
<td>80,162</td>
<td>57,905</td>
<td>138,067</td>
</tr>
<tr>
<td>2017</td>
<td>82,848</td>
<td>57,299</td>
<td>140,147</td>
</tr>
</tbody>
</table>

Enhancing Portfolio for Carbon Emission Trading

Since the implementation of the emission trading scheme in 2015, LG Chem has made various efforts to reduce operating risks due to regulatory compliance. First, we are minimizing financial risk by introducing a system that analyzes monthly GHG emissions compared to the target and to supply management. We are also working to expand solar and ESS facilities at domestic and overseas workplaces.

Greenhouse Gas

LG Chem has established the Greenhouse Gas & Energy Management System (EGMS) to deal with the government regulations and financial risks resulting from the introduction of emissions trading system, and come up with procedures and strategies for the operation of emission credits. In order to positively respond to the risks associated with the cost of purchasing emission credits, the cost of purchasing emission credits is reflected in production costs every month. Also, in response to the variability of the market, a strategy for purchasing emission credits has been established to make a purchase according to market conditions. In addition, we have prepared a manual to train those in charge of each workplace on the emission trading system, and to share domestic and global issues related to energy and climate change with workplaces.

Responsing to Climate Change in Manufacturing Process

LG Chem has conducted a series of activities to cope with climate change by minimizing greenhouse gas emissions from the manufacturing process. We strive to increase energy efficiency through the improvement of manufacturing processes, and to introduce new and renewable energy and ESS facilities.

Green Business

LG Chem strives to research and develop high-efficiency electric vehicle batteries and energy storage system (ESS) batteries, thereby reducing greenhouse gas emissions at the stage of product use by consumers and contributing to the nation’s energy demand and supply management. We are also working to expand solar and ESS facilities at domestic and overseas workplaces.

GHI Reduction

Setting GHG Reduction Target

LG Chem has established greenhouse gas reduction goals as well as a 22% reduction of BAU by 2020 and mid-long-term energy intensity saving goals with an overall aim to reduce greenhouse gas emissions and energy consumption. LG Chem continues improvement activities to achieve the goals and has consequently achieved its annual reduction goal every year. We are establishing long-term plans for greenhouse gas reduction and energy use after 2020 and are considering plans to expand the use of new and renewable energy to introduce eco-friendly energy sources. In the future, LG Chem will continue its activities to reduce greenhouse gas emissions and save energy in line with the 2030 national roadmap for greenhouse gas reduction.
Savings Energy

Expanding ESS at Workplaces  The introduction of Energy Storage System (ESS) contributes to stabilizing the national power demand and the supply of renewable energy, thereby restraining further construction of power plants. LG Chem is promoting the spread of ESS in order to increase the energy efficiency of its business sites and to reduce electric power costs. The ESS of 50.3MW in total has been installed at the Iksan, Ochang and Yeosu Plants, and the ESS of 53.3MW will be added to five work sites by the second half of 2018. Going forward, LG Chem will strive to improve energy efficiency through the expansion of ESS facilities and the introduction of photovoltaic facilities.  

Improving Energy Technology Database  LG Chem supports the activities for energy/GHG reduction at its workplaces by operating an energy portal system. We manage energy and GHG target indicators through the energy portal, and share key activities and issues for the year. In addition, we manage the classes of energy-saving technologies at each workplace in a database. In particular, we upgraded our technology database in 2017 and uploaded about 1,000 energy-saving technologies. In addition, to increase the utilization of the database in which each workplace has a rating to each energy reduction technology and subdivided the technical classification. At the same time, we have added the internal and external audit function to the ISO 50001 energy management system in order to support the efficient operation of the energy management system at workplaces. LG Chem publishes the Energy/Greenhouse Gas News Letters and shares key issues with work sites to help those in charge to identify and respond to energy and greenhouse gas relevant issues.

Responding to Climate Change through Product Development  LG Chem makes a positive impact on climate change at the stage of product manufacturing by saving energy and also at the stage of product use by introducing eco-friendly products. In addition, we analyze and disclose carbon information of our products to enable customers that manufacture products with our raw materials to effectively respond to climate change. Also, we transparently disclose the environmental information requested by our customers.

Communicating with Customers  The efforts of companies to respond to climate change have emerged as an important evaluation index for investors and customers. LG Chem reports on greenhouse gas emissions, emissions trading transactions, and energy consumption through its sustainability reports and annual reports, and every year it also discloses LG Chem’s response system to climate change and current status through DJSI and CDP for domestic and overseas investors. In addition, upon the request of customers, we publish the Life Cycle Assessment (LCA) reports by analyzing the greenhouse gases emitted throughout the entire manufacturing process from raw materials to disposal, and strive to expand carbon footprint-certified products. We are also actively engaged in the government’s GHG and energy policies, such as emissions trading system, energy diagnosis and joint projects with SMEs, in cooperation with government agencies.

Developing Sustainable Products  LG Chem contributes to the corporate and social response to climate change by developing products for the sustainable development of society. We are concentrating our research and development capabilities on developing products that can protect the environment of our planet, such as automotive batteries, ESS batteries, and water treatment filter, and improving their performance.

Expanding Energy Diagnosis  LG Chem’s engineers are striving to increase energy efficiency through process improvement. The analysis of the process enables them to discover and apply various ideas for improvement including recovery of waste heat, introduction of energy saving technologies, and improvement of facilities. Also, a number of energy diagnoses are made to reduce energy consumption. In 2017, a comprehensive diagnosis of electric power equipment was conducted for the first time. In the past, our energy saving efforts used to focus on the reduction of fuel and steam consumption, but now have moved to the improvement of power efficiency. As a result of the diagnosis, we could discover power saving items worth about 300 million won. The specifications and operation status of power facilities at workplaces were measured and the results were stored in a database so that the efficiency of each facility can be systematically analyzed and managed. Through these efforts, we have developed improvement plans, such as replacement of low-efficiency equipment and enhancement of power quality, and established investment plans accordingly. LG Chem will continue to carry out various energy diagnoses and reduce energy consumption at its workplaces by strengthening the capabilities of engineers.

LG Chem contributes to the spread of eco-friendly electric vehicles through the production of automotive batteries. Our automotive batteries have gained a competitive edge in the EV battery market with major Supplier Awards by global automakers and secured orders for key electric vehicle projects.
Industry Trends: Change & Response

Global companies operate business in a complicated supply chain from raw materials to final product. In the past, business management activities were considered when a company’s sustainability was evaluated. However, taking responsibility for the economic, social, and environmental impact in the overall supply chain is required today.

Stakeholders require transparent disclosures of information in regard to the overall supply chain and a company’s sustainability cannot be guaranteed without the existence of responsible supply chain management and shared growth with its suppliers. In particular, in 2016 Amnesty International raised the issue of using child labor to mine for cobalt, which is a key material for EV’s battery, in the Democratic Republic of the Congo, and it required global companies to actively respond. Now global companies are required to manage risks, such as human rights, safety, and health, and environment, etc., with suppliers and foster a sustainable supply chain that supports mutual growth.

Strategy: Risk & Opportunity

As the competitive landscape in the chemical industry extends to competition among corporate supply chains including suppliers, mutual cooperation and growth with excellent suppliers to enhance market competitiveness have become essential elements of corporate sustainability management. LG Chem strives to build strategic partnerships with its suppliers based on mutual trust. In addition to making mutual growth agreements with our primary and secondary suppliers, we are also committed to creating a fair trade culture. We are operating support and cooperation programs in various fields, including finance, environment, capacity building, and communication. In addition, we are fulfilling our social responsibilities in the overall supply chain.

Evaluation

CSR Audit on Suppliers (Unit: case)

<table>
<thead>
<tr>
<th>Year</th>
<th>Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
</tr>
</tbody>
</table>

* Operating CSR audit on suppliers since 2016
**Strengthening Suppliers for their Sustainable Growth**

To achieve a balanced development of the corporate ecosystem, LG Chem is strengthening the basis for mutual and sustainable growth with its partners, beyond providing mere support. LG Chem actively promotes a culture of shared growth based on sound cooperation culture according to five major strategies for the sustainable growth with suppliers. Our shared growth activities are conducted in various sectors: fair trade, financial support, environment, capacity building of suppliers, and communication. We believe that our supplier’s competitiveness is our competitiveness, and we are working hard to ultimately enhance their sustainability economically, socially, and environmentally by extending support to secondary suppliers.

**Five Strategies**

- **Creating Fair Trade Atmosphere**
- **Financial Support and Payment Condition Improvement**
- **Safety & Environment/ Energy Shared Growth**
- **Activities to Strengthen Suppliers’ Capabilities**
- **Information Sharing and Communication Activities**

**External Activities**

The CFO of LG Chem is participating in the Shared Growth Committee as a member on behalf of LG and the chemical industry as a whole, and is also working with the government to discuss mutual growth issues and to spread the culture of mutual growth.

**Financial Support**

LG Chem conducts financial support activities such as direct financial support, shared growth fund, network and family loan, and shared growth investment resources to help suppliers fund their operations. The direct financial support which is a loan program to support new investment of suppliers directly grants no-interest loans.

**System for Supplier Partnership Promotion**

**Shared Growth Strategy**

LG Chem active promotes a culture of shared growth through various support activities, such as financial support, safe environment and energy, capacity building of suppliers, and communication. We believe that our supplier’s competitiveness is our competitiveness, and we are working hard to ultimately enhance their sustainability economically, socially, and environmentally by extending support to secondary suppliers.

**Communication with Suppliers**

LG Chem regularly holds meetings with partners to share business status and issues and to listen to their opinions. In 2017, the Yeouo Plant held a “Mutually Beneficial Hmmbuilding” for construction partners, expanding the scale of meetings held in the past to create a venue for mutual communication. In addition, LG Chem has its management visit suppliers’ production sites and tries to resolve difficulties in the collaboration and trade process. In order to strengthen the rechargeable battery business, which is one of LG Chem’s future core businesses, in 2017, the CEO visited two partner companies of the Energy Solutions Division and took time to directly check the production sites. In the future, we will strive to establish a healthy culture of cooperation by streamlining improvements through the collaborative process during ongoing meetings with and CEO visits to partners including suppliers.

**Operating the Shared Growth Payment System**

LG Chem introduced the Shared Growth Payment System to reduce the financial burden placed on suppliers. This system is a safety payment method with no recourse in which secondary and tertiary suppliers can cash bonds issued by large companies early at a main bank with credit equal to large companies. Through this, primary suppliers can pay for delivered goods by issuing shared growth bonds to secondary suppliers. Since the interest rates for large companies are applied, financial expenses can be saved on the part of suppliers. In 2017, we increased the amount used in the Shared Growth Payment System by about 25%. Moreover, we supported more monetary flows to secondary suppliers and encouraged primary suppliers to take a part in the system.

**Support for the Greenhouse Gas Reduction of Small/Medium-Sized Companies**

LG Chem implements “Green Credit” businesses to support the greenhouse gas reduction of small-medium-sized companies. The Green Credit businesses facilitate the greenhouse gas reduction of small-medium-sized companies through cooperation between large companies which have financial resources and technology but low reduction potential for greenhouse gases, and small/medium-sized companies which have high reduction potential for greenhouse gases. This system is a safety payment method with no recourse in which secondary and tertiary suppliers can cash bonds issued by large companies early at a main bank with credit equal to large companies. Through this, primary suppliers can pay for delivered goods by issuing shared growth bonds to secondary suppliers. Since the interest rates for large companies are applied, financial expenses can be saved on the part of suppliers. In 2017, we increased the amount used in the Shared Growth Payment System by about 25%. Moreover, we supported more monetary flows to secondary suppliers and encouraged primary suppliers to take a part in the system.

**Eco-friendly Manufacturing Process**

Promoting Mutual Growth Business in the Energy Sector

LG Chem signed an MOU with the Korea Energy Agency to provide various forms of support to its customers and suppliers throughout the entire process, from education on energy saving, diagnosis and investment in performance management, so that they can build their own energy management systems. Every year, selected client companies and suppliers are provided with support for the development of the greenhouse gas inventory and management tools. In addition, the Energy Shared Growth Fund, currently amounting to KRW 4 billion, has been formed to create financial support for such projects. In 2017, we selected 10 small to medium-sized clients and suppliers for energy diagnosis, and found 50 energy saving technologies, which led to a reduction of 1,573 tons of greenhouse gas per year and KRW 400 million worth of energy cost savings. Excellent energy saving technologies were selected and directly/indirectly supported through investments, contributing to their reduction of GHG emissions and creation of profits.
Getting Engaged with Partners

The enhancement of our suppliers' global competitiveness naturally leads to the enhancement of our own competitiveness. In this regard, we consider our suppliers as partners who grow with us to enhance our competitiveness and value.

Recruiting and Training Support for Suppliers

Supporting Talent Recruitment  LG Chem supports suppliers by helping them recruit excellent talents and thereby enhancing their competitiveness. In addition to helping them take advantage of LG Chem’s brand image in job fairs organized by government agencies or other parties, we are providing a certain amount of subsidies to the SMEs in need of recruitment funding. In 2017, the amount of subsidies has increased to over 300% compared to the previous year, and LG Chem will continue to remove wage disparity by increasing the amount of subsidies every year.

Training Suppliers’ Employees  LG Chem operates ‘Polymer Processing School’ to deliver its technical know-how on designing and developing plastic products to the employees of suppliers. The training course covers the basics of plastics processing, including basic knowledge on plastic and injection molding, to strengthen the expertise of suppliers’ employees. Online training sessions on language, professional duties, and general management are also available at the LG Academy, a training institute designated by the Korean Ministry of Labor. In 2017, liberal arts classes were added to the sessions, and a total of 216 employees from 47 suppliers have received training.

Supporting Suppliers’ Productivity Improvement and Exports

Participation in Production Innovation Partnership  LG Chem is participating in the production innovation partnership held by the Ministry of Trade, Industry and Energy and the Large & Small Business Cooperation Foundation to strengthen our suppliers’ technical capacity and increase their productivity. We are enhancing the competitiveness and self-sufficiency of our partners by providing consultation on productivity improvement and supporting the incidental costs of export. We provide innovative solutions for productivity improvement in the management and manufacturing fields by finding productivity improvement tasks suited to the characteristics of each partner, and support the direct costs of exporting (faux, logistics agents, etc.).

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Managing CSR Risk in Supply Chain

Recently, more attention is being paid to the ethical purchase of raw materials, including minerals, used in products. Major stakeholders, such as customers, NGOs and investors, are demanding a comprehensive resolution of the CSR issues surrounding specific raw materials, including human rights and environmental issues, and their expectations have significantly increased.

LG Chem’s Sustainable Supply Chain Management Process

Establishing Code of Conduct for Suppliers  In 2016, LG Chem established the ‘Code of Conduct for Suppliers’ that consists of 10 items, including human rights and labor, ethical management, safety environment, and ethical purchasing. In 2017, the use of conflict minerals and raw materials sourced through unethical methods that involve illegal and serious human rights violations was prohibited. In addition, we have established a due diligence policy to strengthen the monitoring of the concerned raw materials.

Conducting CSR Evaluation on Suppliers  To build a sustainable supply chain management system, LG Chem is conducting CSR evaluations on suppliers in line with their purchase evaluations (regular evaluation, new company evaluation for registration). The regular evaluations are performed on about 240 raw material manufacturers for 52 evaluation items, including prohibition of child labor, protection of workers, compliance with working hours, management of conflict minerals, and the assessment and elimination of safety and health risks. New company evaluation for registration is undertaken on raw new raw material manufacturers for 10 items in the CSR list, which is reflected in the overall company evaluation. For regular evaluations, suppliers perform a self-evaluation with their own CSR checklist, and high-risk entities are selected for on-site inspections. On-site inspections were conducted for two companies in 2016, three companies in 2017, and six companies in the first half of 2018. In the future, we plan to strengthen the CSR risk management in our supply chain by expanding the coverage to China and other regions.

Analyzing Evaluation Results  The results of CSR evaluations on suppliers are provided to our customers to demonstrate our commitment to CSR management processes, including the labor Standards Act and Occupational Safety and Health Act, but have poor CSR management processes, and regulation of chemical leaks. LG Chem will continuously put effort into future businesses with partners, and its plans to secure a green growth engine that allows us to grow together through the development of new technology and new products.

Purchasing Risk-free Raw Materials

Making Efforts for Responsible Procurement of Minerals  Various stakeholders including customers, investors and NGOs are demanding a responsible mineral supply chain and a response to the issue of conflict minerals. Conflict minerals include four minerals (tin, tantalum, tungsten and gold) mined in conflict areas such as the Democratic Republic of the Congo (DRC) and its neighboring countries. LG Chem has established a policy to prohibit the use of conflict minerals during procurement of raw materials in order to prevent any human rights violation, exploitation of labor, loss of life and environmental pollution. As part of such efforts, we are monitoring suppliers who handle the four minerals above, and check whether they use conflict minerals. Also, we collect and manage referral information for these minerals and use the IT system to monitor the ingredients of the materials procured by our suppliers. LG Chem’s suppliers are also given the Green SCM Guideline that prohibits in principle the use of conflict minerals. Furthermore, four companies within the LG group (LG Chem, LG Electronics, LG Display, and LG Innotek) formed a council to share policies on conflict minerals management every year, and are carrying out activities to encourage all of their partner companies to prohibit the use of conflict minerals.

Monitoring Improvements  LG Chem includes a clause on social responsibility in the standard purchase agreement so that suppliers can recognize the importance of CSR from the contract phase and be committed to making improvements whenever major CSR risks are found. Based on the purchase agreement and Code of Conduct, we will require them to make continuous improvements and monitor their social responsibilities.
Cobalt is the raw material of lithium-ion batteries used in mobile devices and electric vehicles. Due to the recent rise in demand for electric vehicles, the price of cobalt has also been increasing. More than 60% of the global cobalt production comes from the Katanga area, located in the southern part of the Democratic Republic of the Congo (DRC).

In January 2016, Amnesty International published a report to raise the issue of child labor at the cobalt mining, which has eventually put the raw material in the center of global attention, being treated as equivalent to the conflict minerals. In November 2017, the organization published a follow-up report to disclose the improvements made with regard to the human rights issues in the supply chain. LG Chem received a positive evaluation for taking proper measures, but the cobalt supply chain issue is no longer confined to child labor but has now expanded to the overall social responsibility including the safety and health of workers and environmental pollution, etc.

Establishing Policies and Participating in the Initiatives
LG Chem recognizes that the issue raised by the Amnesty International report regarding child labor in the cobalt mining process in the Democratic Republic of the Congo (DRC) is a significant global human rights issue in a conflict area, and it has established a Due Diligence Policy by revising the Code of Conduct for Suppliers and Eco-friendly SCM Guidelines. LG Chem's due diligence policy defines a five-step framework according to the 'OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas,' and designates cobalt as a material under control, which is equivalent to a conflict mineral. LG Chem is also participating in the Responsible Cobalt Initiative (RCI), which is organized by the China Chamber of Commerce of Minerals, Metals and Chemicals (CCCMC) and is sponsored by the OECD with the participation of the DRC, NGOs, and upstream/downstream business entities related to cobalt production. Together with these related organizations, we will make our best efforts to fundamentally resolve the child labor issue.

Conducting On-site Inspections
LG Chem conducted a CSR Audit on its primary suppliers (cathode material manufacturers) to confirm whether they change the country of origin and also how they respond to secondary suppliers with regard to the cobalt issue. We have also uploaded a cobalt supply chain map on our website for stakeholders. A third party audit was conducted on the cobalt refineries and precursor suppliers, which are at the center of the cobalt child labor issue. In July 2017, the headquarters conducted its due diligence to review the policies and action plans meant to resolve the issues of mass balance and child labor, and in April 2018 another due diligence was completed to check the status of child labor in the ASM of the DRC. This issue was initiated by cobalt, but has been spreading to other core raw materials for batteries, such as lithium, nickel, manganese, and graphite, which means responsible procurement of minerals has become more important. In this regard, we are closely cooperating with our stakeholders, automotive battery companies in particular, to establish a sustainable supply chain for cobalt and other core raw materials used for batteries.
Respecting Human Dignity

Industry Trends: Change & Response

As companies expand their influence on society, demand is growing for the protection of human rights in the workplace. Respect for human rights in companies is becoming internationally standardized, and various moves are being made to enhance the value of employees.

For LG Chem, which operates a number of global business sites, complying with international conventions and standards on human rights stipulated by the Universal Declaration of Human Rights, the Ten Principles of the UNGC, the UNGP, and the ILO Core Conventions is an integral part of its business operations. The corporate responsibility for human rights is also clearly stated in the draft of the third national human rights policy. Companies must fulfill their responsibility for respecting human rights in accordance with international standards; partners or suppliers should prevent violations of human rights in supply chains; the government needs to improve relevant support, laws, policies and systems.

Given the nature of the chemical industry, which has a manufacturing process, the management of employees’ working conditions and human rights is crucial to ensure business competitiveness. The occurrence of human rights risks affects financial performance, brand image, and consumer confidence. Enhancing corporate sustainability while dealing with human rights issues as part of risk management and protecting the human rights of our employees is important.

Strategy: Risk & Opportunity

The ‘LG Chem Global Human Rights & Labor Policy’ was established in 2016 as part of the efforts to promote its management philosophy of “People-oriented Management”. Also, according to a human rights management process, a CSR self-diagnostic tool is used to assess human rights issues and risks related to employees and to identify potential human rights risks in advance.

Evaluation

Self-evaluation for Working Conditions and Human Rights (Unit: %)

<table>
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<th>Year</th>
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<th>2017</th>
</tr>
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</tbody>
</table>

* Evaluation implemented for overseas sites include only China plants in 2015.
Human Rights Management System

LG Chem respects the human rights of its employees, and supports the human rights protection and labor standards of international organizations in order to fulfill its responsibility to respect human rights throughout its management activities.

Human Rights Policy

LG Chem actively supports international standards related to human rights and labor, including the Universal Declaration of Human Rights, the UN Global Compact, the ILO Labor Conventions, and the UN Guiding Principles on Business and Human Rights, and strictly complies with labor laws in all countries and regions of its business operation. Based on its management philosophy of “People-oriented Management,” LG Chem promotes the guarantee of respect for human dignity, freedom, and happiness as fundamental values. In 2016, the ‘LG Chem Global Human Rights & Labor Policy’ was enacted. This policy applies to all workplaces at home and abroad and is posted on the LG Chem website.

Human Rights Management Process

Every year, LG Chem identifies risks related to working conditions and human rights by using a CSR self-evaluation tool and develops improvement tasks.

Inspections are conducted on the following areas: the operation of the Grievance Handling System, the prohibition of child labor and forced labor, and the protection of underage workers, the prevention of discrimination and sexual harassment, the compliance with legal working hours, the implementation of weekly holidays, the payment of fair compensation, the reduction of wages, and the retention of employment after childcare leave. Furthermore, self-evaluations are made at all domestic and overseas production sites including the head office and the Daejeon Technical Research Institute. After the self-evaluation, on-site inspections are conducted together with a third-party organization. The on-site inspections aim at identifying the best practices and improvement tasks by sector and performing improvement activities. The results are monitored and complemented with the self-evaluations the following year.

Risk Management Process of Working Conditions and Human Rights

Among the self-evaluation results, those with the highest risk are defined as major human rights protection and labor standards issues. We ensure that the employees in the respective workplace are fully aware of the major human rights protection and labor standards issues. The employees who are significantly affected by the major human rights protection and labor standards issues are immediately instructed to resolve the problems. The risk management process of working conditions and human rights consists of the following steps:

1. Identification of major human rights protection and labor standards issues: We define major human rights protection and labor standards issues with major influence on employees based on the risk evaluation results.
2. Resolution of major human rights protection and labor standards issues: We immediately instruct employees and their supervisors to resolve the major human rights protection and labor standards issues.
3. Internal monitoring of major human rights protection and labor standards issues: We repeatedly check whether the major human rights protection and labor standards issues are resolved.
4. External verification of major human rights protection and labor standards issues: We verify whether the major human rights protection and labor standards issues are resolved through field inspections or third-party verification.

Those Vulnerable to Human Rights Violations and Improvement Plans


Groups Vulnerable to Human Rights Violations

- Production and Technical Employees
  - Due to the nature of the manufacturing process, repetitive work over a long period of time can pose a threat to the health and safety of employees.
- Pregnant Employees
  - Pregnant employees, including employees who have given birth less than one year ago, should be protected for their health and safety.
- Child/Underage Workers
  - Child labor must be forbidden for the growth and health of the children, and the work of underage workers must be restricted by law.

Mitigation Measures

- Discussing various issues of working conditions and preparing improvement plans through quarterly labor-management council and annual collective bargaining.
- Implementing various maternity protection programs; determining the retirement rate after returning from parental leave; prohibiting pregnant employees from nights/overtimes/holiday work.
- Identifying and prohibiting child labor; excluding minor workers from legally designated dangerous/hazardous work; restricting underage workers from nights/holiday work.

Human Rights Assessment

The results of the self-evaluations in 2017 showed that there were no violations in regard to child or under-age workers at all domestic and overseas production sites. With regards to working time, which is the most important human rights issue in Korea as well as in the global society, we sampled the number of working people per workplace to determine the working hours of production and technical employees. In 2017, we observed compliance with working hours at all of our global production sites and achieved a compliance rate of over 90%.

Evaluation of Working Conditions and Human Rights (L: hr, %, case)

<table>
<thead>
<tr>
<th>Year</th>
<th>Compliance with child labor standard</th>
<th>Compliance with working hour standard</th>
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<tbody>
<tr>
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<tr>
<td>2017</td>
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<td>94</td>
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</tr>
</tbody>
</table>

Major Human Rights Protection System and Culture

As part of the efforts to protect the labor and human rights of its employees, LG Chem regularly identifies factors that have a negative impact on human rights, and makes continuous improvements.

Prohibition of Employee Discrimination and Respect for Diversity

LG Chem provides opportunities for recruitment, promotion, compensation and training equally to all employees through the prohibition of discrimination in its global human rights and labor policy. It also prohibits discrimination based on gender, age, race, religion, union activity, disability, pregnancy, marital status and social status. In addition, HR policies and employment rules also specify recruitment without discrimination based on race, nationality, gender, religion, disability, region, affiliated groups, etc.

LG Chem conducts various programs to train talented people and allow them to join the company to contribute to the balanced development of the local economy and solving the issue of youth unemployment. In 2018, the company established the LG Smart Convergence Engineering Department in Pusan National University and Chonnam National University to train professional personnel who seem to be suitable to work in the industry. In addition, it signed the ‘Battery Customized Track Agreement’ with Chungbuk National University to train engineers in natural sciences or engineering specialized in battery business in the Chungbuk area.

Ratio of local talents among new administrative and technical employees in 2017

| Year | 31 % |

*Local talents: excluding talents from Seoul, Gyeonggi-do, Incheon, and overseas universities.

Sampling method: Depending on the size of the production staff, samples were selected with similar proportions by section/process (110 people from 1 to 100 people, 15 people from 501 to 1,000 people, 20 people from 1,001 to 2,000 people, 25 people from 2,001 to 3,000 people, and 30 people from over 3,000 people).

LG Chem

Respecting Human Dignity

LG Chem Sustainability Report

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Respecting Human Dignity

Employee Grievance Program

LG Chem has a variety of employee grievance resolution programs. The HR Q&A system is operated on the intranet to receive employee grievances by sections, and staff in the relevant departments review and respond to the received reports.

Welfare Policy

The company provides various welfare programs to support the healthy and happy lives of employees, to enhance the level of satisfaction with their work, and to help them maintain a work-life balance. In addition, we operate a retirement pension system to enable employees to have old age income security after retirement. The retirement pension system is operated in two types defined benefit (DB) and defined contribution (DC) according to legal standards.

Employee Counseling Center

We have introduced and implemented wellness programs to improve employee work engagement through the enhancement of their physical and mental health. For those who get tired or need stress management, we are conducting programs to boost their physical and mental energy and health. For those who get tired or need stress management, we are conducting programs to boost their physical and mental energy and health. For those who get tired or need stress management, we are conducting programs to boost their physical and mental energy and health.

Employee Growth Support

We provide various programs such as various test, personality test, stress test, and aptitude test, are provided, and psychological counseling programs for individuals or teams are available to help employees deal with the stress factors that interfere with their work flow. In addition, ‘Heart Green Letter’ is regularly sent to employees to give information on psychological counseling programs and personal stress and emotion management.

Education on Human Rights

At LG Chem, a two-hour training on LG Code of Ethics is provided for employees every year, with a focus on employee rights based on case studies. Also, one-hour mandatory training on the prevention of sexual harassment is provided every year as part of education on human rights by the Global Academy, which is an e-learning portal on the intranet.

Maternity and Child-care Leave

LG Chem actively implements support policies to reduce the burden of childbirth and childcare for employees. In addition, the rate of return after parental leave, which is a key indicator of job security for employees using parental leave, is 98.4%, which is a 6.3%p increase from the previous year.

Employee Counseling Center

LG Chem operates a psychological counseling center at its headquarters and major workplaces and assigns professional counselors to receive employee grievances. A number of psychological tests, such as a character test, personality test, stress test, and aptitude test, are provided, and psychological counseling programs for individuals or teams are available to help employees deal with the stress factors that interfere with their work flow. In addition, ‘Heart Green Letter’ is regularly sent to employees to give information on psychological counseling programs and personal stress and emotion management.

Employee Growth Support

We have introduced and implemented wellness programs to improve employee work engagement through the enhancement of their physical and mental health. For those who get tired or need stress management, we are conducting programs to boost their physical and mental energy in the open-air (Gonjiam Resort) for two nights and three days. Also, for executives who suffer from excessive stress from intensive work and organization management, we provide individual counseling by psychiatrists to contribute to continuous performance improvement.

Employee Grievance Program

LG Chem provides equal opportunities to every employee and promotes their diversity so that we can contribute to social development. As a part of it, We are creating jobs for people with disabilities by operating ‘Happy Nuri’ and ‘Love Nuri’, which are the disabled-oriented subsidiaries of the company. As of 2017, a total of 137 disabled workers are carrying out tasks ranging from beautification, steam washing, packing, and management of stalls, and welfare facilities to providing assistance to animal rooms at the Ochang, Cheongju, Daejeon, Osong, and Magok plants. We will continue to fulfill our social responsibility by maintaining a diverse workforce that includes women, the disabled, and social minorities.

Diversity in Employment (Unit: %, person)

<table>
<thead>
<tr>
<th>Year</th>
<th>Female Employment among Job Creation</th>
<th>Percentage of female employees in management position</th>
<th>Disability Employment</th>
<th>Veterans</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>12.3</td>
<td>4.77</td>
<td>125</td>
<td>505</td>
</tr>
<tr>
<td>2016</td>
<td>16.9</td>
<td>5.56</td>
<td>137</td>
<td>504</td>
</tr>
<tr>
<td>2017</td>
<td></td>
<td>7.20</td>
<td>137</td>
<td>376</td>
</tr>
</tbody>
</table>

* Data is based on domestic operation

Employee Counseling Center

- **Relevant person from HR**
  - Corporate Culture Promotion Team
  - HR Office
  - Ethics Office & HR
- **Sexual Harassment Reporting Center**
  - HR Office
  - Management of Ethics Office
  - Operating Disciplinary Committee
  - Sexual Harassment Reporting Center
  - Relevant person from Jeong-Do Management of Ethics Office
  - Relevant person from HR
- **Relevant person from HR**
  - Corporate Culture Promotion Team
  - HR Office
  - Ethics Office & HR

Employee Growth Support

- **Sexual Harassment Reporting Center**
  - HR Office
  - Management of Ethics Office
  - Operating Disciplinary Committee
  - Sexual Harassment Reporting Center
  - Relevant person from Jeong-Do Management of Ethics Office
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Employee Counseling Center

LG Chem has a variety of employee grievance resolution programs. The HR Q&A system is operated on the intranet to receive employee grievances by sections, and staff in the relevant departments review and respond to the received reports.

Welfare Policy

The company provides various welfare programs to support the healthy and happy lives of employees, to enhance the level of satisfaction with their work, and to help them maintain a work-life balance. In addition, we operate a retirement pension system to enable employees to have old age income security after retirement. The retirement pension system is operated in two types defined benefit (DB) and defined contribution (DC) according to legal standards.
Industry Trends: Change & Response

The era of economic value creation in which profit generation and efficiency mattered the most has ended. We are now entering an era in which companies need to create great social value. It is becoming increasingly important for companies to communicate with local communities and to achieve mutual growth through social contribution activities.

Since its inauguration, the new government has discussed legislation on social value. Nowadays, companies are encouraged to prioritize human and community values, such as human rights, labor rights, safety, ecosystem, consideration of the disadvantaged, quality jobs and mutual cooperation, over pursuing economic profits and efficiency. In accordance with this trend of legislation, stakeholders are raising their voices, calling for increased corporate interest in social values and social responsibility. Corporate social responsibility is now an important indicator of corporate competitiveness.

For LG Chem, which operates its business across the globe, local communities are one of the most important stakeholders. Beyond providing token support, we need to build close relationships with local communities through active engagement. LG Chem strives to share the difficulties of and grow together with local communities that serve as the base of our employees and businesses.

Strategy: Risk & Opportunity

Chemical companies build and grow manufacturing facilities in their local communities. Accordingly, neglecting the development of and engagement in local communities can result in battered consumer confidence and crisis of existence. The efforts to develop and communicate with local communities will grow the communities and lay the foundation for the solid growth of the company. LG Chem is conducting strategic social contribution activities that reflect the social contribution policies of LG Group and the characteristics of the chemical industry. In particular, we are pursuing social contributions in line with the UN SDGs, and we are making efforts to create social values through education programs for future generations, support for the environment, and sharing with local communities.

Evaluation

Social Contribution in Korea (Unit: KRW billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>22.2 (1.4%)</td>
<td>36.3 (1.6%)</td>
<td>29.5 (1.6%)</td>
<td></td>
</tr>
</tbody>
</table>

* Operating income is more than 1% of expenses for social contribution.
**CSR Promotion System**

To ensure the authenticity of social contribution activities, LG Chem has established its CSR programs in line with the SDGs by reflecting the corporate capabilities and social requirements, and we have pursued activities that provide substantial benefits to local communities.

**CSR Promotion Direction**

Being established with the unanimous agreement of 193 UN member states in September 2015, the SDGs are a collection of 17 goals that the UN and the international community must achieve from 2016 to 2030 to realize sustainable development around the world. As a member of the international community and a global corporate citizen, LG Chem intends to contribute to the achievement of the SDGs by aligning its corporate strategies and activities with the goals. We are continuing to discover and implement activities related to the SDGs with a focus on four goals in the youth education and green/energy sectors.

**CSR Promotion Organization**

LG Chem operates a corporate CSR team as a CSR-dedicated organization, and promotes enterprise-wide CSR activities and new business planning. In addition, the business support team at each workplace conducts social contribution activities on its own. The CSR committee with the CEO as the president approves new business planning. In addition, the business support team at each workplace conducts social contribution activities on its own.

**Sharing for Social Value**

LG Chem, as a global corporate citizen, shares social value with local communities through social contribution activities that reflected by the characteristics of the business.

**UN Sustainable Development Goals**

LG Chem regards the UN SDGs as a new business opportunity and is actively participating in the implementation of the goals with its technological capability to enhance the value of society and the environment. We reviewed the goal alignment reflecting social contribution activities and corporate code of conduct presented by the SDGs. As a result, we will continuously carry out our social contribution activities in alignment with the SDGs, such as ‘Quality Education (Goal 4)’, ‘Affordable and Clean Energy (Goal 7)’, ‘Decent Work & Economic Growth (Goal 8)’, ‘Reduced Inequalities (Goal 10)’, and ‘Life on Land (Goal 15)’.

- **Chemistry Camp**
  4 times, around 400 participants (as of January 2018)
- **Fun Chemistry Park**
  8 times, 1,300 participants
- **Innovative and Creative Motor Vehicle Battery Contest for University Students**
- **Love School Project**
  Repairing library of Moon-Young Middle School, Ganzhou
- **Contest for University Students**
  Innovative and Creative Motor Vehicle Battery Contest for University Students
- **Quality Education**
- **Reduced Inequalities**
- **Life on Land**

**Green Partnership Project**

Building ‘Power Plant for Green Hope’ in Junghang Water recycling center -4,500m² of space, facility with 620kW of capacity

- **LG Social Campus**
  Financial support (accumulated): 130 companies
  Offering space for working, etc.
  Supporting growth, benchmarking overseas cases, running seminars

- **Brighter Future, LG Chem’s Green World**
  4 times, 200 employees participated

**Sharing for the Next Generation**

LG Chem Fun Chemistry Park Program

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG Chem ZONE</td>
<td>Understanding LG Chem’s business and conducting an experiment which is available in daily life</td>
</tr>
<tr>
<td>Life ZONE</td>
<td>Education and experiments on Super Absorbent Polymer which is closely related to our daily lives</td>
</tr>
<tr>
<td>Energy ZONE</td>
<td>Educating importance of energy and sharing energy for the underprivileged</td>
</tr>
<tr>
<td>Chemistry Magic Show</td>
<td>Interesting chemistry education for students</td>
</tr>
</tbody>
</table>

In September 2017, we held the Fun Chemistry Park program at the outdoor exhibition hall of Gwacheon National Science Museum in conjunction with the ‘Young Maker Festival’ hosted by the LG Yonam Cultural Foundation. We promoted the Fun Chemistry Park to many participants by running various programs at the festival where a number of booths for experience/workshop/exhibition/event were operated.

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66 Please tell us why you volunteered

I participated in the camp in 2007, and now even 10 years later, the experience is still a good memory in my mind. I joined the chemistry camp as a volunteer to help students as a major in chemistry. As a mentor, I did my best to create precious memories for my mentees, as I had experienced with my mentor before, and was very happy to see the voluntary participation and creativity of the children. I think it will be good to extend the time for communication between mentors and mentees so that the children can develop their creativity to the fullest.107

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107 Please tell us why you volunteered

Collage student volunteer, Bae Jin-Young

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107 Please tell us why you volunteered

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107 Please tell us why you volunteered

Collage student volunteer, Bae Jin-Young

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107 Please tell us why you volunteered

Collage student volunteer, Bae Jin-Young
Sharing for the Earth

Brighter Future, LG Chem’s Green World

The ‘Green Maker’, a volunteer group to protect Bamseom Islet located in Yeouido, was launched in connection with the ‘International Day for Biological Diversity’[22 of May]. Bamseom was once destroyed by an explosion during the development of Yeouido, but it has been self-regenerating with the natural accumulation of sediments from the Han River for a long time. Recognized for its value as an urban habitat for migratory birds, it was designated as an ecological landscape conservation area in 1999 and a Ramsar wetland in 2012. LG Chem and the Han River Business Division of the Seoul Metropolitan Government planned a series of CSR activities for biodiversity conservation with the official title ‘Brighter Futures, LG Chem’s Green World’. The activities were held over four times in 2017, with the participation of about 200 employees including the CEO. In the first half of the year, we took out hazardous plants, including ‘Stylos angustifolius’, which threatens the ecological environment with their excessive fertilization. In the second half of the year, we cleaned up the garbage that has accumulated on the islet during the rainy season. We will plan and implement various CSR activities related to biodiversity in the years to come.

Green Partnership Project

LG Chem promotes the ‘Green Partnership Project’ for local communities where its business divisions and plants are located. In 2017, we signed a MOU with the Community Chest of Korea, Seoul City, and Energy Peace Foundation to promote green partnership projects. The ‘Power Plant for Green Hope’, which is based on photovoltaic power generation, will be constructed at a public site (Jungnang Sewage Treatment Center) provided by Seoul City by 2018. We plan to sell the power generated by the solar power plant to KEPCO and donate the proceeds to the children and youth in Seongdong-gu and Dongdaemun-gu, Seoul City. The ‘Green Remodeling’ project, as a sub-project, will reduce energy costs for summer cooling and winter heating by installing greening systems and insulation materials at youth welfare facilities and energy-vulnerable facilities. We will expand our project by entering into partnership with other local governments in the coming years.

LG Social Campus

LG Chem and LG Electronics are jointly operating the LG Social Campus (formerly LG Social Fund), a platform that supports social economic innovation. Since 2017, we have been supporting the growth of social economic organizations in the green sector by investing annually in this multilateral cooperation model that utilizes the expertise of the government ministries, academia, and NGOs for the first time in Korea. From 2011 to now, we have provided financial support, interest-free loans and free grants for a total of 130 companies (including duplicates). Since 2015, we have also provided spaces for offices and other purposes for 21 companies at the industry-university cooperation hall in Korea University. In addition, we provide various forms of support to help them attain greater business growth, including consulting on productivity improvement, overseas training in advanced countries, networking workshops, promotion, and education. Through these efforts, we are creating an environment for the sustainable growth of social economic organizations and we are pursuing innovation that will bring about a better life for the next generation.

10) What is the environmental and social value that Reum creates through its business?

Reum is a social enterprise founded in 2011, which reduces the negative environmental and social impact of waste recycling with recycled plastic by transforming it. Globally, 300 million tons of plastic are produced each year, with only 10% of them being recycled and the remaining 90% being estimated to be discarded and incinerated. Reum utilizes raw recycled plastic to make products, and the material cost and product sales are linked directly to the virtuous cycle of resources. The recycled plastic resin used for the virtuous cycle of waste plastic in 2015 amounts to about 13 tons. With the supports of LG Social Campus, Reum is expanding its business. Direct employment increased by 35%, and indirect employment also increased in the process of assembly, sales and distribution to create 10 sector jobs. Also, we strive to solve domestic and international social problems by preparing parcel and delivery services to create jobs for the youth of Myanmar in 2016.12

11) What is the environmental and social value that Mr. Battery pursues?

Mr. Battery is dealing with a variety of batteries for industrial and power use through on-site battery replacement and O2O platform operation. Batteries are usually made of ‘lead’ and ‘sulfuric acid’, and lead causes enormous environmental pollution during processing. Using a battery as long as possible is the way to reduce the environmental impact, but the battery may be replaced for reasons such as discharge despite its remaining life. Early disposal of batteries has reached 35% of the total replacement. Mr. Battery has professional equipment to accurately determine whether or not to replace the battery, thereby reducing costs and battery waste. In addition, reusable waste batteries are recharged and distributed free of charge through the ‘Eco-Sharing Campaign’. Mr. Battery received financial support from LG Social Campus. Based on the support, sales in 2017 increased by 100% from the previous year and direct employment increased by 70%.13

Social Contributions in Communities (Domestic)

1 Company for 1 Army Campaign

Since entering into a sisterhood relationship with the 1st Infantry Division in 2011, LG Chem has provided comfort articles and presents of money every year. LG Chem participated in the 2nd anniversary event of ‘Remember 804’, which is related to the North Korean provocation of burying FMD series mines in DMZ, held at the Injung-Dong DMZ Ecotourism Support Center on August 4, 2017. In December 2017, the CEO personally visited the JSA security battalion. He encouraged the personnel who carried out operations on the spot to rescue the North Korean soldiers who defected through the JSA on November 13, and delivered financial support as well as daily necessities and snacks to the 1st Division and the JSA security battalion, respectively.

Genie Day at Local Childcare Centers Program - Yeosu Plant

Yeosu Plant: Yeosu Plant has organized Genie Day every year since 2015 to allow employees to volunteer clubs to solve the difficulties of local childcare centers. It supported 85 local childcare centers so far. In 2017, personal support goods, and joint support goods such as an air purifier that protects children from fine dust, and other home appliances were donated to 14 childcare centers with an aim to aid children.

Dong-go-dongrak Program - Daesan Plant

The Daesan Plant has conducted the ‘Dong-go-dongrak Program’ for high school students since 2014 to train local talents. Various programs are in place to assist students in planning their academic future: a mentorship program providing students with opportunities to explore career choices creatively; a college entrance briefing session helping bridge the information gap between cities and agricultural regions; a chemical analysis experience which increases interest in and understanding of chemistry; cultural courses for youth that provide various cultural benefits. In particular, the project’s mentorship program matches three to four students and one employee at the Daesan Plant and contributes to enhancing students’ fulfillment and practically helping them prepare for the college entrance examination. Daesan Plant, aware of the partnership between company and community, will operate more diverse and sincere win-win programs to contribute to local communities.

Junior Science Class – Daesan R&D Campus

Since 2004, the LG Chem Daesan R&D Campus has operated the ‘Junior Science Class’ as a way to donate LG Chem’s talent to elementary and middle school students. Researchers with professional degrees at the Daesan R&D Campus visit nearby schools and participate in science classes to provide children with opportunities to learn more about life science. In 2017, the Research Center provided students with opportunities to take an interest in and experience science by developing textbooks that reflected.
the characteristics of LG Chem’s products, such as ESS, SAP, and polarizing plates. An experience study was conducted for more than 400 students from 3 schools and 4 local childcare centers. More than 1,900 students in total have participated since 2004.

Musim Stream Keeper – Ochang Plant  The ‘Musim Stream Keeper’ is a new CSR activity that the Ochang Plant has implemented to preserve the local stream as a representative of the local community. The Ochang Plant will continue to carry out various activities to preserve the ecosystem in urban areas and enhance the convenience of local residents, such as eliminating harmful plants to preserve biodiversity, creating rest areas for residents, and performing environmental cleanup.

Social Contributions in Communities (Overseas)

The Love School Project – LGCCI  LGCCI, a Chinese regional holding company of LG Chem, is engaged in activities to promote youth education and welfare and to clean up the environment in local communities. Since 2010, we have promoted the “Love School Project” with the China Youth Development Foundation, the China Women’s Development Foundation, and the China Environmental Protection Foundation for the eighth consecutive year. Through this project, we are improving the school environment where young students can grow healthily, and building a society in harmony with the development of local communities. As of 2017, we have supported a total of 16 schools: toilets, water purification facilities, and libraries have been improved, and our employees regularly visit the schools to conduct volunteer activities.

LGCCI selected Taeyeongang Elementary School as the 15th beneficiary of “LG Chem China Love School Project”. In September 2016, we donated a multimedia room which includes a computer room, a library, and a music room. The multimedia room is currently used as a place for children to use computers and read books. In May 2017, we donated badminton, basketball and soccer equipment, and five pianos. In addition, our employees provided chemistry classes according to the children’s level of understanding.

College Student Contest on Creativity & Innovation for Automotive Batteries – LGCCI  In cooperation with the China Automobile Newspaper, LGCCI hosted the “1st Chinese College Student Contest on Innovation and Creativity for Automotive Batteries” in 2017. This contest was designed to discover and cultivate college students who are interested in the application of automotive batteries as well as human resources in the automotive battery and material field. This sort of event provides students with the opportunity to not only network with other students, professionals, and companies but also to utilize their knowledge and skills as future leaders of the automotive battery industry.

Youth Invitation Program - LGCTW  LG Chem’s Taiwan corporation has been operating the Taichung Plant in the central region since 2007. It has selected five high schools near the plant, and supported seven students from the schools to visit Korea every year since 2015. Those selected are sent to LG Chem’s Ochang Plant, Daesin Research Center, LG Twin Towers, and LG Science Hall to experience LG Chem’s products and to have dreams and hopes through cultural experiences in Seoul. In particular, the operating funds for this activity are managed through a matching fund system in which individual employee contributions are matched by the same amount by the company.

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1st Chinese College Student Contest on Innovation and Creativity for Automotive Batteries

Effects of Chemistry Camp Effectiveness of Fun Chemistry Park

<table>
<thead>
<tr>
<th>Year</th>
<th>Chemistry Camp</th>
<th>Fun Chemistry Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>183.2%</td>
<td>195.7%</td>
</tr>
<tr>
<td>2017</td>
<td>195.7%</td>
<td>199.8%</td>
</tr>
<tr>
<td>2018</td>
<td>199.8%</td>
<td>202.9%</td>
</tr>
</tbody>
</table>

SROI (Social Return on Investment) Evaluation

LG Chem measures SROI (Social Return on Investment), which is for promoting the effectiveness of CSR activities. SROI is an improved method to apply the ROI (Return on Investment) concept in social and environmental sectors. LG Chem monetizes the input-output of programs and measures their social and economic effects. In 2017, Fun Chemistry Park and Chemistry Camp were evaluated.

Analysis on CSR Program Effectiveness

Practice

Insight

Comparison of SROI

Effects of Chemistry Camp Effectiveness of Fun Chemistry Park

<table>
<thead>
<tr>
<th>Year</th>
<th>Chemistry Camp</th>
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</tr>
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<tbody>
<tr>
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<td>199.8%</td>
<td>202.9%</td>
</tr>
</tbody>
</table>

The Fun Chemistry Park’s SROI shows the cost-social benefit ratio was 136.48% in the second half of 2017, thanks to program improvements and greater efforts to eliminate educational inequality.
Diagnosing and Analyzing Business Performance

In 2017, LG Chem achieved KRW 25.698 trillion in sales and 2.929 trillion in operating profits. The sales and operating profits grew by 24% and 47%, respectively, compared to the previous year, resulting in the best performance since the foundation of the company. We merged with LG Life Sciences on January 1, 2017, and officially launched our red bio business, while specifying and implementing the future growth strategies and action plans for the biotechnology business including FarmHannong.

Business Performance by Division

Our Basic Materials & Chemicals Division made outstanding achievements by strengthening its sales capacity, expanding high value-added businesses, and reducing costs. The Energy Solutions Division successfully turned a profit thanks to the increased sales of automotive batteries and ESS and it improved the business structure of small cells. The IT & Electronic Materials Division and Advanced Materials Division also achieved higher sales and profitability with improved products.

Business Prospect in 2018

Going forward, LG Chem will push for the creation of high-added value in its existing businesses and actively enter into new material businesses. At the same time, we will intensively promote the future growth areas of energy, water, and biotechnology, and grow into a world-class company that provides differentiated materials and solutions.

Financial Performance

As of the end of 2017, LG Chem’s total assets were KRW 25,412 trillion, up KRW 4,554 trillion from the previous year, thanks to the overall expansion of sales in all business divisions as well as the increase in accounts receivable, cash flows from operating activities, and tangible and intangible assets from the merger with LG Life Sciences. Liabilities also increased by 35.2% from the previous year to reach KRW 8,703 trillion due to the impact of the merger and the issuance of corporate bonds. The total amount of capital also grew by 16.3% to a record KRW 16,339 trillion.

Consolidated Financial Statement (Unit: KRW million)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>9,055,601</td>
<td>9,230,334</td>
<td>11,208,591</td>
</tr>
<tr>
<td>Non-current assets</td>
<td>9,023,123</td>
<td>11,250,126</td>
<td>13,835,640</td>
</tr>
<tr>
<td>Total assets</td>
<td>18,078,728</td>
<td>20,487,460</td>
<td>25,041,221</td>
</tr>
<tr>
<td>Current liability</td>
<td>4,706,981</td>
<td>5,446,851</td>
<td>6,464,089</td>
</tr>
<tr>
<td>Non-current liability</td>
<td>676,225</td>
<td>989,242</td>
<td>2,057,955</td>
</tr>
<tr>
<td>Total liability</td>
<td>5,383,206</td>
<td>6,436,093</td>
<td>8,522,037</td>
</tr>
<tr>
<td>Owners of the parent</td>
<td>12,991,465</td>
<td>13,937,352</td>
<td>16,168,527</td>
</tr>
<tr>
<td>Non-controlling interests</td>
<td>112,057</td>
<td>113,615</td>
<td>170,050</td>
</tr>
<tr>
<td>Total equity</td>
<td>13,103,522</td>
<td>14,050,967</td>
<td>16,338,577</td>
</tr>
</tbody>
</table>

Consolidated Income Statement (Unit: KRW million)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>20,206,583</td>
<td>20,659,296</td>
<td>25,698,014</td>
</tr>
<tr>
<td>Operating income</td>
<td>1,823,568</td>
<td>1,991,920</td>
<td>2,928,457</td>
</tr>
<tr>
<td>Net income</td>
<td>1,148,531</td>
<td>1,280,994</td>
<td>2,021,973</td>
</tr>
<tr>
<td>Owners of the parent</td>
<td>1,152,987</td>
<td>1,281,124</td>
<td>1,945,280</td>
</tr>
</tbody>
</table>

Financial Ratio (Unit: %)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current ratio</td>
<td>180.4</td>
<td>169.4</td>
<td>168.6</td>
</tr>
<tr>
<td>Debt-to-equity ratio</td>
<td>41.8</td>
<td>45.8</td>
<td>53.3</td>
</tr>
<tr>
<td>Operating income margin</td>
<td>9.2</td>
<td>9.6</td>
<td>11.4</td>
</tr>
<tr>
<td>Net income margin</td>
<td>5.7</td>
<td>6.2</td>
<td>7.9</td>
</tr>
<tr>
<td>ROA</td>
<td>6.3</td>
<td>6.8</td>
<td>8.9</td>
</tr>
<tr>
<td>ROE</td>
<td>9.1</td>
<td>9.4</td>
<td>13.3</td>
</tr>
<tr>
<td>Sales growth</td>
<td>39.1</td>
<td>9.2</td>
<td>47.0</td>
</tr>
<tr>
<td>Operating income growth</td>
<td>9.2</td>
<td>9.2</td>
<td>47.0</td>
</tr>
<tr>
<td>Net income growth</td>
<td>10.5</td>
<td>2.2</td>
<td>57.8</td>
</tr>
<tr>
<td>Total assets growth</td>
<td>2.5</td>
<td>10.3</td>
<td>22.2</td>
</tr>
</tbody>
</table>

*Based on consolidated financial performance
**Non-financial Performance**

**Employee**

**Employment Status**

As of the end of 2017, the total number of LG Chem employees was 29,438, and among these, employees in foreign workplaces account for 42.9% (12,628 employees).

We strive to secure a diverse pool of employees. The number of female employees in Korea is 2,149, which is 27.3% higher than the previous year and the percentage of full-time workers is 98.4%.

Employment of social minorities has been steadily increasing. The term refers to people with disabilities and national minorities in the domestic market, and people with disabilities, ethnic minorities, and national minorities in overseas markets.

**Employees Status** (Unit: person)

<table>
<thead>
<tr>
<th>By region</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>13,374</td>
<td>12,250</td>
<td>14,610</td>
</tr>
<tr>
<td>Female</td>
<td>1,487</td>
<td>1,687</td>
<td>2,115</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>14</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td>Female</td>
<td>420</td>
<td>385</td>
<td>394</td>
</tr>
<tr>
<td>Total</td>
<td>28,136</td>
<td>26,582</td>
<td>29,438</td>
</tr>
<tr>
<td>Male</td>
<td>12,734</td>
<td>11,511</td>
<td>15,171</td>
</tr>
<tr>
<td>Female</td>
<td>454</td>
<td>404</td>
<td>460</td>
</tr>
<tr>
<td>National government</td>
<td>303</td>
<td>334</td>
<td>376</td>
</tr>
<tr>
<td>Overseas</td>
<td>8</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Recruitment and Retirement**

Thanks to its outstanding economic performance, LG Chem created many jobs through active new recruitments in 2017. The company had 6,048 new hires in 2017, which is a 55.4% increase from the previous year. The number of managers employed from the local communities around business sites is 586 and the ratio is 67%.

**New Recruitment** (Unit: person)

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>973</td>
<td>1002</td>
</tr>
<tr>
<td>Female</td>
<td>1002</td>
<td>1100</td>
</tr>
<tr>
<td>Total</td>
<td>1,975</td>
<td>2,102</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2,820</td>
<td>2,570</td>
</tr>
<tr>
<td>Female</td>
<td>1,140</td>
<td>1,300</td>
</tr>
<tr>
<td>Total</td>
<td>4,960</td>
<td>3,870</td>
</tr>
</tbody>
</table>

**New Employment by Age** (Unit: person)

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>16s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18s</td>
<td>557</td>
<td>596</td>
</tr>
<tr>
<td>19s</td>
<td>338</td>
<td>431</td>
</tr>
<tr>
<td>20s</td>
<td>78</td>
<td>69</td>
</tr>
<tr>
<td>21s</td>
<td>37</td>
<td>39</td>
</tr>
<tr>
<td>22s</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>1,110</td>
<td>1,151</td>
</tr>
</tbody>
</table>

* Overseas data for the amount of new employment is limited to China (LGCCI) and overseas manufacturing facilities.
* Overseas data for the number of female employees is management position is limited to China (LGCCI) and overseas manufacturing facilities.
Manager from Local Community of Business Sites (Unit: person, %)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>350</td>
<td>389</td>
<td>403</td>
</tr>
<tr>
<td>Female</td>
<td>62</td>
<td>75</td>
<td>128</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>464</td>
<td>611</td>
</tr>
</tbody>
</table>

Turnover Rate (Unit: person, %)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>2.3</td>
<td>2.6</td>
<td>3.6</td>
</tr>
<tr>
<td>Female</td>
<td>0.4</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td>2.7</td>
<td>3.1</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Number of retirement (voluntary)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>196</td>
<td>232</td>
<td>305</td>
</tr>
<tr>
<td>Female</td>
<td>55</td>
<td>68</td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>251</td>
<td>300</td>
<td>391</td>
</tr>
</tbody>
</table>

Turnover rate (voluntary)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>1.3</td>
<td>1.5</td>
<td>2.1</td>
</tr>
<tr>
<td>Female</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>1.7</td>
<td>2.0</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Employee Training

LG Chem provides its employees with training sessions that advance their job skills and also opportunities for their self-development. In 2017, the average training time per employee was 44 hours and training for on-site talents that meet certain qualifications. For individuals, this is an opportunity to become experts, and for the organization, it is a way to raise competitiveness in production. Unlike the past, we no longer confine the operation of the on-site expert development program to large business sites, but have extended it to small to mid-sized business sites since 2017, which resulted in an increase in the number of training participants from 217 to 381 year-on-year.

Nurturing On-site Experts

LG Chem provides a systematic know-how delivery program and training for on-site talents that meet certain qualifications. For individuals, this is an opportunity to become experts, and for the organization, it is a way to raise competitiveness in production.

Nurturing Global Talent

To expand its overseas businesses, LG Chem is striving to nurture global talents by enhancing the capabilities of expatriate employees and local employees in overseas markets. Training programs for expatriate employees are operated systematically from pre-training before their post-training after their return. Furthermore, LG Chem provides on-site training courses for expatriate employees to support their local adaptation and capability enhancement.

Evaluation on Performance and Reward

Through a fair performance evaluation system, LG Chem is raising the level of employee satisfaction and motivating them to perform better. The performance evaluation system reflects individual ability, teamwork, and changes in the environment both inside and outside the company through the evaluation of achievements, work difficulty, contribution, and attainment of business goals. In addition, we are evaluating individual job performance by job grade and family, and also attitudes that represent the LG Way. In 2017, all employees subject to performance evaluation were evaluated. All employees are given equal opportunities and the same basic salaries regardless of gender.

Equal Salary (Unit: %)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>5.5</td>
<td>5.7</td>
<td>5.7</td>
</tr>
<tr>
<td>Female</td>
<td>5.6</td>
<td>5.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Total</td>
<td>5.5</td>
<td>5.6</td>
<td>5.3</td>
</tr>
</tbody>
</table>

* The data is a ratio of average male salary compared to average female salary.

Employee Safety and Health

We are committed to providing a safe and healthy working environment to our employees. In particular, we are strengthening education on safety environment to spread the culture of safety throughout all business sites at home and abroad. The rate of industrial accidents in 2017 is 0.23% in Korea and 0.28% overseas.

Injury and Severity Rate (Unit: %, day)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>0.12</td>
<td>0.13</td>
<td>0.17</td>
</tr>
<tr>
<td>Overseas</td>
<td>1.12</td>
<td>1.13</td>
<td>1.10</td>
</tr>
</tbody>
</table>

* The data is a ratio of average male salary compared to average female salary.

Labor Practices

LG Chem’s employees have voluntarily established a labor union based on freedom of association, and are joining the labor union of their own free will. In 2017, the labor union membership was 76% in Korea and 89% in overseas. Employees are immediately informed of any changes made by the Labor Management Committee.

Manager from Local Community of Business Sites (Unit: person, %)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>458</td>
<td>475</td>
<td>586</td>
</tr>
<tr>
<td>Female</td>
<td>72.4</td>
<td>65.0</td>
<td>67.0</td>
</tr>
</tbody>
</table>

Percentage of locally hired employees in management position

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>72.4</td>
<td>65.0</td>
<td>67.0</td>
</tr>
<tr>
<td>Female</td>
<td>62.7</td>
<td>75.0</td>
<td>128</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>464</td>
<td>611</td>
</tr>
</tbody>
</table>

Average training cost (Unit: KRW 10 thousand, KRW billion)

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>590</td>
<td>698</td>
<td>1,09</td>
</tr>
<tr>
<td>Female</td>
<td>0.4</td>
<td>0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td>2.7</td>
<td>3.1</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Training programs for on-site talents that meet certain qualifications. For individuals, this is an opportunity to become experts, and for the organization, it is a way to raise competitiveness in production.
Suppliers and Customers

**Supplier Management** (Unit: company %)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of raw materials among the primary suppliers</td>
<td>234</td>
<td>292</td>
<td>584</td>
</tr>
<tr>
<td>Number of registered suppliers</td>
<td>3,784</td>
<td>3,673</td>
<td>3,780</td>
</tr>
<tr>
<td>Number of suppliers to conduct document investigation (total)</td>
<td>795</td>
<td>843</td>
<td>1,146</td>
</tr>
<tr>
<td>Number of suppliers to conduct on-site survey (total)</td>
<td>373</td>
<td>318</td>
<td>450</td>
</tr>
<tr>
<td>Number of suppliers to take corrective action</td>
<td>4</td>
<td>22</td>
<td>33</td>
</tr>
<tr>
<td>Number of suppliers to be suspended transaction temporarily or permanently</td>
<td>4</td>
<td>2</td>
<td>11</td>
</tr>
</tbody>
</table>

**Customer Satisfaction** (Unit: point %)

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPS score</td>
<td>80</td>
<td>94.7</td>
<td>94.7</td>
</tr>
<tr>
<td>Data coverage</td>
<td>75.1</td>
<td>93.3</td>
<td>94.7</td>
</tr>
</tbody>
</table>

Environment

**Raw Materials Management**

LG Chem’s products use naphtha produced from crude oil and minerals as raw materials. As these raw materials are limited resources, we strive to produce as many products as possible with the same amount of materials. In 2017, the domestic consumption of raw materials has increased by 13.7% year-on-year to reach 1.16 tons/product tons. In addition, we have used 20,526 tons of regenerated raw materials at domestic worksites.

**Wastewater and Waste Management**

In 2017, the total amount of waste water was 15,045,938㎥ at domestic worksites, and the recycling ratio was 7.4% (1,194,080㎥). LG Chem strives to increase the rate of waste recycling and decrease the intensity of waste discharge to deal with the continued waste generation. In 2017, the domestic waste discharge was 221,698 tons, which is an increase of 6% from the previous year, and the recycling rate was 71.7%.

### Wastewater Management

**(Unit:㎥/product ton, %)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of wastewater discharged</td>
<td>13,383,269</td>
<td>14,056,800</td>
<td>15,045,938</td>
</tr>
<tr>
<td>Recycling ratio</td>
<td>0.05</td>
<td>0.06</td>
<td>7.4%</td>
</tr>
<tr>
<td>Recycling rate</td>
<td>0.89</td>
<td>0.91</td>
<td>6.89</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of wastewater discharged</td>
<td>3,388,912</td>
<td>4,080,292</td>
<td>4,737,703</td>
</tr>
<tr>
<td>Recycling ratio</td>
<td>0.52</td>
<td>0.60</td>
<td>38.1</td>
</tr>
<tr>
<td>Recycling rate</td>
<td>1.00</td>
<td>1.29</td>
<td>23.29</td>
</tr>
</tbody>
</table>

### Waste Management

**(Unit: ㎥, ㎥/product ton)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General waste</td>
<td>109,770</td>
<td>111,688</td>
<td>110,504</td>
</tr>
<tr>
<td>Hazardous waste</td>
<td>67,631</td>
<td>91,443</td>
<td>111,194</td>
</tr>
<tr>
<td>Recycling amount</td>
<td>129,916</td>
<td>135,539</td>
<td>138,886</td>
</tr>
<tr>
<td>Recycling rate</td>
<td>70.2</td>
<td>90.7</td>
<td>71.7</td>
</tr>
<tr>
<td>Total amount of waste generated</td>
<td>177,401</td>
<td>203,128</td>
<td>207,918</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General waste</td>
<td>43,821</td>
<td>50,900</td>
<td>44,887</td>
</tr>
<tr>
<td>Hazardous waste</td>
<td>13,305</td>
<td>14,821</td>
<td>15,940</td>
</tr>
<tr>
<td>Recycling amount</td>
<td>16,488</td>
<td>20,397</td>
<td>20,930</td>
</tr>
<tr>
<td>Recycling rate</td>
<td>26.8</td>
<td>42.6</td>
<td>49.4</td>
</tr>
<tr>
<td>Total amount of waste generated</td>
<td>60,623</td>
<td>68,527</td>
<td>71,186</td>
</tr>
</tbody>
</table>

**Waste Resource Management**

LG Chem has responded to waste resource risks by systematically managing water resources to ensure stability of supply. It also takes into consideration the influence of discharged water on adjacent eco-systems and water-intake areas. In 2015, The total amount of LG Chem use water amounts to 57,196,025㎥ in domestic worksites.

**Emission of Air Pollutants**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>5,623,781</td>
<td>5,651,512</td>
<td>6,014,748</td>
</tr>
<tr>
<td>SOx</td>
<td>8,080,154</td>
<td>8,079,512</td>
<td>8,083,497</td>
</tr>
<tr>
<td>Dust</td>
<td>1,996,695</td>
<td>1,335,662</td>
<td>1,143,055</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CO2</td>
<td>1,563,341</td>
<td>1,602,429</td>
<td>1,630,854</td>
</tr>
<tr>
<td>SOx</td>
<td>1,667,818</td>
<td>1,602,429</td>
<td>1,581,584</td>
</tr>
<tr>
<td>Dust</td>
<td>933,721</td>
<td>923,446</td>
<td>823,580</td>
</tr>
</tbody>
</table>

**Pollutants Management**

LG Chem strives to minimize the release of pollutants. Eco-friendly facilities have been introduced to reduce the amount of air and water pollutants generated during the manufacturing process. We are also making various efforts to minimize impact on water quality, such as developing wastewater concentration technology for each business site, improving existing wastewater treatment systems, and strengthening the management of water pollutants. Also, efforts are being put forth into reducing emissions by installing supplementary boiler burner facilities, and improving existing related systems.

**Discharge of Water Pollutants**

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>689</td>
<td>679</td>
<td>705</td>
</tr>
<tr>
<td>BOD</td>
<td>776</td>
<td>785</td>
<td>802</td>
</tr>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COD</td>
<td>394</td>
<td>388</td>
<td>391</td>
</tr>
<tr>
<td>BOD</td>
<td>406</td>
<td>407</td>
<td>407</td>
</tr>
</tbody>
</table>

**Environmental Investment**

LG Chem continuously makes environmental investment to improve and manage environment. In 2017, the amount of environmental investment was KRW 41.4 billion.

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount</td>
<td>15,989,031</td>
<td>16,322,423</td>
<td>19,139,517</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.038</td>
<td>0.037</td>
<td>0.036</td>
</tr>
</tbody>
</table>

Data for environmental investment is limited to (China (LGCCI) and overseas manufacturing factories).
Business Performance and Strategy by Division

Basic Materials & Chemicals

Business Overview
LG Chem's Basic Materials & Chemicals business has the characteristics of a large-scale process industry, as it includes both the production of basic materials, such as ethylene, propylene, butadiene, and benzene, with the use of naphtha as a raw material, and the production of various synthetic resins made from these basic materials. We are contributing to the development of the industry through various high quality petrochemical products. Our key products include PE, PVC, plastiizer, ABS, EP, Acrylic, SAP, synthetic rubber, and special resin.

Market Prospects
The recent growth in the global petrochemical industry is forecast to continue until 2022. This is because, other than those in North America, supplies are expected to tighten as the expansion of global production fell short of expectations due to the volatility of oil prices. At the same time demand has increased in line with the global economic recovery.

From a long-term perspective, demand for highly functional new materials is expected to grow, along with the enhancement in the structure of consumption/industry. Global companies are therefore diversifying their business portfolio with a focus on highly functional products while pursuing stronger business competitiveness through a proactive response to new demands.

Performance

Energy Solutions

Business Overview
Since becoming the first mass producer of lithium-ion batteries in Korea, LG Chem has been leading the global market for automotive batteries. ESS (Energy Storage System) batteries, and small cells based on its world leading technology. Automotive batteries are medium to large-sized lithium-ion batteries used as the driving force of electric vehicles. They also refer to rechargeable batteries that can be repeatedly charged and discharged as lithium-ion move from the cathode to the anode and stores and releases electricity. ESS batteries are a device that stores energy to increase energy efficiency, improve quality of renewable energy, and stabilize the power supply system. Small cells come in three types: cylindrical, prismatic, and pouch, which are applied to mobile devices, power tools, and power driven devices.

Market Prospects
The production of electric vehicles has been increasing due to the strengthened environmental regulations worldwide, which is consequently raising the demand for automotive batteries. Governments are strengthening their policy support for ESS throughout the world, and the ESS market for electric grids and homes is also growing at an accelerated pace due to the improved efficiency of the ESS battery system. The small cell market is expected to expand into new areas, thanks to the growth of cylindrical batteries used in power tools, electric bikes, vacuum cleaners, laptops, etc., and the increased application of small cells in wireless products.

Prospect of the Lithium Rechargeable Battery Market by Main Field (Unit: GWh)

<table>
<thead>
<tr>
<th>Year</th>
<th>GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>104</td>
</tr>
<tr>
<td>2018</td>
<td>115</td>
</tr>
<tr>
<td>2019</td>
<td>169</td>
</tr>
<tr>
<td>2020</td>
<td>213</td>
</tr>
<tr>
<td>2021</td>
<td>252</td>
</tr>
<tr>
<td>2022</td>
<td>291</td>
</tr>
<tr>
<td>2023</td>
<td>315</td>
</tr>
<tr>
<td>2024</td>
<td>425</td>
</tr>
<tr>
<td>2025</td>
<td>610</td>
</tr>
<tr>
<td>2026</td>
<td>672</td>
</tr>
</tbody>
</table>

Major Client Companies for Electric Vehicle Batteries
- Korea, Hyundai Kia Automotive Group
- USA: GM, Ford, Chrysler
- Europe: Audi, Daimler, Renault, Volvo
- Others

Business Strategy
LG Chem aims to achieve the global top position in the battery market and to effectively respond to the change of business environments based on differentiated products, strengthening technology capability, and price innovation. Our business strategies for automotive batteries are as follows: to win orders for large electric vehicle projects through differentiated products based on material innovation, to ensure competitive prices to compete with internal combustion engine vehicles, and to strengthen production, quality, procurement, and marketing divisions in preparation for rapid business expansions. As for ESS batteries, we are creating a barrier to entry with a longer battery life and competitive prices to compete with internal combustion engine vehicles, and to strengthen production, quality, procurement, and marketing divisions in preparation for rapid business expansions. As for ESS batteries, we are creating a barrier to entry with a longer battery life and differentiated customer services, strengthening the business portfolio with a focus on core markets, securing the top position in the electric grid and home market, and raising price competitiveness by maximizing development and production efficiency. The business strategies for small cells areas follows: for pouch batteries, to enhance profitability by improving premium products in the IT market, and for cylindrical batteries, to respond to the extended application in wireless products (power tools, vacuum cleaners) and power-driven devices (electric bikes, electric scooters) and to find new growth opportunities, such as drones, AR/VR and robots.
Information Technology & Electronic Materials

Business Overview
LG Chem’s IT&E Materials Division both produces and sells various IT materials used in displays, semiconductors, and automobiles, as well as water treatment materials that will serve as the growth engines for the next generation. Polarizer, one of the core businesses in the division and the first commercialized material in Korea, is a core material for LCDs, for which LG Chem holds the world’s top competitiveness. Furthermore, the company is continuing its growth by producing RO membranes, which are the key to water treatment, manufacturing functional films, and developing materials that can be applied to OLED displays for smartphones and TVs and plastic OLEDs.

Market Prospects
The growth of the LCD market is expected to continue in China where large-scale investments, such as 10.5-generation production lines, are being made. The growth of the OLED market is mainly led by technology-leading companies. The demand for functional films is expanding according to market and technology changes. In addition, along with the increasing interest in water resources, the global water market is expected to grow steadily and reach USD 800 billion in 2019.

Business Strategy
For polarizers, we have invested in a local production base in China, the largest growth market for the material, ahead of our competitors, and are currently operating four production lines. We plan to enhance profitability through raw material internalization and productivity improvement. For functional films, we will strengthen our product and customer base by establishing development, production, and quality systems fit for small quantity batch production. For RO filters, we will become the top manufacturer in the industry with the goal to make it our No. 1 global business based on product competitiveness. Functional films and RO filters are especially nurtured by our headquarters, with the input of resources to promote the expansion of the business. Also, we will continue activities to improve the productivity and quality of glass substrates.

Advanced Materials

Business Overview
The Advanced Materials Division has been promoting future material businesses in order to secure growth engines. Its main business is the production and sales of materials for displays and batteries. One of the display materials is LCD photoresist, which is a core material for LCD color filters. The LCD photoresist was developed by using LG Chem’s independent technology, followed by a successful mass production for the first time in Korea. In addition, the OLED panel for smartphones, which was adopted by Apple for the first time in the world, also uses LG Chem’s materials. The Division continues to grow steadily by creating new customers and building synergy with other divisions in LG Chem and affiliates in the LG Group.

Market Prospects
With the establishment of large TV plants by the Chinese display manufacturers, the LCD materials market is growing mainly in China and this trend is expected to continue for years to come. Demand for OLED materials is projected to increase significantly due to investment in new lines by domestic display companies and the expansion of OLED production facilities by the Chinese display makers. Regarding cathode materials, the electric vehicle market will be facilitated further, increasing demand for high-capacity cathode materials that can extend battery life. As the price of cobalt, its core material, is expected to go up due to the instability of supply and demand, active technological developments will be made to reduce the cost of cathode materials.

Business Strategy
LG Display, one of the major clients of the LCD Materials Division, has increased the number of products applying LG Chem’s High-color and high-intensity materials, and is striving to enter the fast-growing Chinese market. The OLED Materials Division is making efforts to increase the number of materials applicable to the products of its clients, such as increasing the number of products applying light-emitting materials for LG Display’s OLED TV in 2017. Moreover, as the demand for cathode materials used in electric vehicles is expected to grow, we are expanding plants at home and making investments in new overseas plants in the form of joint ventures. In addition, we are investing in the shares of core material suppliers and facilitating joint ventures to secure a stable supply of materials and cobalt, which are the core materials of cathode materials.
Life Sciences

Business Overview
LG Chem officially launched its red bio business by merging with LG Life Sciences in January 2017. LG Chem’s Life Sciences Division was the first in Korea to receive the US FDA approval for a new drug in 2003, and is now strengthening its competitiveness in the future biotechnology industry based on its outstanding technologies that led to the successful commercialization of new drugs. We are also utilizing our advanced technology, R&D capacity, and production facilities to continuously increase our competitive edge in the pharmaceutical, vaccination, and fine chemical markets.

Market Prospects
The global prescription drug market (excluding over-the-counter drugs and medical devices) is projected to expand from approximately USD 774 billion in 2017 to USD 1.1 trillion in 2022, maintaining a steady growth of 6.5% every year. This can be attributed to the increasing development of new drugs due to aging populations and innovations in life science technology. In particular, the anti-cancer and immune disorder markets are expected to lead the growth with active releases of new drugs. The market for metabolic disorders, including diabetes, will also continue its growth. The time and cost for developing new drugs are constantly increasing, making the activities to raise R&D efficiency the core competitiveness of the red bio business.

Business Strategy
The Life Sciences Division has concentrated its R&D activities on the development of new and innovative drugs that combat cancer, immune disorders, diabetes, and metabolic disorders. As a strategy to strengthen our R&D capacity and efficiency, we will promote open innovation in all areas, including building capacity at a global level and securing a global network, to actively expand the pipeline of new drugs. By 2030, the Life Sciences Division will grow into a global bio-pharmaceutical company with the development of new innovative drugs that have global competitiveness, and we will serve as the next generation growth engine for LG Chem.

FarmHannong

Business Overview
LG Chem has diversified its business by entering the green bio industry with the acquisition of the nation’s top green bio company, Dongbu FarmHannong, in 2016 and newly launched it under the name of ‘FarmHannong’. It is mainly engaged in the manufacturing and sales of agricultural products including crop protectants, seeds, and fertilizers. In 1953, FarmHannong started the first crop protectant business in Korea and still has the largest market share in the country. Now it is focused on developing and selling high value-added and differentiated products. The seed business secure a variety of genetic resources that can raise competitiveness in the future food industry and continues to develop new high-value added varieties. The fertilizer business focuses on the development and sales of special functional fertilizers that will lead the future fertilizer industry.

Market Prospects
Recently, environmental and food issues, such as ecosystem conservation, population growth, and food safety, have become increasingly important, and green biotechnology is attracting much attention as the sole solution to these issues. As a result, the green bio market is expected to grow steadily across the globe. Global chemical companies have already entered the green bio market, and are actively pursuing mergers and acquisitions to respond to market growth and enhance competitiveness. At the same time, we are increasing investments to secure future technologies, such as genetic engineering technology and solutions for precision agriculture, and these movements are expected to accelerate the growth of the green bio market.

Business Strategy
FarmHannong has maintained its leading position in the domestic market for crop protectants, fertilizers, and seeds, and achieved KRW 663.9 billion in sales and KRW 35.5 billion in operating profits in 2017. FarmHannong established its first overseas research station in 2015, and is working to expand its business to the global market. We will continue to focus on overseas markets to grow into a global green bio company with annual sales of KRW 1 trillion by 2022.
### Corporate Governance

**Composition and Independence of Board of Directors**

LG Chem’s Board of Directors consists of two executive directors, one non-executive director, and four independent directors. For effective checks and balances against the management, more than half of the BOD consist of independent directors. The directors are appointed to serve a three-year term in principle and then are re-appointed in consideration of their activities and performance evaluations. Moreover, according to the Commercial Act, a director can only serve one other executive position in another company that does not have a stake in LG Chem.

**Expertise and Diversity**

The four independent directors have expertise in finance, tax, law, administration, and chemical substances, or expertise in chemistry which is LG Chem’s core businesses and possess a strong understanding of management, chemistry, batteries, IT & electronics, and life sciences. To enhance the expertise and efficiency of the Board of Directors, LG Chem also operates three committees under the Board of Directors, which are the Audit Committee, the Nomination Committee for Independent Directors, and the Management Committee.

### Audit Committee

The Audit Committee conducts audits on accounting, business practices, and directors’ execution of duties, and has the authority to request a sales report from a director or investigate the business or property of the company. All the members of Board of Directors are independent directors for independence.

### Nomination Committee for Independent Directors

The Nomination Committee for Independent Directors makes recommendations for candidates who meet the interests of LG Chem and its stakeholders, including shareholders, with strong expertise and capabilities, and appoints them at the general meeting of shareholders. To secure the diversity of independent directors, LG Chem does not discriminate against gender, nationality or race. In order to ensure fairness in selecting candidates for outside directors, two of the three members are outside directors.

### Management Committee

The Management Committee was established in July 2017 to handle daily business matters delegated by the BOD and financial matters under a certain amount.

#### Board of Directors Activity

The Board of Directors officially meets once every quarter, but unscheduled Board meetings occur as needed. In 2017, the Board held 11 meetings resulting in 37 approvals and eight reports. The members of the Board of Directors must attend the meeting 100% unless there is an unavoidable reason. The participation rate was 100% for executive directors and 93.1% for independent directors in 2017.

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### LG Chem’s Board of Directors

#### Category Name

<table>
<thead>
<tr>
<th>Category</th>
<th>Name</th>
<th>Role</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Directors</td>
<td>Park, Jin-Soo</td>
<td>Chairperson of the Board of Directors</td>
<td>Current CEO and Vice Chairman of LG Chem</td>
</tr>
<tr>
<td></td>
<td>Jeong, Ho-Young</td>
<td>Member of the Management Committee</td>
<td>Current CFO of LG Chem</td>
</tr>
<tr>
<td>Non-Executive Director</td>
<td>Kim, Bon-Joon</td>
<td>Chairperson of the Nomination Committee for Independent Directors</td>
<td>Current Vice Chairman of LG Corp</td>
</tr>
<tr>
<td>Independent Directors</td>
<td>Ahn, Young-Ho</td>
<td>Chairperson of the Audit Committee Member of the Nomination Committee for Independent Directors</td>
<td>Current Adviser at Kim &amp; Chang Former Director General for Planning and Coordination of Fair Trade Commission Standing Commissioner of Fair Trade Commission</td>
</tr>
<tr>
<td></td>
<td>Char, Kook-Heon</td>
<td>Member of the Nomination Committee for Independent Directors</td>
<td>Current Professor at the School of Chemical and Biological Engineering, Seoul National University Permanent Vice President of The National Academy of Engineering of Korea Senior Vice President of The Polymer Society of Korea</td>
</tr>
<tr>
<td></td>
<td>Jeong, Dong-Min</td>
<td>Member of the Audit Committee</td>
<td>Current Partner at Barun Law LLC Former Chief Prosecutor at Daejeon District Public Prosecutors’ Office Former Chief Prosecutor at Seoul Western District Public Prosecutors’ Office</td>
</tr>
<tr>
<td></td>
<td>Kim, Mun-Su</td>
<td>Member of the Audit Committee</td>
<td>Current Adjunct Professor of Graduate School of Science in Taxation The University of Seoul Former of the Deliberation Committee on Taxation Development at the Ministry of Strategy and Finance Non-Executive Judge of Tax Tribunal Former Vice Commissioner of National Tax Service</td>
</tr>
</tbody>
</table>

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*As of June 2018*
Important decisions on management resolved by the BOD shall be immediately made public to provide related information to shareholders and stakeholders. Major business issues related to investors’ interests are disclosed through the Data Analysis, Retrieval and Transfer System (DARTS) of the Financial Supervisory Service, and the Korea Exchange (KRX), and the LG Chem website.

Evaluation and Compensation

Independent evaluations on the activity and performance of directors are conducted regularly at the end of each term and the results are reflected in the decision to re-appointment.

Directors receive compensation within the limit approved at the general meeting of shareholders. Wages for executive directors are calculated in consideration of their work performance, and incentives are provided according to the comprehensive evaluation of quantitative indicators, such as sales, and qualitative indicators, such as evaluation of key projects and implementation of mid to long-term expectations. The same wages are paid to all independent directors within the compensation limit approved at the general meeting of shareholders. The upper limit of wages of the Board of Directors decided by the general shareholders meeting in 2017 is KRW 8 billion, and the total amount of wages paid was KRW 3.38 billion. Wages for individual directors and auditors that exceed KRW 500 million are made public through a business report in accordance with related law.

Compensation for Directors in 2017 (Unit: KRW million)

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Number of People</th>
<th>Total Payment</th>
<th>Average Payment</th>
<th>Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Directors (Independent Director and Audit Committee members excluded)</td>
<td>3</td>
<td>3,144</td>
<td>1,048</td>
<td></td>
</tr>
<tr>
<td>Independent Directors (Audit Committee members excluded)</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Audit Committee members</td>
<td>4</td>
<td>241</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Transparency Disclosure

Business Ethics

Jeong-Do Management Principles

LG Code of Ethics

The LG Code of Ethics provides all LG Group employees with the standards for appropriate behavior and value judgment that serve as the foundation for all business conduct of LG Chem employees and business sites at home and abroad. The LG Code of Ethics consists of customer responsibilities and obligations, fair competition, fair trades, basic ethics of employees, employees’ responsibilities, and national and social responsibilities.

Practice Jeong-Do Management in Life

LG Chem provides regular training on Jeong-Do Management for all employees and partners, pursuant to the Jeong-Do Management training and promotion system. In particular, we send ‘Jeong-Do Management letters’ tailored to each business and constantly emphasize that ‘fair competition through capacity building’ is the core of Jeong-Do Management. We also promote ‘Jeong-Do Management practices in daily life’ that encourage business sites to autonomously eliminate poor business practices, identify risks and improve processes, through programs such as ‘Outreach Activities for Consensual Building,’ and ‘Workshop for On-site issue Management’.

LG Chem has established the compliance management standard to promote fair and transparent business practices, ensure the sound development of the company, and gain customer trust by complying with laws and regulations. In line with this, we also operate the compliance management system to identify laws and regulations that must be complied with during business operations and self-check the compliance of our employees, so as to prevent legal violations and respond to various legal risks.
We have operated the Compliance Program with a focus on preventive measures. In 2017, we performed inspections on cartel, internal transaction, subcontracting transaction, and agency transaction while we conducted an inspection of and compliance training for the newly added businesses. We have also established a ‘Fair Competition Guidelines’ and formed a self-compliance team at the working-level under the control of the fair trade and self-compliance manager to build, implement, and report the operation plan of the Compliance Program.

Operating Fair Trade System

LG Chem pursues fair contracts based on the standard subcontract agreement recommended by the KFTC, with the immediate reflection of amendments in the Fair Trade Act, Subcontracting Act, and Agency Transactions Act. We also operate the Internal Committee on Subcontracting Transactions that carry out preliminary inspections to prevent unfair transactions that may occur in subcontracting transactions with small to mid-sized suppliers. The Committee, consisting of three members including an executive related to subcontracts, conducts a review on transactions that exceed a standard annual amount, focusing on whether or not to conclude a contract and the adequacy of the transaction amount. Furthermore, the Dispute Resolution Group classifies the cases of dispute into grades based on the level of response, and takes measures for follow-up and recurrence prevention.

Spreading Fair Trade Culture

In order to establish a fair trade culture throughout the company, LG Chem provides customized training programs every year, including Q&A training, new team leader training, and leader W/S training, that reflect the characteristics of each business. In addition, we distribute the Fair Trade Compliance Manual, which reflects new legislations, legal amendments, practical issues, and the Do’s & Don’ts. Compliance Newsletters provide all employees with behavior Do’s & Don’ts. Compliance Newsletters provide all employees with behavior.

Information Security Management System

LG Chem has established a systematic information security management system to protect all of its business secrets, core technologies, R&D information, customer information, and personal information. Also, we operate the security control system around the clock to provide real-time responses to external hacking attacks, and we perform regular inspections on security vulnerabilities as well as hacking simulations to constantly improve the level of internal security.

To prevent information leakage, we have strengthened the pre-identification of abnormalities through a detailed analysis of leakage channels, along with security measures for all IT media, including PCs and emails. Furthermore, our main business sites, including the Technology Research Institute in Daejeon and the Ochang Plant, have maintained global security levels by obtaining the ISO 27001 certification, which is the international standard for information security.

Improving Security Awareness

LG Chem provides online and offline training on information security for all domestic employees once a year to continuously raise the level of their security awareness. We are also extending the security training to overseas business sites, including China, and the employees of our partners are also required to meet essential security requirements, as part of the efforts to create a culture where all personnel working for LG Chem perform their duties with a proper awareness of security.

Responding to Information Protection Regulations

LG Chem responds to external regulations on domestic and overseas information protection, which have been strengthened in recent years. With regard to the Personal Information Protection Act of Korea, we have taken protection measures for personal information that we collected prior to the enforcement of the Act, and also necessary measures for each amendment. In addition, we have established a personal information management system for all our European corporations prior to the enforcement of the European General Data Protection Regulation (GDPR). We are also continuously identifying and improving legal imperfections in regard to the China’s Network Safety Act, which was enacted in 2017.
Risk Management

Company-wide Risk Management System

For efficient risk management, the company-wide risk management system was structured in three stages: daily management at the working level, integrated management by a risk management team, and supervision by the BOD. Daily management includes monitoring of each business division, risk identification and cause identification. For integrated management, the Risk Management Committee (RMC) reviews risks according to the characteristics of each division, establishes response measures, and manages risks at the corporate level. Corporate-level guidelines and risk response measures are discussed with the CFO, the chief executive of risk management. The final risk management directions and decisions are confirmed by the BOD in accordance with the compliance management standards, and the BOD supervises whether the CEO has rightfully reflected their decisions and effectively operates the compliance management system.

Risk Management Activities

Identifying Risks

LG Chem pinpoints risks in various aspects throughout the company-wide mid-term strategy, analysis of work process by function, and interview to analyze and manage risks. To respond to the rapidly changing business environment, LG Chem operates a working-level risk analysis session on a weekly basis, and key issues of each division are discussed during the monthly business management meeting with the CFO. In addition, LG Chem checks business environment changes and discusses counterplans before the mid-term strategy and business plan are established each year.

Preventing Risks from Recurring

LG Chem prevents risks from recurring by identifying risks which need to be managed and taking countermeasures through an internal audit. Moreover, all major projects are evaluated based on sales, profitability, and investments in comparison with investment plans for the last 3 years. For projects whose results were different from predicted outcomes, major factors are examined through follow-up inspection to improve the success rate of future investments.

Internal Control System

LG Chem operates the Internal Control System based on the IACS (Internal Accounting Control System) framework to secure the reliability of financial data, effectiveness and efficiency in business operations, and ensure compliance with applicable laws and policies. LG Chem continues to operate the Internal Control System for the Board of Directors, managers, and other members to secure trust of investors and strengthen management's responsibility for risks.

Major Risks and Mitigation Actions

LG Chem identifies major potential risks and applies them to business practices. Risks that require management are categorized into business risk, financial risk, and social and environmental risk, and activities are performed to measure their potential impacts and prevent them.

Category | Risk Type | Impact on LG Chem | Mitigation Actions
--- | --- | --- | ---
Management of order | Uncertainty for systematic management due to an increase in uncertain projects, orders, and large-sized projects | Establishing company-wide management of order system | Secure profitability through management from a quotation stage
Expansion of new businesses and foreign direct investment | Shifts in industrial and competitive structures due to intensified competition in emerging market and expansion of new businesses | Securing the position of a technical leader by enhancing manufacturing and R&D capacity | Focusing on the change in business environment for establishing matching strategic and tactical plans
Changes in business environment | Lowered risk to long-term growth with an insufficient response to rapidly changing business environment | Responses to each indicator such as price and exchange rate | Analysis of short-term business environment and risks with the head office and overseas subsidiary companies
Interruption of management and information security | Threat on management and information security | Establishing the company-wide information security organization and operating an information protection association | Establishing dual system equipment and remote disaster recovery system to minimize risks related to IT systems
Financial risk | Damage to corporate competitiveness due to lowered credibility in case of chemical accidents or legal violations | Strengthening material safety training for employees that handle hazardous materials | Strengthening pre-filtering of materials avoiding domestic or overseas legal standards on chemicals
Investment | When investment results in a failure to achieve profit gains due to wrong investment or change in business environment, it is likely to cause financial loss and deterioration of cash flow | Strengthening management risk by dividing for market risks from the micro and macro perspective | Establishing investment management system to enhance investment efficiency and respond proactively to risks
Social and environmental risk | Potential loss and damage to corporate image upon the occurrence of non-compliance with laws and regulations | Strengthening management of risk by dividing for market risks from the micro and macro perspective | Implementing risk management by divisions for market risks from the micro and macro perspective

Enterprise Risk Management System

- Reporting
  - Approval of management strategy and formulating preventive guidelines
  - Corporate-wide risk management guidelines and discussion of countermeasures
- Integrated Management
  - Division level Risk Management Committee (RMC)
  - Risk Management Team (Planning & Coordination Team)
- Daily Management
  - Risk Owner (Working Level)
  - Division level guidelines for managing business-related risk trends and discussing countermeasures
- Internal Audit
  - Surveillance
    - Corporate-wide guidelines for reviewing business-related risk trends and discussing countermeasures
  - Identifying and explaining causes for taking corrective action
  - Monitoring and analysis of business level

LG Chem Sustainability Report 93
Independent Assurance Statement

Relating to LG Chem, Ltd.’s Sustainability Report for the 2017 calendar year

This Assurance Statement has been prepared for LG Chem, Ltd. in accordance with our contract but is intended for the readers of this Report.

Lloyd’s Register Quality Assurance (LRQA) was commissioned by LG Chem, Ltd. (LG Chem) to provide independent assurance on its “LG Chem Sustainability Report 2017” (“the report”) against the assurance criteria below to a moderate level of assurance using AA1000AS (2008), where the scope was a Type 2 engagement.

Our assurance engagement covered LG Chem’s operations and activities in Korea specifically the following requirements:

- Evaluating adherence to AA1000 Account Ability Principles of Inclusivity, Materiality and Responsiveness
- Confirming that the report is in accordance with AA1000
- Evaluating the accuracy and reliability of data and information for only the selected indicators listed below:
  - GRI 200 (Economic): 201-1, 202-2, 203-1, 205-3, 305-1, 206-1
  - GRI 300 (Environmental): 303-1, 305-1, 305-2, 305-3, 305-4, 305-7, 307-1
- GRI 400 (Social): 401-2, 402-1, 404-1, 404-2, 405-1, 406-1, 415-1

Our assurance engagement excluded the data and information of LG Chem’s suppliers, contractors and any third-parties mentioned in the report.

LRQA’s responsibility is only to LG Chem. LRQA disclaims any liability or responsibility to others as explained in the end footnote. LG Chem’s responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems.

Based on LRQA’s approach nothing has come to our attention that would cause us to believe that LG Chem has not, in all material respects:

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

The opinion expressed is formed on the basis of a moderate level of assurance and at the materiality of the professional judgement of the verifier.

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

LRQA’s assurance engagements are carried out in accordance with our verification procedures. The following steps were undertaken as part of the evidence-gathering process for this assurance engagement:

- Assessing LG Chem’s approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through reviewing documents and associated records.
- Reviewing LG Chem’s process for identifying and determining material issues to confirm that the right issues were included in their report. We did this by benchmarking reports written by LG Chem and its peers to ensure that sector specific issues were included for comparability. We also tested the filters used in determining material issues to evaluate whether LG Chem makes informed decisions that may create opportunities that contribute towards sustainable development.
- Auditing LG Chem’s data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data-handling procedures, instructions and systems, including those for internal verification. We also spoke with three key people responsible for compiling the data and drafting the report.
- Reviewing supporting evidence made available by LG Chem at their head office in Seoul, Korea.

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

- Stakeholder inclusivity: We are not aware of any key stakeholder groups that have been excluded from LG Chem’s stakeholder engagement process.
- Materiality: We are not aware of any material issues concerning LG Chem’s sustainability performance that have been excluded from the report. It should be noted that LG Chem has established extensive criteria for determining which issue/topic is material and that these criteria are not biased to the company’s management. However, in the materiality process, LG Chem should make more efforts to better reflect reasonably estimable economic, environmental and social impacts for determining significance of relevant issues.
- Responsiveness: LG Chem operates on an annual basis, a CSR committee chaired by CEO and composed of senior executives of relevant function, discussing the risks, deciding what to improve and reviewing its performance associated with corporate social responsibility.
- Reliability: LG Chem has reliable data management systems for the indicators in the report. However, LG Chem should review its procedures regarding compiling data and determine where it needs to develop documented guidance to ensure more reliable data, and should also improve the data quality assurance procedures.

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO/IEC 17021 Conformity assessment – Requirements for bodies providing audit and certification of management systems that are at least as demanding as the requirements within the International Standard on Quality Control 1 and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent. LRQA is LG Chem’s certification body for ISO 9001, ISO 14001 and OHSAS 18001. We also provide LG Chem with a range of training services related to management systems. The verification and certification assessments, together with the training, are the only work undertaken by LRQA for LG Chem and as such does not compromise our independence or impartiality.

Dated: 6th July 2018

On behalf of Lloyd’s Register Quality Assurance Limited

Tae-Kyoung Kim
LRQA Lead Verifier

17th Floor, Sinchon Building, 67 Yeouinaru-ro, Yeongdeungpo-gu, Seoul, Korea

LRQA reference: SE2000000259

https://www.globalreporting.org

LG Chem Sustainability Report 95
LG Chem Code of Conduct for Suppliers

LG Chem, Ltd. ("LG Chem") is committed to be a global chemical company that carries out its roles and responsibilities as a member of global society. We strive to provide sustainable solutions that can contribute to resolve social/environmental problems, while endeavoring to adhere to the basic principles of sound growth of the business.

We have established the LG Chem Code of Conduct for Suppliers based on international norms, standards and legal requirements to fulfill our social responsibilities at global level and to achieve sustainable performances. We particularly expect mutual support from our supplier (the "Company") to comply with the following standards.

A. The company does not hire any person below the legal working age, and complies with the legal requirements for juvenile labor regarding minimum age, working hours and working conditions.

B. The company prohibits all forms of involuntary labor, including forced labor, labor exploitation, and establishes employment contracts that clearly define the working conditions in the employees’ native languages.

C. The company prohibits all forms of discrimination such as race, skin color, age, gender, place of origin, physical disability, pregnancy, religion, political views, labor union membership or marital status in terms of employment, promotion, remuneration, educational opportunities, etc.

D. The company respects the human rights of all employees, and effectuates humane working circumstances by prohibiting any sexual harassment, abuses, punishment, psychological or physical coercion, violent language, etc.

E. The company abides by all legal requirements related to maximum working hours, days of work, minimum wage, welfare and remuneration, etc.

F. The company respects the employee’s right to have association and collective bargaining in accordance with local laws and regulations. Employees can communicate with the management with regard to their working conditions without any risk of discrimination, retaliation, threats or harassment.

G. The company maintains the highest level of integrity in all transactions and relations, and strictly prohibits any types of corruption including undue acquisitions of improper advantages or bribery, while fully complying with all legal requirements related to anti-corruption. The company also guarantees confidentiality and protection of whistle-blowers.

H. The company must comply with legally mandated precautionary measures including evaluating and eliminating hazardous matters, providing regular education and emergency trainings, disseminating personal protective equipment, etc., to ensure that employees can work and live (if accommodation is provided) in a safe and healthy environment.

I. All required environmental permits, approvals, and registrations shall be obtained and maintained in the most recent versions. The company also guarantees confidentiality and protection of whistle-blowers.

J. The company shall prohibit the use of conflict minerals and materials sourced through any illegal and unethical processes including the processes where human rights are infringed, and shall establish a precautionary system. In addition, the company must be able to provide due diligence measures of the origin and chain of custody on raw materials in accordance with [Appendix1], and actively cooperate with LG Chem’s due diligence.

[Appendix1]

Due Diligence Policy

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<th>2. Due Diligence Standard</th>
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<td>OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas</td>
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<td>Establish strong company management system</td>
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<td>Identify and assess risk in the supply chain</td>
</tr>
<tr>
<td>Design and implement a strategy to respond to identified risks</td>
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<td>Carry out supply chain due diligence at identified points in the supply chain</td>
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<td>Report on supply chain due diligence</td>
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Identify and assess risk in the supply chain

- Identify the risks in the supply chain
- Identify the risks in the supply chain
- Devise and adopt a risk management plan identified in the ‘Identify and assess risk in the supply chain’ phase
- Report findings of the supply chain risk assessment and risk management plan to the designated senior management of the company
- Report on supply chain due diligence
- Publicly report on supply chain due diligence

[Appendix2]

References for the LG Chem Code of Conduct for Suppliers

The following standards were used in referencing this LG Chem Code of Conduct for Supplier, on which additional information can be found at the sites listed.

- IBA Code: http://www responsablebusiness.org/standards/code-of-conduct/ |
- ISO 14001: www.iso.org |
- OECD Guidelines for Multinational Enterprises: www.oecd.org |
- SAI8000 and SAI (Social Accountability International): http://www.sai8000.org/ |
# Sustainable Management Index

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## Presented by

- East Asia Journal of Industries, Business and Management, Ministry of Trade, Industry and Energy, Ministry of Science, ICT and Future Planning
- Energy Storage Association
- ENCAC
- Hindustan MediaWorks
- ICMA
- ICMAI
- CDP Korea
- CDP Korea
- Korea Corporate Governance Service
- Morgan Stanley Capital International

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### 10 Principles of UN Global Compact

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<td>Energy Consumption and Greenhouse Gas Emissions</td>
<td>45-49</td>
</tr>
<tr>
<td></td>
<td>RBA: Responsible Business Alliance</td>
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### Participation Information

<table>
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<tr>
<th>Korea</th>
<th>Overseas</th>
</tr>
</thead>
</table>

### Investor Information

- **Headquarters Address**: LG Twin Towers, 128, Yeou-dairo, Yeongdeungpo-gu, Seoul, Korea  
  Tel. 02-3773-1114  
  http://www.lgchem.com
- **Establishment Date**: January 1947
- **Paid-In Capital**: KRW 391,406 million (As of December 31, 2017)
- **Number of Issued Shares**: 78,281,143 Shares (As of December 31, 2017)
- **Status of Listed Stock Exchanges**: Korea Stock Exchange: 051910.KS
- **Transfer Agent and Registrar**: Securities Agent Services Team in the Korea Securities Depository  
  4 Gil 23 Yoinaru, Youngdeungpo-gu, Seoul, Korea
- **Contacts for Inquiry on Sustainability Report**: LG Twin Towers, 128, Yeou-dairo, Yeongdeungpo-gu, Seoul, Korea  
  Tel. 02-3773-3536  
  Fax. 02-3773-7983  
  E-mail: csrteam@lgchem.com  
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