

We Care for the future

Healthcare, Earthcare





Cover Story

SK chemicals is exerting ourselves to improve human health and protect the environment on the earth. We are researching and developing a vaccine (left) to recover a healthy daily life currently being threatened by COVID-19 while producing PETG (right) used for face protective shields at emergency relief sites. This year's report contains SK chemicals' strong will to safeguard future health and the environment amid the COVID-19 pandemic.

About this Report

Overview of Report SK chemicals share our activities and performances in regard to sustainable management through the annual publication of sustainability report. The tenth sustainability report contains financial performance as well as non-financial achievement concerning social value creation.

Principle of Report This report complies with the core option standards of the GRI (Global Reporting Initiative) Standards guideline, and partially reflects the principle and contents of the International Integrated Reporting Council (IIRC)'s Reporting Framework. In addition, the principle of UN SDGs is contained in the report, and the financial data in this report abides by K-IFRS.

Period of Report This report covers activities from January to December of 2020. In terms of major sustainable management performance, it contains data for three years from 2018 to 2020 to give a better understanding for comparison. In addition, it partially includes data of 2021 or before 2020 if it is considered significant enough to make an impact on stakeholders.

Scope of Report The scope of this report encompasses domestic business sites, including headquarters, R&D institute, sites in Ulsan

and S HOUSE in Cheongju as well as L HOUSE in Andong, which is the business site of SK chemicals' subsidiary, SK bioscience.

Data Assurance For the sake of reliability, this reports has been reviewed by Korea Management Registrar (KMR) in terms of compliance with the principles of inclusivity, materiality, responsiveness and impact put forward by AA1000AP(2018). GIR indicators and data in this report have been also verified in terms of reliability and quality. The results are disclosed on page 96 - 97.

Additional Information SK chemicals has published Korean and English versions of Sustainability Report with an aim of giving stakeholders access to information. This report can also be found on SK chemicals' website (<http://www.skchemicals.com>).

SK chemicals' Web Page

HTML <https://www.skchemicals.com>

PDF <https://www.skchemicals.com/social/report.aspx>

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2020 SK chemicals Sustainability Report

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Shortcuts Added to Webpage

SK chemicals created shortcuts leading to webpages to present more details on our Sustainability Report 2020. If you click on the icon above, it will lead you to relevant websites for accessing to additional information.

 Click on this button to navigate within the page

 Click on this button for more information

CEO Message

“ SK chemicals aims to go hand in hand with each of you to move forward our vision, ‘Leap toward a global leading player providing total solutions for eco-friendly materials and healthcare’. ”

Dear stakeholders,

We published our 2020 Sustainability Report elaborating on our sustainability progress and strategy with your unwavering support and interest. It has been 10 years since we produced our first sustainability report in 2012, which has granted us opportunities to actively communicate with our stakeholders. As you are aware, sustainable management refers to the management where a company is fully responsible for the economy (governance included), society, and the environment. SK chemicals shares our innovative achievements we have made on the journey toward sustainable management in favor of customers, the environment, and society through this report.

Last year, the COVID-19 pandemic brought about turmoil in the global management environment. Amid this daunting challenge, SK chemicals delivered a meaningful result. We made progress on the two pillars of SK chemicals, Green Chemicals Business and Life Science Business. Ant this achievement was attributed to reinforcing our business portfolio, under the mission of ‘earth protection’ and ‘human health improvement’, and devoting all our strength for it. Furthermore, we shored up our operation system and never stopped innovating the way of work. And I cannot forget to mention our employees’ dedication and hard work. All these efforts enabled us to achieve this meaningful outcome.

In Green Chemicals Business, we sold the bioenergy business to raise our financial stability while providing copolyester, our core product, to prevent the spread of COVID-19, which brought us improved profitability.

As for Life Science Business, we provided the effects of disease treatment and prevention for society through open innovation in the Pharma business, the growing sales of influenza vaccines, and CMO and CDMO businesses for COVID-19 vaccines. By doing so, SK chemicals was able to constantly generate the social value, the improved quality of life, which, in turn, earned us trust from stakeholders. In addition, we are working on the development of a COVID-19 vaccines through our subsidiary, SK bioscience, with the assistance of the Coalition for Epidemic Preparedness Innovations (CEPI), a global partnership, and Bill & Melinda Gates Foundation (BMGF).

In 2021, the areas of our focus, under our new management mission, are ‘Bio and eco-friendly product development’, ‘GHG mitigation’, ‘reinforcement of chemical substance management and its safety’, and ‘minimization of workplace accidents’.



Cheol Kim SK chemicals CEO *Cheol KIM*



Gwang-hyeon Jeon SK chemicals CEO *Jeon*

SK chemicals will play a leading role in creating an ecosystem for the global bioindustry in order for disease prevention and treatment and protecting the earth through the expansion of chemical recycling and natural materialbased products. In addition, to stay true to ‘earth protection’, persistent efforts for GHG reduction are being made, aiming to make carbon neutrality happen by 2050 compared to the BAU¹⁾ of 2020. We will also ensure the astute and systematic management of chemicals in order to tighten grip on our products’ harmfulness to the environment and human body. The rate of waste recycling will also be raised. Last but not least, SK chemicals will spare no pains to become an environment where all of our employees are happy at work and any forms of accidents do not occur.

Dear stakeholders and colleagues including customers, shareholders and partners who have always shown support for us, SK chemicals aims to go hand in hand with each of you to move forward our vision, ‘Providing eco-friendly materials and total healthcare solutions Global Leading Company’. I am convinced that a firm belief in happiness and full focus will bring us one step closer to the happiness of all. Based on this conviction, SK chemicals will strain every nerve to make you happy this year.

Thank you.

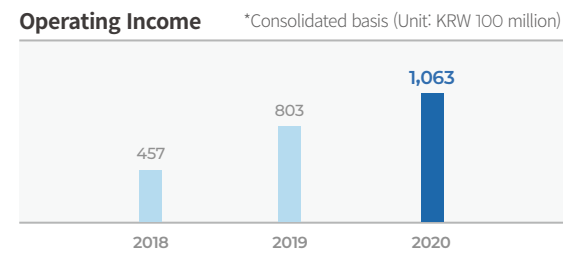
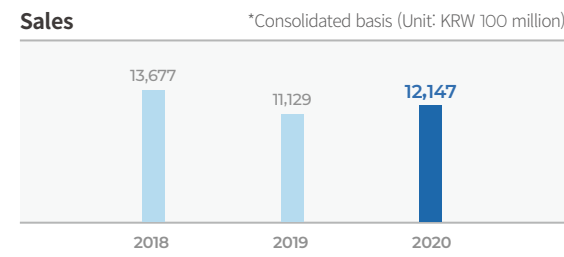
¹⁾ Business As Usual (BAU): Emissions as when the current business environment does not change.

Business Performance

1) With the aim to put our full focus on core businesses, SK chemicals spun off our bioenergy business in May 2020. This report embodies the business operation in the bioenergy sector and its performance made until May 2020.

Performance in 2020

SK chemicals saw a sales increase coming from the expanded sales of copolyester and vaccine. On the strength of the favorable performance in the Pharma business and the optimization of operation, we achieved an increment in sales. Even in the face of the difficult external environment, SK chemicals accomplished a strong operating income built on the expanded sales and improved profitability. Furthermore, we saw remarkable growth in net income on a consolidated basis. In the vaccine business of SK bioscience, a total of 10 million doses of SKYCellflu, an influenza vaccine, were produced and sold while SKYZoster, the second one to be commercialized in the world, began its sales and entered into the stage of growth. In addition, we commenced exporting SKYVaricella, a chickenpox vaccine, into overseas markets with Turkey becoming the first foreign market for the export. The next generation of vaccine for klebsiella pneumonia entered phase 2 of a global clinical trial, and we signed a contract to become a contract manufacturing organization (CMO) which conducts research on COVID-19 vaccine and manufactures raw materials and finished products. All these achievements that SK chemicals made led us to take a quantum jump last year.



GRI 102-2, 102-7 Scale of the Organization_Manufactured Products

Classification	Details	Unit	2018	2019	2020
Green Chemicals Biz.	Biodiesel*	ton	182,078	208,140	56,196
	Vaccines	Dose	6,000,806	5,893,408	11,477,663
Life Science Biz.	Tablets	Tablet	578,340,985	631,933,562	606,231,520
	Patches	Patch	37,125,447	50,290,715	40,500,354

*Biodiesel business (bioenergy business) is sold to Hahn & Company. Thus, this table shows the performance until May 2020.

GRI 102-2, 102-7, 201-1 Scale of the Organization_Revenue by Business

Classification	Details	Unit	2018	2019	2020
Green Chemicals Biz.	Bioenergy*		2,770	3,142	2,148
	C&A business/EP business*		690	796	780
	Composite material	KRW 100 million	545	485	466
	Power UT		615	465	350
	Others		0	0	2
Life Science Biz.	Pharmaceuticals	KRW 100 million	2,085	2,325	2,523
	Vaccine		1,402	1,832	2,375
	Others (plasma-derived medicines excluded)		0	0	0
Others		KRW 100 million	0	-53	71
Total			13,677	11,129	12,147

*Biodiesel business (bioenergy business) is sold to Hahn & Company. Thus, this table shows the performance until May 2020.

**C&A Business/EP Business were integrated into 'Functional Materials Business Division' in 2021.

Plans and Prospects for 2021

In 2020, as for Green Chemicals Business, we will keep one eye on accelerating the growth of the resin business as well as improving its profitability while putting the other on the development of new products and uses and the promotion of new businesses in response to the changing environmental paradigm in every facet. When it comes to Life Science Business, various efforts will be made, including enlargement of existing products, establishment of a new portfolio, expansion of investment scale for R&D and reinforcement of capabilities to grow our Pharma business in a stable manner. A focus will also be put on the business of SK bioscience on the basis of competencies we have built through investments in the sector for many years so that the various projects we have been working on will be on track. By doing so, SK chemicals will never stop changing ourselves and advancing into a global leading player who provides bio and eco-friendly materials and health care solutions.

Green Chemicals Biz.

Market Prospects | The chemical industry is liable to global economy, exchange fluctuations and oil price changes arising from geopolitical risks in the Middle East in terms of its growth and profitability. The prolonged expansion of COVID-19 has come with the sluggish economy since 2020. And chemical companies are wrestling with this daunting challenge, and SK chemical is not an exception. We, however, saw a favorable aspect. SK chemicals has prepared for the shift into the eco-friendly paradigm, which has brought us good results in our products and uses. Going forward, we will see that eco-friendly issues, such as GHG mitigation and recycling, will constantly come into focus. And all the countries across the world will make efforts to resolve the issues at their own pace in the same direction. Especially, the environmental regulations, such as the rules regarding mandatory use of recycled plastic products, are expected to be more stringent mainly in Europe. In order to keep up with the transition into 'sustainability' and 'circular economy', global chemical companies will put more efforts into developing environment-friendly materials and distinctive solutions to create new values, such as plastic recycling. In addition, the growing number of EVs and HEVs will bring about rising demand for light materials. Our current business allows us to replace existing plastic with our products having many advantages, and expand into new usage. But we are also required to prepare for more growing demand for eco-friendliness.

Strategic Direction | As for existing businesses, such as copolyester, we will focus on identifying markets for new usage in order to increase utilization rate while putting our focus on raising price competitiveness through optimal operation taking advantage of digital transformation technologies. Endeavors will also be made to stabilize our new businesses so that we can lay the foundation for the transition into an eco-friendly material company.

Life Science Biz.

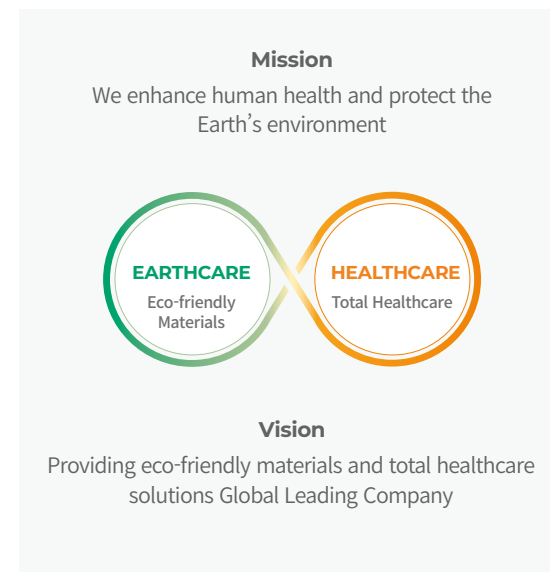
Market Prospects | The domestic pharmaceutical industry is ramping up its level of response to policies regarding medical insurance and drug pricing driven by the government, relevant regulations, and compliance. In particular, COVID-19 has had a direct and indirect impact on the industry, which is likely to lead to a decrease in the pharmaceutical and healthcare markets in the short run, but the development of digital platforms will bring new opportunities. In response, domestic drug makers are working on the establishment of infrastructure for multi-channel marketing, such as non-face-to-face marketing activities, thereby diversifying their marketing activities to go beyond limited environment. Efforts are also being made, including enlargement of product portfolio and expansion into overseas markets. This trend will be likely to bring more investments in R&D, more efficient internal operation, and an increment in M&A down the road. The outbreak of new infectious diseases and biological threats make the stable supply of vaccine grow in importance as a social safety net while economic growth coupled with aging society gives rise to growing demand for high-growth, high value-added and premium vaccines. In addition, the government's plans for vaccine self-sufficiency and expanded national inoculation project will accelerate the growth of the domestic vaccine market as well as the overseas vaccine markets mainly of developing countries. SK Plasma – a producer of essential, plasma-derived products – has expanded its production capacity in 2018 with active globalization since 2020.

Strategic Direction | For the sake of proactive response to the rapid changing pharmaceutical market, SK chemicals has built organization equipped with expertise and better efficiency in the Pharma and vaccine businesses. Especially, as for the Pharma business, we will constantly expand our product portfolio while reinforcing our R&D capabilities by scaling up the investments in open innovation so as to secure candidate materials for new drugs. When it comes to the vaccine business (SK bioscience), multifaceted efforts will be made, including delivering business performance capitalizing on platforms for technology and production, securing domestic market leadership at every corner of the business ranging from marketing, production to R&D, and internalizing ethical management living up to what international standards require. By doing so, we will enhance our stature as a global drug maker.

Company Profile

Management Vision

SK chemicals has driven the innovation in the domestic chemical and life science sectors since 1969 when we started our business as Sunkyung Synthetic Fiber. To stay true to the mission, 'We promote human health and protect the environment', we are taking the leap forward to becoming a global leading player built on two pillars; 'Green Chemicals Business' which aims to provide eco-friendly material solutions, and 'Life Science Business' which provides total healthcare solutions.



As of December 31, 2020

Company Name	SK chemicals Co., Ltd.
Business Type	Chemicals, Pharmaceuticals
Address (Headquarters)	310, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
No. of Employees	2,317*
Revenue	KRW 1 trillion 214.7 billion
Business Profits	KRW 106.3 billion
Net Profit During the Term	KRW 255.2 billion

*Including SK chemicals' corporate bodies/business sites/subsidiaries at home and abroad

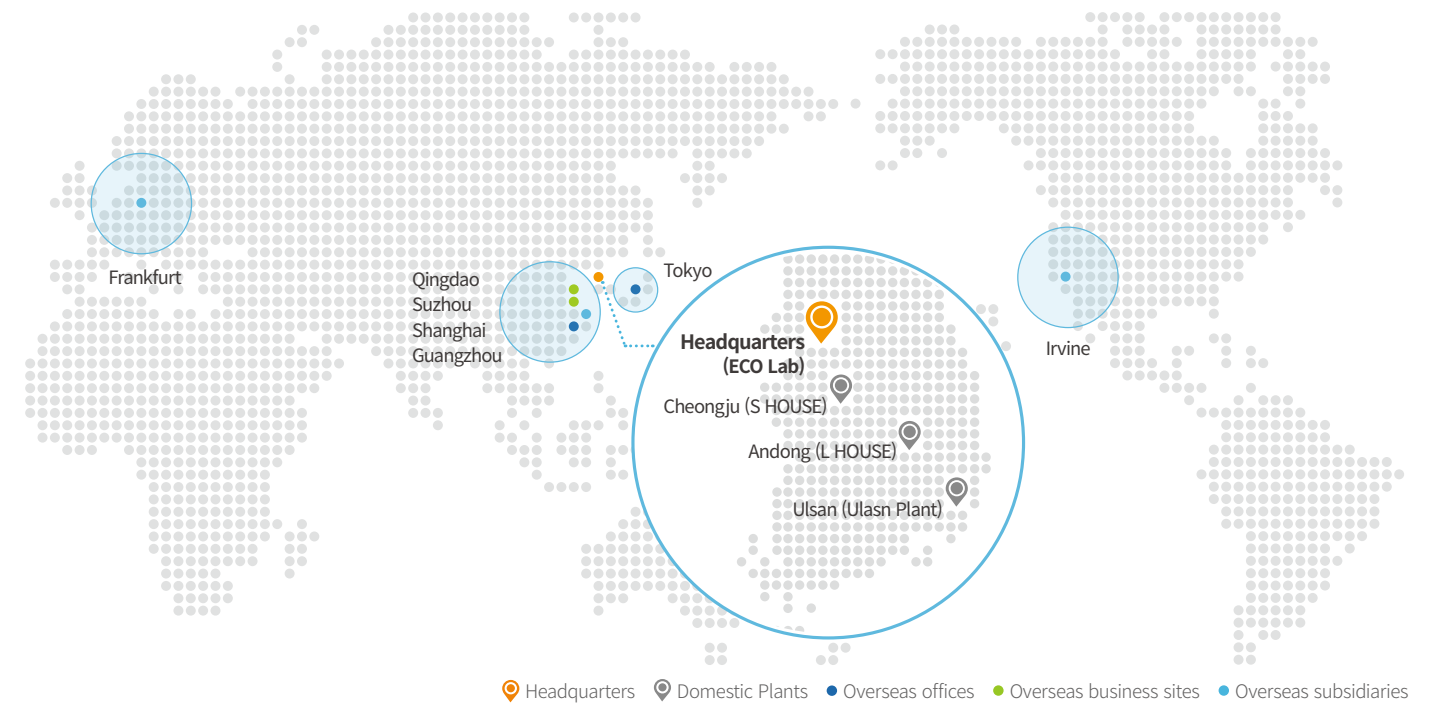
Key Business Areas

SK chemicals is a leading company in the domestic chemical/life science field, providing eco-friendly materials and total healthcare solutions. Our business structure is divided into two main areas; Green Chemicals Business manages the chemical/energy business while Life Science Business deals with synthetic new drugs, natural substances, and bio fields, based on which SK chemicals is taking the lead in environmental protection and human health promotion.

Green Chemicals Business aims to develop environment-friendly materials, such as recycled plastic products and plastic made of bio raw materials. In this business we boast world-class technology and facility, and deliver strong results through active investments and R&D activities. Through Life Science Business, we serve as a comprehensive solution provider throughout the whole stage ranging from disease diagnosis, prevention to treatment. We are putting our focus on R&D, and making investments in the sectors of pharmaceuticals and vaccines, and blood derivatives, which has made us well-positioned in not only the domestic markets and but also global advanced markets.



Domestic Business Sites and Global Network



SK chemicals has the headquarters, located in Pangyo, Seongnam, Gyeonggi-do Province, and three plants, including Green Chemicals Business Plant in Ulsan, SK bioscience Plant in Andong and Pharmaceutical Plant in Cheongju. In addition, we boast our reinforced global capabilities and competitiveness built on our global network which includes the overseas subsidiaries in the United States, Germany, Shanghai and other areas, and regional offices in Japan and Guangzhou, and business sites in Qingdao and Suzhou, China.

Associates

JSI	Manufacturing business	40%
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Major Affiliates

ENTIS Co., Ltd.	Manufacturing business	50%	ST Green Energy Pte, Ltd.	Wholesale business	50%
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Subsidiary company

SK bioscience	Pharmaceutical manufacturing business	98%	SK chemicals-Daejeung*	High-purity organic solvent manufacturing	100%	SK chemicals Qingdao Co., Ltd.	Prepreg manufacturing business	100%
SK chemicals Suzhou Co., Ltd.	Resin manufacturing business	100%	SK chemicals Shanghai Co., Ltd.	Chemical product, plastic & compounding Resin sales business	100%	SK chemicals America	Wholesale business	100%
SK chemicals GmbH	Wholesale business	100%	cf. Eastman Fibers Korea (EFKL, SK chemicals' shareholding ratio: 20%) is a company we have invested in. The company is an acetate fiber manufacturer, and some of products are utilized as raw materials for cigarette filters. *SK chemicals had a 100% stake in SK chemicals-Daejeung in 2020, but sold 50% of the shares in February 2021.					

Product Overview Green Chemicals Biz.

Copolyester



Copolyester is a compound word of 'Co-' which means together, and 'polyester'. It is produced by adding other materials to high molecular weight polyester. This material doesn't contain endocrine disruptors, so it can contribute to the creation of eco-friendly value. And high level of transparency and chemical resistance are representative strengths it has. SK chemicals has achieved vertical integration from raw material to copolyester production, thereby expanding the scope of the business in a stable manner.

Product

ECOZEN | ECOZEN is the world's first copolyester resin made of combined raw materials sourced from natural substances. This product is designed to remedy petroleum-based plastics' shortcomings, thereby reducing dependency on petroleum-based base materials and mitigating GHGs emitted.

SKYGREEN | SKYGREEN is a bisphenol A (BPA) free and eco-friendly material, which boasts outstanding transparency and chemical resistance. These properties make the product a good substitute for existing materials. Its excellent formability and processability make it possible to be used as a transparent material for personal preventive equipment, such as face shields or transparent shields, in the prolonged COVID-19 situation.

ECOZEN Claro | This product is a crystalline material which maintains copolyester's outstanding features; transparency and chemical resistance. ECOZEN Claro is a recycled product designed to respond to the emerging trend of plastic recycling.

ECOTRIA | ECOTRIA, which contains post-consumer recycled materials (PCR) made of pet bottles collected, is a material allowing better resource circulation. We plan to commercialize the product manufactured by applying chemical recycling technology to PCR in 2021.

SKYDMT | SKYDMT is used in diverse sectors as a material for film, fiber, engineering plastic or adhesive. Since the launch of the product in 1989, we have maintained the comparable management to the global top tier level on the strength of 30 years of experience, which allows us to be recognized for its outstanding quality by customers at home and abroad.

SKYCHDM | SKYCHDM is a monomer utilized for polyester polymer resin, polyurethane resin or resin for paints. This product can replace aromatic and aliphatic base materials, or can be combined with them for use. We design the product to accommodate existing raw materials' advantages as much as possible, and at the same time, to supplement the shortcomings of them. One of the strengths it has is to enhance various properties of resin.

Functional Materials



We do functional materials business which manufactures compounding products which is set apart from polymerized copolyester products. We provide resin products for coating and adhesion, and engineering plastics and elastic materials for automobiles and E&E. In addition, we are focusing on the development of eco-friendly products made of recycled or bio base materials.

Product

ECOTRAN, PPS | ECOTRAN, a lightweight and high performance material resistant to impact and heat, is now being emerged as a material for electric vehicles and hydrogen fuel cell vehicles. SK chemicals became the world's 1st to develop a process without chlorine, a toxic substance, and reducing for washing water during the whole production process.

Functional Materials

1) PCT (Polycyclohexylene Dimethylene Terephthalate): It refers to a polymeric polyester resin which is formed by adding CHDM to PET.



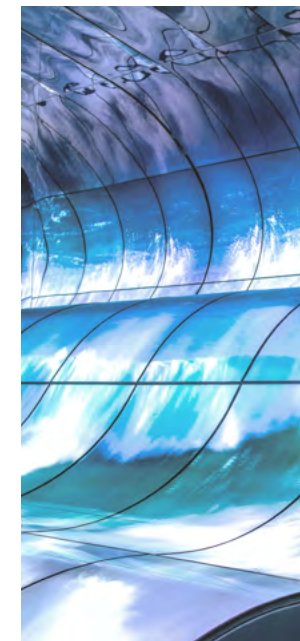
SKYTRA | SKYTRA is a compound product used for the parts of E&E and automobiles which are difficult to respond with base polymer. This product is equipped with great chemical resistance and thermal stability.

SKYPURA | SKYPURA is the Korea's 1st PCT¹-based material for super engineering plastic. The product boasts outstanding chemical resistance, reflexivity, durability and stabilized insulation, which makes it an optimal material for electrical and electronic components. SK chemicals won the minister's prize at 2013 Korea Technology Awards hosted by the Ministry of Trade, Industry and Energy for this product, and obtained certification as one of the 10 new technologies, which is a clear manifestation of our excellence.

SKYPEL | SKYPELL is a thermoplastic and polyester-based elastomer exhibiting combined properties of the elasticity of rubber and excellent processability and durability of engineering plastic. This organic material is widely used for electrical and electronic, automobile, and film and fiber sectors.

SKYBON | SKYBON is a high molecular weight copolyester binder used for adhesion and coating. This product is equipped with outstanding chemical resistance, flexibility and adhesive strength on various basic materials such as metals, clothes and plastics. This is bisphenol A (BPA) free, which allows the product to be used for can coating and flexible packaging. A hotmelt product, a solvent-free type made without an organic solvent, boasts good resistance to laundering, being used as a glue of heat transfer film for clothes.

Composite Materials



Eco-friendly carbon composite materials are lighter but stronger than steel. These properties make it come to the fore as an alternative under the more stringent regulations on CO₂ emission. The carbon composite materials are the combination of plastic and carbon fiber. And the materials make it possible to be combined in various ways. And strong coherence is one of the advantages the materials have, so it can be used as high value-added and high-tech materials. In addition, carbon composite materials are expected to have a high market potential, as they are an integral part as core materials of the hydrogen economy driven by the government.

Product

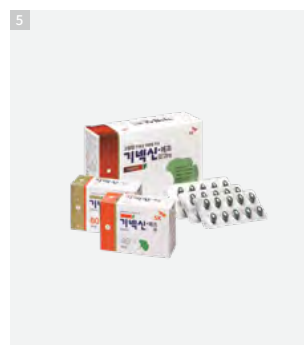
SKYFLEX | SKYFLEX refers to our own unique brand, which means prepreg produced by impregnating fiber reinforced with resin. Carbon fiber is more than 10 times stronger than steel with only a 20% weight of steel. These merits allow the product to be widely used for sectors which requires strength and lightweightness. The coverage of the product use includes sporting goods, high-tech industry products, such as industrial robot, blades for wind power generators and stiffeners of concrete structures.

CnR | CnR is a high-purity solvent used for instrumental analysis, ultrasophisticated synthetization of chemical products, and also utilized in the bio technology industry. This product was developed built on our own technologies combined with the technical partnership with Honeywell of the United States. And we are exporting CnR to various countries across the world including the United States. In 2020, we established a joint venture with Daejung Hwageum, a raw material medicine manufacturer, and based on this we are working on the development of high-purity solvent production technologies for electronic materials such as semiconductor or OLED.

Product Overview Life Science Biz.

Vaccine

1) Production period is reduced to two or three months since it is made of animal cell, and stable supply is secured regardless of the lack of fertilized eggs.



The prolonged COVID-19 pandemic threatening the whole world and the higher frequency of disease outbreaks disrupt daily lives and cause increasing medical costs. Our subsidiary, SK bioscience develops a variety of vaccines to prevent disease infection in advance, striving to improve human health. The global market for vaccines, in which considerable amounts of fund are being invested due to its high return on investment, is expected to reach USD 103.6 billion in scale by 2028.

Product

1 SKYCellflu | In 2015, SK chemicals succeeded in commercializing SKYCellflu, a cell-cultured¹⁾ influenza vaccine, for the first time for adults in Korea, and for the first time for children in the world. In the following year, SK chemicals launched 'SKYCellflu Quadrivalent' to the market, created through the world's first cell-culture technology, thereby preventing four types of human influenza viruses.

2 SKYZoster | SKYZoster, the second developed in the world, is a live-attenuated zoster vaccine for adults over the age of 50 or above. The product is verified in the safety of toxicity, the effectiveness and safety targeting adults aged 50, and the non-inferiority. SKYZoster has been well received in the market since its release, reaching one million doses of domestic sales in two years as of 2019 with a 46% market share.

3 SKYVaricella | SKYVaricella, the second locally developed, has proved its high immunogenicity and safety through phase 3 clinical trials conducted by 19 clinical research institutes at home and abroad. In 2019, SKYVaricella obtained WHO's pre-qualification (PQ) certification as a chickenpox vaccine for the second time in the world. Based on this, we plan to go for international bids as well as to expand our presence in developing countries.

SK chemicals contributes to public health by producing and supplying medicines for disease treatment. Particularly on the strength of our expertise in the treatment of geriatric diseases, we respond to the rapid rise in the incidence rate of geriatric diseases and the demand for treatment. Especially, we are collaborating with renowned overseas and domestic pharmaceutical companies to adopt products and expand our pipeline, thereby making constant progress. On top of that, we are working on commercializing our pipeline earlier and tapping into overseas markets based on our own R&D capabilities.

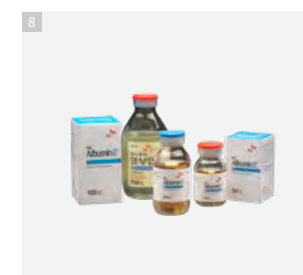
Product

4 Joins | Joins, one of our representative drugs, is the first locally registered product as an antiarthritic herbal medicinal treatment. It has proven its anti-inflammatory effect equivalent to the existing anti-inflammatory drugs, low side effect, and the effect of protecting cartilaginous tissue through clinical trials. Consequently, Joins is recognized as a fundamental cure for arthritis. We reached the sales of 1 billion capsules since its release in 2002 and KRW 400 billion of accumulated sales for the first time in Korea.

5 Ginexin-F | Ginexin-F, one of our representative brands, is a blood circulation enhancer with the largest market share. We capitalized on our own patented technology (extracting active constituents from ginkgo leaves) to develop this product which has the effects of blood viscosity reduction and blood vessel expansion. And we further rolled out 'Renexin', an anticoagulant drug with less side effects and better compliance and convenience in 2010 and 'Renexin CR Tab' in 2020. These products have been well received in the market. We achieved KRW 400 billion of accumulated sales for the past 28 years since its launch and retaining its 1st position in market share.

Pharma

2) Trans-dermal Drug Delivery System (TDDS): A system that allows drugs to be delivered directly into the body through the skin



Plasma-derived Medicines

6 Trast | Trast has been a beloved patch formulation for arthritis since its launch in 1996. The patch is applied directly to lesion, maximizing treatment effect of arthritis while minimizing adverse effects coming from the existing medicine. With the technology of the Trans-dermal Drug Delivery System (TDDS)²⁾, the patch delivers piroxicam, a nonsteroidal anti-inflammatory drug to inflamed area, maintaining its effective concentration so that its effect can last up to 48 hours.

7 Wondron Patch (Rivastigmine) | Wondron Patch is the Korea's first patch-type medicine for Alzheimer's disease released in 2010. In 2013, we obtained approval to sell the medicine as the first generic drug in Europe, having been a leader with the largest market share in the European market of generic drugs with the same ingredient. We were also granted sales approval for the patch from Australia, the Republic of Colombia, Mexico, Jordan, Canada, and the U.S Food and Drug Administration in order since 2016. Currently, we are undergoing the procedure to win approval in Brazil so as to further expand our overseas sales.

Plasma-derived medicines are produced by collecting human plasma and processing it through fractionation, purification, and virus inactivation and removal. SK plasma was established in 2015 as a subsidiary of SK chemicals with specialization in the plasma-derived medicine business. SK plasma is in charge of the production and marketing of plasma-derived medicines on the basis of its expertise in plasma-derived products and distinct technology. SK plasma not only meets the domestic demand, but derives results in the global market through the large-scale production facility within the Gyeongbuk Bio Industrial Complex in Andong-si.

Product

8 SK Albumin Inj. | SK Albumin Inj. is a human serum albumin that is administered intravenously for the treatment of hypoalbuminemia and hemorrhagic shock caused by decreased albumin synthesis like albumin loss or liver cirrhosis from burns or nephrotic syndrome. It is manufactured using high-purity albumin from the plasma of healthy people and heat-treated at 60°C for 10 hours to prevent virus transfer.

9 Liv Gamma SN Inj. | Liv-Gamma SN Inj., Korea's leading plasma-derived product, is a human normal immunoglobulin (Ph 4.25) with maltose, which is administered intravenously for the treatment of hypogammaglobulinemia, agammaglobulinemia, idiopathic thrombocytopenic purpura, Guillain-Barré syndrome, and Kawasaki disease. The product is actively marketed, as continuous developments have improved its convenience of use and it is available in a variety of doses at a competitive price.

10 IV Hepabulin SN Inj. | This product is an intravenously administered human immunoglobulin composed of antibodies for the hepatitis B virus to prevent hepatitis B recurrence in liver transplant patients. IV Hepabulin SN Inj. has effectively inactivated and removed blood-derived viruses, and its efficacy and safety have been proven through phase-3 clinical trials conducted in multiple centers.

11 Tetabulin SN Inj. | Tetabulin SN Inj. is a human tetanus immunoglobulin for intramuscular use. It is applied in the early incubation period of tetanus to prevent its occurrence or to relieve symptoms after tetanus infection.

SK Anti-Thrombin III Inj. 500 I.U. | This is derived from freeze-dried human antithrombin III and is administered intravenously for the prevention and treatment of thrombo-embolic complications caused by congenital antithrombin III deficiency and acquired antithrombin III deficiency. It contributes to the prevention and treatment of coagulopathy consumption in sepsis, multiple trauma, amniotic embolism, and acute liver failure caused by poisoning, hepatitis, decompensated cirrhosis, and many more.

ETBI Inj. 250 IU | This is derived from freeze-dried human blood coagulation factor VIII for the prevention and control of bleeding in patients with coagulation factor VIII deficiency by supplementing factor VIII.

SK DBL

Introduction of SK DBL

SK Group seeks for enhancement in Economic Value (EV), and at the same time, in Social Value (SV) in every facet of our management, thereby aiming to going hand in hand with society. SK has contributed to resolving social issues and has been in pursuit of the happiness of our members in order to generate SV. Recently, we have expanded the scope of SV into the creation of values for the happiness of all stakeholders. In this way, SK pursues and manages two values at the same time, EV and SV, and we call it Double Bottom Line (DBL). With the aim of measuring visible indicators as well as providing a benchmark, SK chemicals conduct SV evaluations. The scope of measurement is classified into indirect economic contribution performance, business social performance, social contribution social performance.



DBL Strategy and Management System

In pursuit of DBL, SK chemicals has measured EV as well as SV and converted the results into monetary value for public disclosure since 2018. A management scholar said 'If you can't measure it, you can't manage, if you can't manage, you can't improve'. Like this quote, SK chemicals measures and manages social value created to develop it more, based on which we step up our sustainability and stakeholders' happiness.

SV is comprised of three sectors: 'indirect economic contribution performance' which measures indirect value, created through business activities, contributing to the economy, 'business social performance' which evaluates the contribution to society through the development, production and sales of products and services, and 'social contribution social performance' which measures activities for local communities. We use the monetization-based measurement method for the evaluation, and the results are utilized for management strategy establishment and decision making.

SV Measurement Outcome

With the aim to fulfill our mission, 'We promote human health and protect the environment', SK chemicals has developed bio and eco-friendly products and furnished them to society while having curtailed environmental loads. SK chemicals is well cognizant that if we suggest solutions to social issues, the corresponding benefits will follow. On the other hand, we also found the areas of improvement in our SV process for the past three years. One is that there was insufficient consensus among our employees, and the other is target management for indicators was deficient. Going forward, we will make progress on the weaknesses.

SV Measurement Outcome

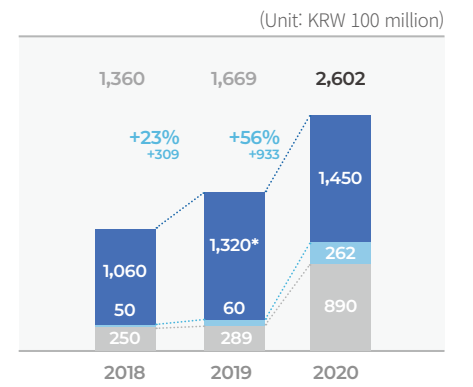
Indirect Economic Contribution Performance

Indirect Economic Contribution Performance refers to an indirect contribution to society through corporate business activities. In detail, this performance consists of 'employment', a labor cost paid to our employees, 'dividend payment' which is a dividend allocated and paid to shareholders, and 'tax payment' a tax paid to society.

■ Employment | SK chemicals' performance in 'employment' has been on the constant increase by increasing the number of employees hired and their wages.

■ Dividend Payment | The increment in net income we earned through our business activities in 2020 led to the growing amount of dividends paid to shareholders, which means enhanced 'dividend' performance.

■ Tax Payment | We saw a temporary uplift in 'tax payment' as we paid the relevant taxes after the bioenergy business was transferred to Hahn & Company at KRW 385.2 billion in 2020.



*The salary amounted to KRW 132 billion, or KRW 147.1 billion if payment other than salary is included.

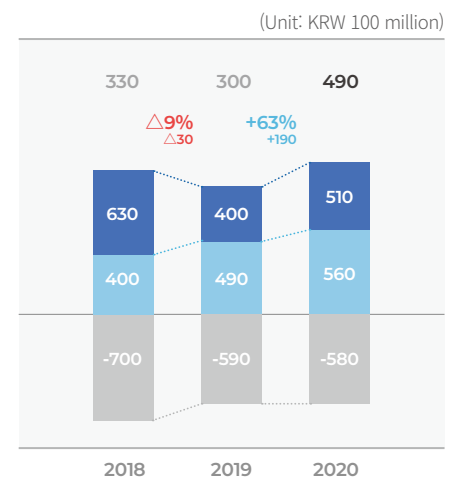
Business Social Performance

Business social performance consists of three areas. The areas include 'product/service' sector having a direct impact on the environment through our products and services, the sector of 'society' which measures the performance regarding improvement in the quality of life of purchasers or users as well as the performance of consumer protection in terms of purchase and employees' welfare. And the last one is the sector of 'environment (process)' which evaluates the level of environmental pollution triggered during the product manufacturing process.

■ Products and Services | The increase in sales of products having SV, ECOZEN, ECOTRIA, in 2020 resulted in an improved performance in 'product and service' sector.

■ Society | We prevent disease infection to reduce medical fees while promoting the health of people through the expanded sales of SK bioscience's vaccines, thereby constantly increasing SV in the sector of 'society'. In addition, we ensure the provision of stable welfare for our employees, and make purchases of products from poor countries through fair trade so as to take the initiative in consumer protection.

■ Environment (process) | This sector calculates the amount of water consumed, GHGs emitted, air and water pollutants, and waste. And we maintained the level of 2019 in this 'environment (process)' sector due to the production increase in our business, such as copolyester, despite the sale of the bioenergy business.

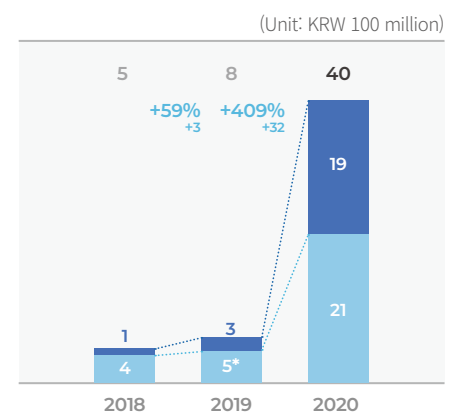


Social Contribution Social Performance

Social Contribution Social Performance measures SV generated through our activities contributing to local communities. SK chemicals spares no efforts to conduct social contribution activities, such as career mentoring and eco-friendly education for elementary school students, along with 'donation and volunteer works'.

■ Social Contribution Activities | We do various social contribution activities. 'Happy Green School' is one of our representative activities, which provides environmental education for low grades of elementary schools. We also created jobs in poor countries and revitalized regional economies through 'Myanmar Cookstove' project in 2020. These activities enable us to increase SV in the sector of 'social contribution activity'.

■ Donation and Volunteer Works | We have developed various volunteer service programs in the form of non-face-to-face since we had to shrink face-to-face volunteer works due to COVID-19. The amount of money donated in 2020 was increasing with the purpose of sharing the benefits we earned with society, which led to the enhanced SV in the sector of 'donation and volunteer works' Going forward, SK chemicals will make every effort to share our interests with society.



*Expenses incurred during donation activities are excluded.

2 Materiality

Corporate Overview 04

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Our Future-Focused Areas for All 30



Materiality Assessment

Goal
Organizing channels for needs identification by stakeholder

~2021: pilot test targeting customers to be conducted

~2022: all stakeholders by group

Identification of ESG Needs of Stakeholders and Policies | SK chemicals declared pursuit of SV as one of our core business strategies. And in order to achieve this, we put efforts into reflecting diverse needs of stakeholders. A survey on the entire issues we have is conducted within the first quarter to identify the needs of stakeholders. The survey divides into two types of questions. One type aims to identify the level of significance, while the other type targets the group of experts and aims to gain an understanding on the level of influence on the group's strategy and finance. In some cases, partner interviews by organization are needed. After the survey, the results are analyzed in order to identify the level of gravity by issue, followed by the selection of salient tasks.

We make sure that the status of sustainable management is frequently inspected, overarching issues are identified. By doing so, we elaborate on plans for the management and progress we have made in our sustainable reports. We draw 20 topics we have to contemplate for the sake of SV creation and sustainable management. And then, we analyzed them in terms of their strategic connectivity and financial impact from the perspective of business and influence on stakeholders. The detailed process for materiality assessment is as below.

Materiality Assessment Process

STEP 01 **Creation of an Issue Pool through the breakdown of internal and external environments**

We classify SV issues into sustainable management standard issues, which are subject to public disclosure and require us to respond to it, and issues in regard of corporate risks and future directions. Accordingly, we create two issue pools: GRI issue pool and our own issue pool.

- Analysis of sustainable management standards** GRI Standards, ISO 26000, MSCI, DJSI, CDP, SASB, TCFD, KCGS, KRX, UN SDGs, etc.
- Breakdown of SK chemicals' own issue pool** Data analysis (internal materials, business reports, management strategy system, investment reports, etc.), SV feedback breakdown (SV key issues and their status, SV risk review)

STEP 02 **Review of issues and selection of topics**

We reviewed the GRI issue pool to respond external evaluations, and also inspected our SV own issue pool in order to react to risks and define future strategies. And then, overlapping issues were removed and a total of 20 crucial issues were selected.

STEP 03 **Analysis of stakeholders and impact on business**

We analyzed the selected 20 issues in two aspects of 'stakeholder impact analysis' and 'business impact analysis'. With the purpose of evaluating the impact on stakeholders, a survey was conducted among our members and external stakeholders while an assessment of our executive members and external experts was conducted in order to measure 'the impact on business'.

STEP 03 **Analysis of stakeholders and impact on business**

Stakeholder Impact Analysis
We surveyed internal and external stakeholders online with the aim of collecting their opinions about sustainable management, and then drew salient issues by stakeholder.

- Survey Period: March 19, 2021 ~ March 26, 2021
- Survey target: 391 people including customers, shareholders and investors, employees, government and associations, partner companies, financial institutions, local communities, and others
- Questionnaire Composition: Questions evaluating the significance of 20 sustainable management-related issues

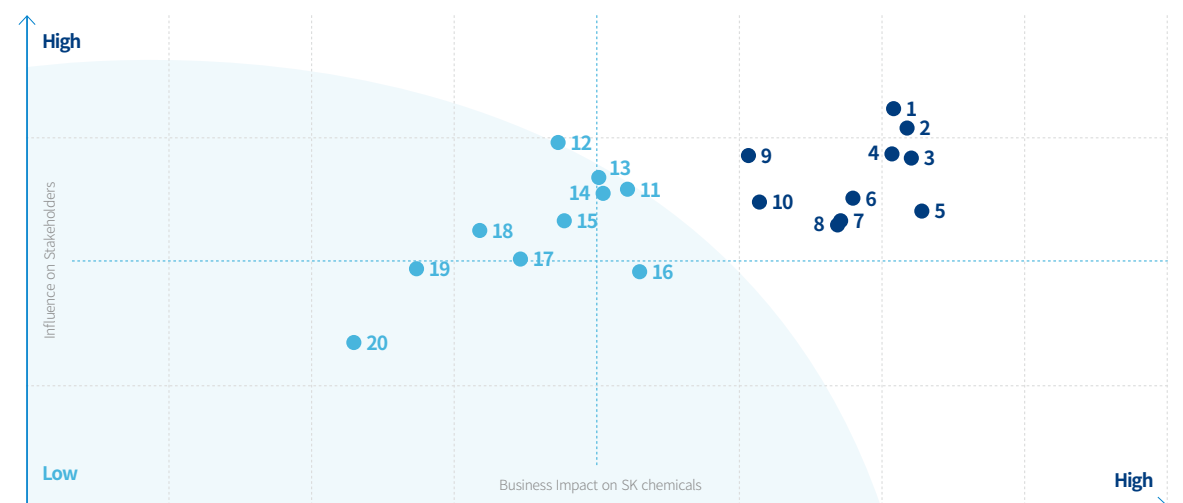
Business Impact Analysis
To figure out the level of impact our sustainable management-related topics have on SK chemicals, we comprehensively reviewed them in terms of their strategic connectivity and financial impact.

- Survey Period: April 6, 2021 ~ April 8, 2021
- Survey target: 18 people including executive members of SK chemicals and ESG expert group
- Questionnaire Composition: Management strategy connectivity (from the perspective of connectivity with strategy, long-term goals, management evaluation and compensation), financial impact (increase or decrease in income and expense, impact on risk probability)

STEP 04 **Prioritization and Selection of Areas of Focus**

We analyzed global ESG standard indicators and the management environment, and then reviewed every facet of our own SV issue pool to draw 20 sustainable management topics. To prioritize the selected topics, we conducted an evaluation of our employees' and stakeholders' interest, and a strategy and financial impact assessment of executive members and expert groups. And the followings are our final priorities.

Materiality Assessment Result



1 Development of recycled products	2 Zero-accident workplace	3 Economic performance	4 Disease prevention with vaccines
5 2050 carbon neutrality	6 Development of bio-based products	7 Management of ESG integrated risks	8 Product risk assessment
9 Disease treatment	10 Reinforced management of chemical substances	11 Compliance	12 Ethics and integrity
13 Employment and labor-management relations	14 Human rights management	15 Governance	16 Supply chain management
17 Customer data protection	18 Training and education	19 Stakeholder engagement	20 Contribution to local communities

Materiality Assessment

Areas of Focus

Materiality ● High ● Medium ● Low

Social Performance Classification According to SK DBL	SK chemicals' Material Topics	Materiality Ranking	Reporting Boundaries		Connectivity with Management Strategy			Financial Impact			Major Activities of SK chemicals	Report Location	Page	
			Internal	External	Connectivity with strategy	Connectivity with target	Connectivity with compensation	Cost	Profit	Risk				
Business Social Value	1 Environment	2050 carbon neutrality	5	●	●	●	●	●	●	●	GHG mitigation	2030 Carbon Mitigation by 50%	36	
		Development of recycled products	1	●	●	●	●	●	●	●	●	Waste plastic recycling	Bio/Eco-friendly BM Innovation	32
		Development of bio-based products	6	●	●	●	●	●	●	●	●	Refrainment from the use of petroleum-based raw materials	Bio/Eco-friendly BM Innovation	32
	Quality of life (Product/Service)	Disease treatment	9	●	●	●	●	●	●	●	●	Disease treatment with pharmaceuticals	Bio/Eco-friendly BM Innovation	32
		Disease prevention with vaccines	4	●	●	●	●	●	●	●	●	Disease prevention with pharmaceuticals	Bio/Eco-friendly BM Innovation	32
		Product risk assessment	8	●	●	●	●	●	●	●	●	Assessment of the whole process from raw material purchase to disposal	Life Cycle Management	40
		Reinforced management of chemical substances	10	●	●	●	●	●	●	●	●	Abidance with laws and regulations, such as Act on the Registration and evaluation, etc. of Chemical Substances, Enforcement Rule of the Chemicals Control Act, and REACH	Life Cycle Management	40
		Customer data protection	17	●	●	●	●	●	●	●	●	Fulfillment of information security responsibilities and implementation of data protection policies	Society, Customer and Product Responsibility	65
		Zero-accident workplace	2	●	●	●	●	●	●	●	●	Prevention of industrial disasters and workplace accidents	Zero Safety Accident in Business Sites	44
	2 Society	Quality of life (Labor)	Training and education	18	●	●	●	●	●	●	●	Employee education and training	Society, Our Members	62
			Employment and labor-management relations	13	●	●	●	●	●	●	●	Employment and establishment of cooperative labor-management relations	Society, Our Members	58
		Human rights management	14	●	●	●	●	●	●	●	●	Ban on human rights abuse and discrimination, spread of a culture of respect for human rights	Society, Our Members	61
	3 Governance	Mutual Growth	Supply chain management	16	●	●	●	●	●	●	●	Partner companies' compliance with the code of ethics, management of supply chain-related management	Society, Shared Growth	63
Governance			15	●	●	●	●	●	●	●	●	Transparency, expertise and diversity of BOD	Governance, Board of Directors	74
Ethics and integrity			12	●	●	●	●	●	●	●	●	Establishment of a code of ethics and compliance with it, expansion of a culture of ethics	Governance, Corporate Ethics	77
CSR Social	4 CSR Program	Contribution to local communities	20	●	●	●	●	●	●	●	Organization of a secretariat for social contribution and systematic operation programs for the expansion of social performance	Society, Local Community	67	
											Expansion of social performance through in-kind and cash donations	Society, Local Community	70	
											Creation of volunteer groups by business site and	Society, Local Community	68	
Indirect Economic Value	7 Employment	Economic performance	3	●	●	●	●	●	●	●	Indirect contribution with wage payment through employment and non-wage payment	SK DBL	15	
											through dividend allocated and paid to shareholders based on our improved operating income	SK DBL	15	
											Indirect contribution through tax payment	SK DBL	15	
Others	Management of ESG Integrated Risks	7	●	●	●	●	●	●	●	●	Response to changes in external and internal environments, management risk management	ESG Fact Book	50	
											Stakeholder Engagement	19	●	●

DMA

- 1) GBCC: Green Building Certification Criteria): domestic eco-friendly building certification
- 2) LEED: Leadership in Energy & Environmental Design): green building certification in the U.S.
- 3) CMO : Contract Manufacturing Organization, consignment production
- 4) CDMO : Contract Development and Manufacturing Organization




	01	02	03	04	05	06
	2050 Carbon Neutrality	Development of Recycled Products	Development of Bio-based Products	Disease Treatment	Disease Prevention with Vaccines	Product Risk Assessment
WHY?	The deterioration of global warming gives rise to the frequent outbreaks of natural disaster such as droughts or floods. Climate change is deemed the most daunting challenge, destroying the ecosystem for fauna and flora and threatening our lives. With the launch of a new climate region built on the Paris Agreement, the international community has been agile in response to climate change. This trend requires corporation to actively respond to carbon neutrality.	It is hard to decompose plastic. This property triggers endocrine disruptors for landfilled plastic products. And microplastics are one of the key threats to the environment. Currently, we are faced with daunting environmental challenges with the usage of plastic. Against this backdrop, the development of recycled products is our common task to be done, just going beyond the reduction of plastic use.	Growing interest in the environment brings concerns over the use of chemical substances into the public eye. And we are seeing rising needs for substitutes for existing chemical materials. Against this backdrop, the development of bio-based materials is being emerged. Bio materials are expected to resolve issues we are now faced with, regarding the environment, disease and energy.	Urbanization, globalization and climate change has triggered the outbreaks of new diseases with far-reaching coverage. Disease is not limited to an individual problem. It also causes massive human and economic losses through infection. For this reason, active disease management and response to treatment and rehabilitation is required.	Germs, viruses and pandemics threaten our healthy life and triggers economic crises. Therefore, a preventive approach has become more important. Against this backdrop, the development of vaccines, activating the human immune system in order to respond to germs and viruses, has come to the fore.	The advancement of cutting-edge technology and product convergence allows the production of various products. But at the same time, we are seeing more threats to our health. In response, we have in place safety standards for the harmfulness of products, and ensure that products are monitored at the stage of import and distribution. Corporation should take product harmfulness seriously, and guarantee consumers' choice of safe products.
Impact Group	Internal/external	Internal/external	Internal/external	Internal/external	Internal/external	Internal/external
Management Method	We mitigate the amount of GHGs emitted by establishing an organization dedicated to GHG, setting a reduction target and managing it. Furthermore, we contribute to making mobility light in accordance with the regulations on CO ₂ through the utilization of PCT or carbon fiber composite.	Taking advantage of our physical and chemical recycling technology, SK chemicals makes every effort to develop products made from recycled waste plastics. A target for sales of these products is also set and managed.	SK chemicals works on the development of eco-friendly materials, such as biodegradable plastic, and the commercialization of them. Efforts are also being made to produce environment-friendly products equipped with outstanding quality, a competitive edge and accessibility without emitting not much amount of GHGs. With the aim of the creation of better EV and SV, we will set and manage concrete sales targets for eco-friendly products.	We produce and provide medicine products for disease treatment while giving better physical access, economic access as well as access to information. By doing so, we play a contributing role in improving the quality of our employees' lives, and reducing social cost incurred by disease.	In swift response to the rapidly changing pharmaceutical market, SK chemicals puts in place an organization with better expertise and efficiency. We are focusing on R&D and the commercialization of vaccines, thereby improving human health. In addition to the development of vaccines, our CMO ³⁾ and CDMO ⁴⁾ businesses are in full swing. We convert SV created through disease prevention with vaccines into monetary value.	We do step by step management for chemical substances, which means that chemicals are managed from prior notification, warehousing, storage, use, disposal, and post notification through a process for chemical substance management, chemicals are managed from prior report, Furthermore, product risk assessments are conducted at every stage. By doing so, we identify hazardous materials having a negative impact on human and the environment in advance, and manage them.
Performance Evaluation	<ul style="list-style-type: none"> • Acquisition of ISO 14001 Environmental Management System • ECO Lab (headquarters) receiving Grade 1 in building energy efficiency • ECO Lab winning Grade 1 in Green Building Certification Criteria (GBCC¹⁾) • ECO Lab rated Platinum in Leadership in Energy & Environmental Design (LEED²⁾) 	<ul style="list-style-type: none"> • Development of ECOTRIA CR 	<ul style="list-style-type: none"> • Korea's 1st commercialization of PO3G, a biomaterial • Under construction of a PO3G facility producing 5,000 tons per year • Sales of bio-based products: KRW 7.31 billion 	<ul style="list-style-type: none"> • Selling 1 billion tablets of Joins, Korea's first anti-arthritis herbal drug on a cumulative basis • Surpassing KRW 400 billion in cumulative sales of Joins • Achieving KRW 400 billion in cumulative sales of Ginexin-F, a drug for blood circulation improvement • Becoming Korea's 1st company to obtain an approval from the FDA of the United States for sales of Wondron Patch, a patch-type medicine for Alzheimer's disease 	<ul style="list-style-type: none"> • Success in the commercialization of SKYZoster • AstraZeneca consignment production • Consignment development and production for Moderna vaccine 	<ul style="list-style-type: none"> • PO3G LCA to be verified in 2020 • Operation of chemical substance management process and SHEQ (safety, health, environment & quality) system → Hazardous chemicals management targeting all chemical substances
Target	<ul style="list-style-type: none"> • Carbon neutrality by 2050 	<ul style="list-style-type: none"> • Accomplishing 100% of ratio of environment-friendly materials by 2030 	<ul style="list-style-type: none"> • Attaining 100% of ratio of environment-friendly materials by 2030 	<ul style="list-style-type: none"> • Establishment of Global Biopharma Ecosystem • Contribution to Global Public Health 	<ul style="list-style-type: none"> • Establishment of Global Biopharma Ecosystem • Contribution to Global Public Health 	<ul style="list-style-type: none"> • Verifying 12 products' reduced harmfulness to human body and environment through LCA in 2021

DMA

- 1) REACH: Registraton, Evaluaton, Authorisation & Restriction of Chemicals
- 2) MSDS: Material Satey Data Sheet
- 3) SHE: Safety, Health, Environment
- 4) PSM: Process Safety Management

	07	08	09	10	11	12	13
	Reinforced Management of Chemical Substances	Customer Data Protection	Zero-accident Workplace	Training and Education	Labor and Labor-management Relations	Human Rights Management	Supply Chain Management
<p>WHY?</p> <p>Exposure to chemical substances does severe damage to human body, and even causes death. Inappropriate management of chemicals also incurs devastating damage to environment. Therefore, efforts should be made to ensure safety, check toxic information, and ramp up the level of management to reduce related accidents.</p>	<p>Personal information leakage comes with the loss of customers' trust, a bad reputation and litigation, which leads to the loss of assets. Personal data leakage in a large scale is not limited to the problem of a company. It has emerged as a social issue. Therefore, a company should persistently come up with policies and guidelines on this matter while actively sharing their efforts for data protection.</p>	<p>Workplace accident incurs human, physical, direct and indirect losses, threatening the lives of workers, and even leading to a terrible accident having a huge impact on our society and people. Accordingly, we have to pay special attention to the prevention of any kind of accidents at workplace.</p>	<p>The rapidly changing corporate environment brings about a paradigm shift in the industry. This situation requires a corporation to secure human resources. Employees determine corporate internal competency and competitive edge, so we need to build a capacity building and training system for employees to sharpen and maintain their expertise.</p>	<p>The international community puts emphasize on corporate responsibility for labor security. International Labour Organization (ILO) has established Fundamental Conventions, and exerts its influence to induce corporation to follow the global standards. A company, which fails to actively improve its employment and labor-management relations, is likely to come under criticism of the international community. Accordingly, a company should pursue economic progress and at the same time, respect for human rights.</p>	<p>Corporate responsibility for human rights management has come to the fore in the international community with conventions or initiatives such as ILO conventions or UNGC. Against this backdrop, the scope of corporate human rights has been expanded from universal rights to its supply chain.</p>	<p>Supporting partner companies in capacity building and risk management will bring corporations competitiveness, and ultimately a good reputation in terms of their sustainability. Accordingly, corporations should refine their supplier management system, and lend support to partner companies for their sustainable growth.</p>	
<p>Impact Group</p>	Internal/external	External	Internal	Internal	Internal	Internal	Internal/external
<p>Management Method</p>	<p>SK chemicals complies with laws and regulations, such as Act on the Registration and evaluation, etc. of Chemical Substances, Enforcement Rule of the Chemicals Control Act, REACH¹⁾. Especially, under the Chemical Management System (CMS), we manage chemicals throughout the whole process ranging from product manufacturing to disposal after use. In addition, we assess the substances in terms of environmental harmfulness through LCA while going through a verification process for waste recycling. In this way, we manage chemical substances in a systematic manner.</p>	<p>SK chemicals has drawn up our data protection policies every year so as to safeguard corporate data assets. In addition, every effort is being made for the protection, including encryption of outdated DB, DB access control, and replacement of a system of server access control. Education and training regarding personal data protection and security has been conducted on a regular basis as well. On top of that, we make it mandatory that, when receiving credit information, consent should be given from the subject of such data. Personal data and credit information we collect is well managed not to be leaked. And we ensure that all information exceeding its retention period is destroyed.</p>	<p>SK chemicals puts in place a system for Safety, Health and Environment (SHE³⁾) in order to manage our entire value chain including our partner companies. Various activities for occupational safety and health are also being conducted including safety training and joint-inspection. In detail, Ulsan Plant classifies inspections into three types; regular, intensive, and theme ones, based on which the plant carry out inspections and maintenance works in a systematic manner. S HOUSE and Andong Plant have implemented PSM⁴⁾, and focused on identifying near miss cases. An institutional system has also been established in response to emergency situation while regular simulation training has been conducted. By doing so, we put our focus on securing safety in advance.</p>	<p>We are operating an educational program tailored to the life cycle of our employees. Newly hired employees are granted opportunities to receive diverse training programs which allow them to raise their capabilities and expertise while executive members and team leaders are supported so that they are equipped with leadership.</p>	<p>We hire employees through a fair recruitment process while operating a labor-management consultative body for the cooperative relationship. In addition, we have organized a happy promotion team based on the SK Group's happy management philosophy to promote the happiness of our employees.</p>	<p>SK chemicals remedies inequality through our human rights protection system. Furthermore, we have expanded the coverage of our human rights management to cover our supply chain including its employees. Efforts are also being made to spread a culture of human rights respect where human rights abuse doesn't occur and any form of discrimination is banned.</p>	<p>With the aim of ramping up the level of efficiency in supporting partner companies, we have established a system for shared growth while diverse education, such as safety training and competitiveness reinforcement education, has been provided. We are creating an ecosystem for mutual growth based on partnership rather than just unilateral support by sharing our culture with them along with technical, financial and manpower support. Moreover, we help them improve their ESG management after the diagnosis of the status on this matter.</p>
<p>Performance Evaluation</p>	<ul style="list-style-type: none"> • CMS adopted by Chemical R&D Institute in June 2021 • CMS adopted by Ulsan Plant by the first half of 2022 • Preparation of MSDS²⁾ and provision of information for customers • Establishment of steam ejectors → reduced the average amount of waste water generated per day by 80% (60 tons) • Reuse of 392 tons of methanol → cost saving by KRW 324 million per year 	<ul style="list-style-type: none"> • No. of customers' data stolen (personal information, etc.) Zero • No. of customers' data lost (personal information, etc.) Zero 	<ul style="list-style-type: none"> • Acquisition of OHSAS-KOSHA 18001 certification • 14th inspection conducted in 2020 • Rated S for PSM 	<ul style="list-style-type: none"> • mySUNI, the SK Group's integrated learning platform, introduced • Total hours of education 65,350 hours • Total amount of money invested in education KRW 2.9 billion 	<ul style="list-style-type: none"> • No. of members of labor union and labor-management consultative body 421 • Ratio of members of labor union and labor-management consultative body 28.1% • No. of meetings of labor union and labor-management consultative body 4 	<ul style="list-style-type: none"> • Ratio of employees receiving human rights education 100% • Ratio of business sites receiving human rights impact assessment 100% 	<ul style="list-style-type: none"> • Diagnosing ESG in partner companies • Joint safety inspection and management in partnership with partner companies • No. of partner companies subject to ESG diagnosis, registration and management 7 • Amount of shared growth fund for partner companies KRW 7.5 billion • Amount of loans given to partner companies KRW 1.9 billion
<p>Target</p>	<ul style="list-style-type: none"> • Achieving zero accident related to chemical substances • Accomplishing zero violation against relevant chemical laws • Installing seven additional steam ejectors 	<ul style="list-style-type: none"> • Achieving zero accident in regard of data leakage 	<ul style="list-style-type: none"> • Lost Time Incident Rate (LTIR) < 0.05 • Pursuit of SHE management beyond the level of relevant regulations • Establishment of SHE management system corresponding to global top tier • 10% reduction in the number of people at higher risk of a health problem after a medical check 	<ul style="list-style-type: none"> • Annually 200 hours of education per person on average achieved 	<ul style="list-style-type: none"> • No. of cases regarding human rights-related gross negligence Zero • Achieving zero in workplace sexual harassment by 2025 	<ul style="list-style-type: none"> • ESG evaluation of target partner companies 100% completed by 2025 	

DMA

	14	15	16	17	18	19	20
	Governance	Ethics and Integrity	Compliance	Contribution to Local Communities	Economic Performance	Management of ESG Integrated Risks	Stakeholder Engagement
 <p>WHY?</p>	<p>Having an independent board of director (BOD) with expertise determines decisions on key management issues. And the assessment of governance. Recently, has grown in importance among global sustainable management initiatives and indicators. Accordingly, interest in governance in favor of sustainable management will be likely to become more significant.</p>	<p>Social trust, earned through fair trade and transparent operation in compliance of ethical standards, determines not only corporate image but also corporate continuity. And the internalization of ethical management through reinforced internal systems and ethical education programs remedies negative practices entailing inefficiency, thereby bringing better work efficiency and raised competitiveness to the company.</p>	<p>We are seeing various laws and regulations regarding compliance newly established or changed. This circumstance requires corporations and their employees take more responsibility for the violation of the relevant laws. Especially, more and more companies hold senior management to account. Accordingly, we need to keep track of frequently changing corporate business status and regulatory environment, and proactively manage legal risks.</p>	<p>In the past, a company proved its value by making profits, but currently, social value creation has become an integral part of its survival and sustainable growth. Constant interaction with society is essential to sustainability. Especially, corporate activities to deal with social issues become an integral part of the key indicators of companies' competitiveness.</p>	<p>Business management entails with employment, dividend distribution and tax payment. Such economic resources go to a variety of stakeholders. In conclusion, corporate economic achievements culminate in the vitalization of national economy.</p>	<p>Investment giants, such as asset management companies or pension fund, pay attention to ESG risks. We are seen the disclosure of ESG information adopted and spread. And socially responsible investment, which refers to investments in corporations reflecting ESG value, is in full swing. In this way, ESG has become an investment indicator demonstrating companies' sustainability and value assessment results. Therefore, identification of ESG-related risks and management of them are becoming significant.</p>	<p>Stakeholders affect and are affected by business operation. The advancement of information and communication technologies enables the interactive flow of information. A company can find ways of stable growth and survival through constant interaction. Accordingly, we need to figure out stakeholders from the perspective of the nature of business, and reflect their opinion in business operation.</p>
<p>Impact Group</p>	Internal	Internal	Internal	External	Internal	Internal	External
 <p>Management Method</p>	<p>For the sake of securing expertise of the BOD, we make the BOD consist of experts from various fields. And we also make sure that outside directors account for more than 50% so that our governance is independent and transparent. With the aim of raising the level of diversity, we have increased the ratio of female directors while establishing EST Committee and HR Committee, thereby making decisions on ESG-related matters, BOD assessment and remuneration in a transparent manner. Attendance rate at the BOD is open to the public for transparent disclosure. The remuneration for the BOD is evenly defined and allocated according to the value of the performance of their duties.</p>	<p>We collect ethical management-related reports through diverse channels, and respond to them. In addition, we will ramp up the level of ethical management practice through a diagnosis survey in the course of the establishment of ethical management principles. And it will be reflected in KPI evaluation of our employees to make a culture of ethics permeate through the whole company.</p>	<p>We put in place a compliance system (law-abiding system), and have the management department and employees in charge manage the system. we always keep up with the legal trends at home and abroad to prevent legal risk and accidents from happening in advance.</p>	<p>With the purpose of providing more effective and practical benefits to local communities, we work with experts and reflect requirements of stakeholders, based on which we plan social contribution activities. After that, we conduct surveys on the level of participation and satisfaction. According to the results of the surveys, we decided whether we contribute to deliver the activities.</p>	<p>SK chemicals is in pursuit of DBL management which aims to achieve EV and SV at the same time. We pay wages and non-salary compensations through employment, and allocate dividends based on enhanced operating income, thereby creating indirect economic value. We are also faithful in terms of tax payment, which leads to indirect contribution to the economy.</p>	<p>In order to respond to the changing external management environment, ESG Committee will be launched within the third quarter of 2021. And the committee will assume the role of defining unique business social performance indicators by ESG sector and systematically managing them.</p>	<p>We identify stakeholder groups around SK chemicals, establish communication channels and figure out their needs by group. The opinions collected through the communication are reflected in our operation. By doing so, we promote the happiness of all of us.</p>
 <p>Performance Evaluation</p>	<ul style="list-style-type: none"> No. of regular BOD meetings convened 13 No. of agenda items discussed at the BOD 21 No. of agenda items passed at the BOD 21 Attendance rate of internal and outside directors 100% 	<ul style="list-style-type: none"> Ratio of employees receiving education on ethical management 93% No. of grievances reported through the official ethics management reporting channel 5 No. of grievances resolved through the channel 5 Ratio of grievances resolved 100% 	<ul style="list-style-type: none"> No. of unfair transactions including impediment to fair competition and monopoly Zero No. of violations against laws and regulations Zero 	<ul style="list-style-type: none"> Supporting four social enterprises in releasing their products and commercializing them Amount of money spent on social contribution activities KRW 2.3 billion No. of employees participating in volunteer works 353 Hours of volunteer works 1,647 hours Amount of donations KRW 2.052 billion 	<ul style="list-style-type: none"> Sales KRW 1.214 trillion Operating income KRW 106.3 billion Employment performance KRW 145 billion Dividend performance KRW 26.2 billion Tax performance: KRW 89 billion 	<ul style="list-style-type: none"> ESG management goal established 2030, We Care for the future 	<ul style="list-style-type: none"> Key stakeholder groups 7 groups No. of communication channels with stakeholders 19 channels Ratio of response to stakeholders' key matters of concern 100%
 <p>Target</p>	<ul style="list-style-type: none"> Appointment of female outside director Establishment of ESG Committee and HR Committee 	<ul style="list-style-type: none"> Ratio of employees receiving education on ethical management 100% Achieving zero breach regarding anti-corruption 	<ul style="list-style-type: none"> Achieving zero breach regarding compliance 	<ul style="list-style-type: none"> No. of social enterprise we support to be increased by 10% by 2025 30 social enterprises or more to be supported from 2025 50% of employees or more to participate in social contribution programs every year 	<ul style="list-style-type: none"> ESG Committee to be launched under the BOD in the third quarter of 2021 		

3

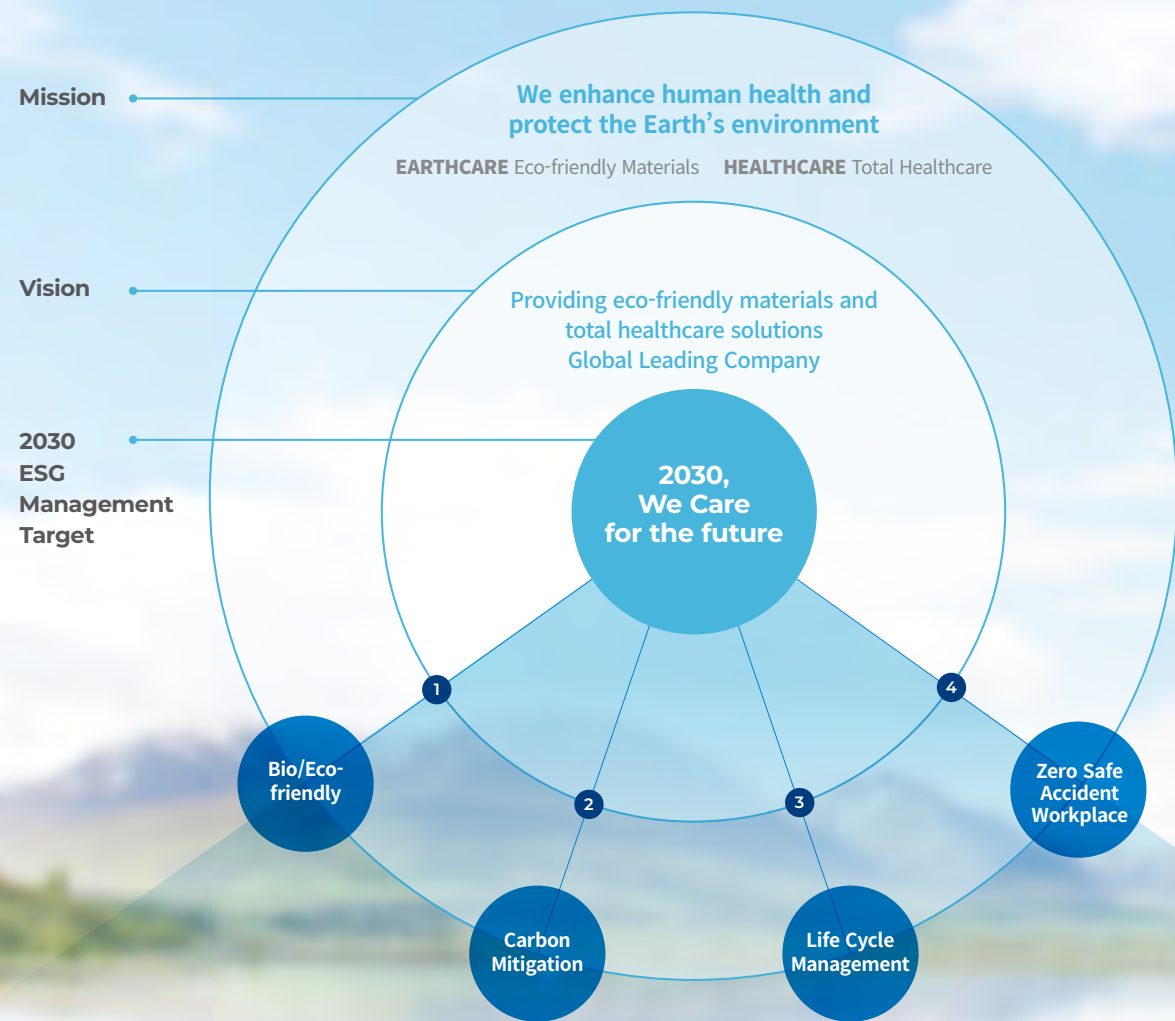
Our Future-Focused Areas for All

Future-Focused Area 1
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2030, We Care for the future

Under the mission of 'We care for the future. Healthcare, Earthcare', SK chemicals spares no pains to become a chemical company keeping the environment in mind, a bio company safeguarding life, thereby growing into a company opens science and ushers in happiness.

In recent years, we have formulated and declared our new management goal, 'We care for the future. Healthcare, Earthcare', with the aim of reflecting ESG topics in our business operation, such as action on climate change or environmental harmfulness of plastic products.

SK chemicals will lay the foundation for the next 10 years under our ESG management mission, and remedy such issues, thereby advancing into a sustainable company.

1	2	3	4
Bio/Eco-friendly	Carbon Mitigation	Life Cycle Management	Zero Safe Accident Workplace
<ul style="list-style-type: none"> Establishment of Global Bio Industry Ecosystem Achieving 100% eco-friendly materials¹⁾ (recycle product, biomaterials, etc.) 	<ul style="list-style-type: none"> Mitigating carbon by 50% (Scope 1&2)²⁾ Building response measures for Scope 3²⁾ Carbon neutrality 	<ul style="list-style-type: none"> Proving the reduction of maleficence on the environment/human body through using LCA³⁾ products Enhancing the management of chemical substances (research, production) ZWTL⁴⁾ certification 	<ul style="list-style-type: none"> LTIR⁵⁾ < 0.05 Upgrading SHE management system

1) Eco-friendly materials: It refers to r-Copolyester and r-PET products.
 2) GHG type Scope 1: GHG emitted when using fossil fuel (i.e. running a boiler)
 Scope 2: GHG calculated when purchasing electricity, steam, etc. (i.e. using electricity/heat)
 Scope 3: GHG generated outside a work site (i.e. introducing/transporting/disposing raw materials, using a product, etc.)
 3) LCA: Life Cycle Assessment (assessing the harm to the environment and human body)
 4) ZWTL: Zero Waste To Landfill
 5) LTIR (Lost Time Incident Rate): Number of accidents X 200,000 / (total number of employees X number of working days per year X 8 hours)

01 Future-Focused Area Bio/Eco-friendly BM Innovation

1) Resource recycling material is classified as waste reuse and recycling (pollution prevention and control system) among clean technologies (alternative energy, energy efficiency, pollution prevention and control system, water resources, eco-friendly buildings) defined by MSCI (Morgan Stanley Capital International, an ESG evaluation).

Products manufactured with fossil fuels, such as petroleum-based plastics, are widely used in industry and daily life owing to their convenience and applicability. However, fossil resources are being depleted, and large amounts of GHG are emitted in the course of production and disposal. Regulations are also being more tightened on the use of petroleum-based plastic products, including environmental hormones that can give harm on the human body. The EU has mandated the use of recycled plastic in PET beverage bottles (25% by 2025, 30% by 2030), and requires brand owners like L'OREAL to use recycled PET in the 50% of their products by 2025. On the other hand, the 'green technology' of the state management section posted on the green certification site managed by the Korea Institute for Advancement of Technology, the country categorizes green technologies into 10 classifications (102 medium-classifications, 428 small-classifications). Among them, 'new materials' in the green technology sector includes 'natural materials' (PO3G) and 'resource circulation'¹⁾ (ECOTRIA) of our Green Chemical Business. And our Life Science Business' treatments/preventive agents/blood derivatives are classified as 'pharmaceutical materials'. Going forward, we will contribute to the preservation of the environment and the promotion of public health through business model innovation centered on eco-friendly and bio-products, actively responding to the changing market.

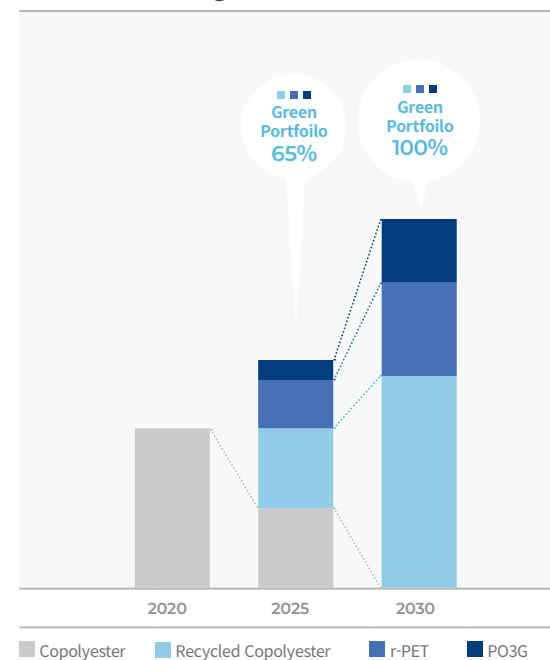
Target

SK chemicals pursues innovation in a bio/eco-friendly business model to actively take the lead in preventing diseases and resolving plastic issues that have been deteriorated by COVID-19 pandemic.

Building a Global Bio-industry Ecosystem | SK bioscience is committed to global public health on the basis of our mission, 'We improve human health, from prevention to cure' and business growth through investment and infrastructure aiming for continuous vaccine development.

Achieving 100% Use of Eco-friendly Materials²⁾ | SK chemicals plans to expand the 'Sustainable Packaging Solution' business by joining efforts of the chemical industry to reduce plastics. As part of the endeavors, we plan to launch 'ECOTRIA CR', which applied chemical recycling technology, in the second half of 2021. On top of that, we have classified products using eco-friendly technologies such as Recycle PETG, Recycle PET, and PO3G into a Green Portfolio while setting a goal to convert 100% of plastic products into the Green Portfolio by 2030.

Green Portfolio Target (Unit: KRW 100 million)



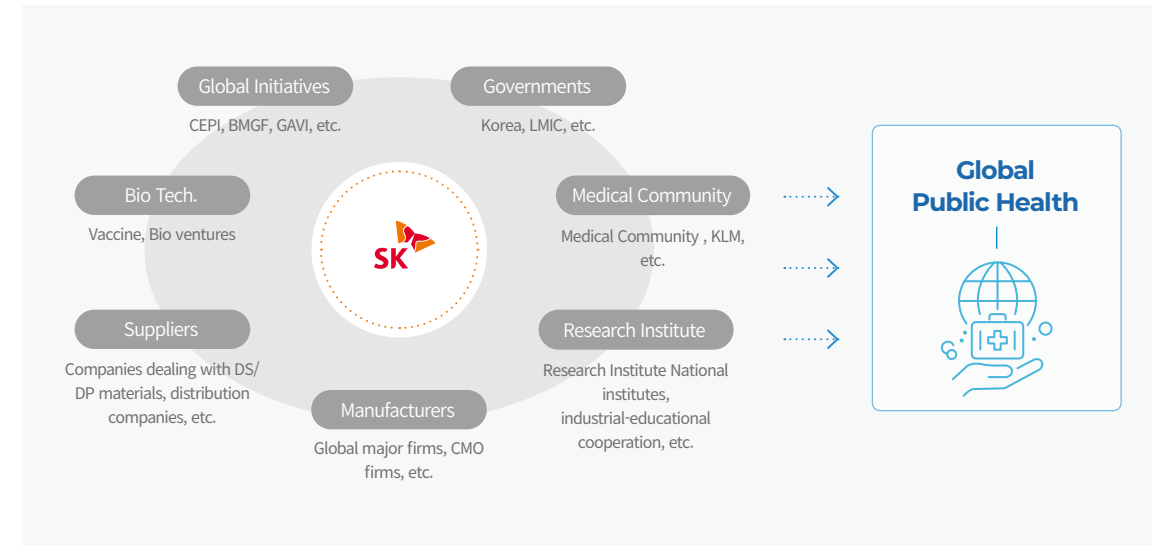
2) Eco-friendly materials: It refers to r-Copolyester and r-PET products.



Activities

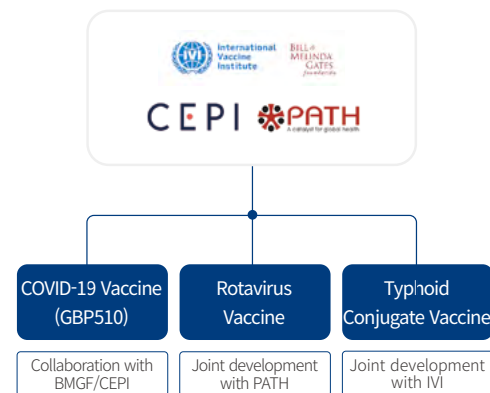
Establishment of Global Bio Industry Ecosystem

Global Biopharma Ecosystem



Business growth and global public health are not 'separate goals' but mutually organic 'common goal' that cannot be parted as each part is closely intertwined, forming a whole. Since there is a limitation to achieving this goal with SK bioscience's sole capability, it is essential to create a Global Biopharma Ecosystem, which is the key to the success of the future biopharmaceutical industry. On top of that, win-win growth in each component is also critical in attaining the goal. For example, local governments including Andong City and Gyeongbuk Provincial Government assist with administrative work, such as rapid approval and issuance of licenses, to attract businesses and support the industrial infrastructure, while SK bioscience makes large-scale investments in local governments for the development of local community and job creation. This cooperative win-win model has established itself as a successful model for shared growth between local governments and businesses. We are also contributing to the national vaccination project by increasing the self-sufficiency rate for basic vaccines in cooperation with the central government. In the emergency situation like COVID-19 pandemic, we actively align with government policies with an aim to overcome the crisis. Furthermore, SK bioscience has established partnerships with BMGF (Bill & Melinda Gates Foundation), CEPI (Coalition for Epidemic Preparedness Innovations), IVI (International Vaccine Institute), and PATH (Program for Appropriate Technology in

Health) based on its advanced vaccine R&D technology and productivity, working on a vaccine joint development project with an objective of improving global public health. We have been also donating a total of KRW 2.5 billion for five years (KRW 500 million per year) to the RIGHT Fund (Global Health Technology Fund), established in 2018 with the aim of promoting global public health. The global R&PD Center, currently being under construction, will accommodate international organizations' coworking spaces and open labs that are freely available. Through this, we further enhance our cooperation in pursuit of the shared goal, promoting global public health.



100% Use of Eco-friendly Materials

Launching ECOTRIA CR, the Recycled Plastic Product | Plastic recycling methods are largely divided into physical recycling and chemical recycling. Unlike physical recycling, in which collected PET bottles are crushed and reused, chemical recycling decomposes polymer plastics chemically and returns them into their initial raw material state for reuse. The chemical recycling technology has two methods: using heat and using organic solvents and catalysts, depending on the plastic materials. This technology enables repeated recycling without deterioration in quality.

SK chemicals' 'ECOTRIA CR' capitalizes on 50% of the raw materials decomposed with chemical recycling technology, while maintaining the unique transparency, appearance, and chemical resistance of copolyester. This allows the usage of materials to be expanded to cosmetic containers, beverage shrink films, and many more that require high functionality and transparency. These products enable us to respond to the changing trends, which come from the regulations on plastic use at home and abroad, with 'Sustainable Packaging Solution (SPS)'. We secure raw materials in partnership with a Chinese plastic recycling company and plan to roll out 'ECOTRIA CR' made through a chemical recycling technology within this year. Ultimately, our goal is to develop 'ECOTRIA CR' made with 100% raw materials decomposed by chemical recycling technology.

Commercialization of biomaterials, PO3G | PO3G is a new material that replaces polyols, using conventional petroleum-based raw materials, with biomaterials. PO3G is mainly used for materials that require elasticity, such as polyurethane and spandex. Therefore, the use of PO3G is growing in the global sports and fashion industry for sneakers and sportswear.

Particularly, SK chemicals' PO3G is a 100% bio-material made from corn. It is softer than existing products, but it has improved elasticity recovery and abrasion resistance, thereby securing comfort-feel to wear and less deformation.

We are currently constructing manufacturing facilities for commercial PO3G production following the approval from the BOD (February 2020).



Under construction of a PO3G facility



ECOTRIA CR

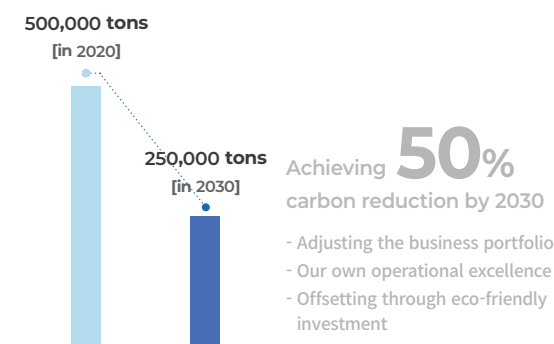
02 Future-Focused Area

2030 Carbon Mitigation by 50%

The climate crisis incurs enormous social and economic costs. The international community is aware of the risks posed by severe climate change and is strengthening environmental regulations. Through the Kyoto Protocol and the Rio Convention in the 20th century in addition to the Paris Agreement in 2015, the international community has put great emphasis on the graveness of climate change while calling for action. Achieving carbon neutrality by 2050, declared by governments and companies around the world, is a shared goal of the international community. And it means a movement to offset the carbon by absorbing greenhouse gases emitted by individuals, companies, and organizations, thereby making it zero. From a regulatory perspective, Europe and the United States are also on the verge of introducing a 'carbon border adjustment mechanism' or 'carbon border tax'. A carbon border tax is a tariff applied when a country with weak carbon emission regulations exports to a country with strong carbon emission regulations. As Korea is highly dependent on trade, it is necessary to closely monitor the rapidly changing international climate policy situation. SK chemicals preemptively responds to climate change for everyone's sustainability, continuing our endeavors to reduce greenhouse gas emissions.

Target

Achieving a 50% reduction in GHG emissions | SK chemicals aims to cut the total amount of Scope 1 emissions, directly emitted by the company, and Scope 2 emissions, indirectly emitted by the company, by 50% compared to 2020 emissions (BAU¹⁾ by 2030.



To achieve this goal, we have reviewed measures to reduce internal emissions and external offsets through eco-friendly investments at the same time, some of which have already been implemented through investment decisions. Going forward, SK chemicals will come up with carbon mitigation plans and put them into action to achieve a 50% carbon reduction (Scope 1&2) by 2030.

1) BAU: Business As Usual. Emissions when the current business environment does not change.

Activities

SK chemicals is about to launch an ESG committee composed of our management executives. The committee addresses ESG-related issues, such as establishing ESG (environmental, social, and governance) strategies and policies, and analyzing the connection and profitability between our core business and ESG. Among them, climate change response and carbon neutrality are the common issues that the world is giving an eye on. SK chemicals is striving to offset the existing emissions by acquiring carbon credits while reducing GHG emissions on the foundation of the adjusted business portfolio covering the existing product lines and product production processes. Through these efforts, we aim to improve energy efficiency in business sites, developing and utilizing eco-friendly technologies. Active movements to realize carbon neutrality are reflected in the entire process from the construction stage to the final operation of the business sites across the country. Setting a GHG mitigation goal in each business site, we monitor and systematically manage direct and indirect emissions to achieve it.

TARGET

2030 Carbon Reduction (Scope 1, 2)

50%

2050 Carbon Neutrality (Scope 1, 2, 3)

100%

ACTIVITIES

01

Modifying Business Portfolio & Internal Reduction through Operational Excellence

02

Carbon Offsets through Green Investment

03

Eco-friendly Business Sites

Activities

Modifying Business Portfolio & Internal Reduction through Operational Excellence

As opposed to Life Science Business which uses a large amount of electric power, Green Chemical Business has a procedure utilizing a lot of heat. Especially, outdated facilities consume more heat during the manufacturing process. Therefore, resolving this issue is closely linked to GHG mitigation. Recognizing the need to shut down old facilities for GHG mitigation and operational efficiency, we make decisions on new business and investment portfolios. Besides, we obtained board approval for the new establishment of a new SKYBON/PEL plant in China (March 2020). As a result of the decision, it is expected that the GHG reduction effect within the company will be seen from 2022.

Carbon Offsets through Green Investment

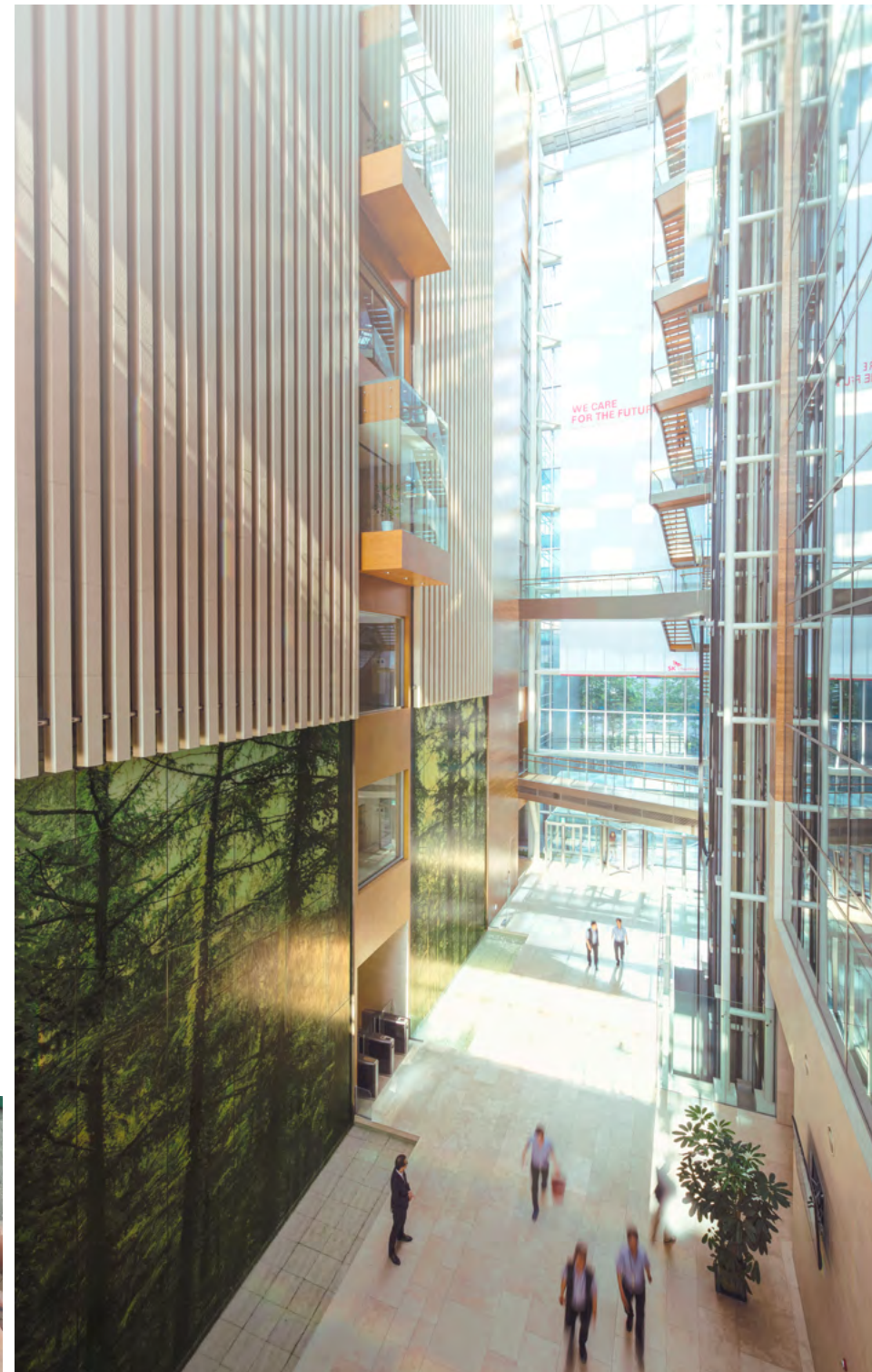
Since the carbon reduction goal cannot be achieved through our activities alone, it is necessary to offset some of the existing GHG emissions by acquiring carbon credits recognized by an accredited institution.

We are reviewing a variety of eco-friendly investments to reduce the total amount of carbon emissions using carbon credits acquired through environment-friendly investments. One of the best practices of them is 'Myanmar Cookstove Project' promoted at the SK Group level.

Distribution of cooking utensils (cookstoves) with lower heat-loss to ordinary households in Myanmar can reduce the consumption of wood, which is the main fuel consumed there. This project has been approved by international organizations, being verified by the Korea Climate Change Center. The carbon credits secured through this project will have a positive impact on our carbon offset efforts from 2023.



Myanmar Cookstove Project



Eco-friendly business site, ECO Lab (HQ)

Eco-friendly Business Sites

SK chemicals minimizes energy consumption, GHG emissions, and water consumption at business sites by incorporating diverse eco-friendly technologies. On the foundation of the company-wide eco-friendly policies, we factor in environment from the construction stage of the business sites. Goals in pursuit of a clean environment are also set for each work site, and we make strenuous efforts to achieve them.

ECO Lab | ECO Lab (headquarters) has applied 101 eco-friendly materials and technologies considering the environmental impact from the architectural design stage. As a result, we could reduce energy by 44%, water resources by 63%, and carbon dioxide emissions by 31%¹⁾ comparing to existing business facilities, which is equivalent to planting 94,000 pine trees annually. In recognition of our achievements, ECO Lab obtained the 1st grade in energy efficiency in the business building sector and the U.S. LEED²⁾ Platinum (highest grade). We also received 1st grade in Korea's GBCC³⁾ by acquiring the highest score at that time.

L HOUSE | We brought in 16 eco-friendly technologies to found L HOUSE (Andong), thereby economizing on energy use by 30%. This achievement in environmental reduction enabled us to win a gold rating from the U.S. LEED for the first time in the world as a pharmaceutical factory. L HOUSE is in compliance with Good Manufacturing Practices (GMP), stringent quality standards applicable to medicine and cosmetics manufacturing, while obtaining OHSAS-KOSHA 18001 certification, the certification for occupational health and safety assessment.

Ulsan Plant | With an aim of optimizing energy use and constantly saving energy, we formed a TF in 2019, and in the following year, Digital Transformation (DT) & Energy part was established. People in charge exchanged opinions on diverse energy saving methods with external experts, which resulted in the cost-saving worth about KRW 1.95 billion by carrying out 22 tasks and a 2.8% reduction in energy cost in 2020 from the target. In 2021, we have produced 11 energy-saving tasks and strived to accomplish them. We expect we can annually reduce energy costs by about KRW 1.4 billion through these efforts.

- 1) Results of joint monitoring with SK ecoplant and the Korea Institute of Civil Engineering and Building Technology in 2011
- 2) LEED (Leadership in Energy & Environmental Design): green building certification in the U.S.
- 3) GBCC (Green Building Certification Criteria): domestic eco-friendly building certification

Energy-saving Tasks in Ulsan Plant

(Unit: KRW 100 million)

Idea	Details	Effects in 2020
Lessening the steam pressure	Decreasing the steam pressure used for heat conservation (reducing steam usage)	1.24
Minimizing underground pipe leakage	Changing old underground pipes	1.39
Reducing electricity usage - Optimized operation of reactors and peripheral facilities	Establishing operation conditions for reactors (reducing energy usage)	0.65
	Optimizing CTA reaction condition using big data	1.19
Introducing optimal process control APC	Reducing additional steam usage by operating it within the condition not affecting the quality	2.47
Utilizing biogas in the anaerobic tank	Utilizing bio-gas emitted from a newly established waste water treatment facility as heat sources for hot oil heaters	1.83
Recovering waste heat from the steam of condensate water	Recovering heat from re-evaporated steam/high-temperature condensate water (recycling it to industrial water)	3.71

03 Future-Focused Area Life Cycle Management

Careless management of chemicals can lead to irreversible damage to the human body and society. In line with the strengthened global regulations on chemical substances (EU-REACH, US-TSCA, Japan-Chemical Substance Control Law, CSCL/law for Pollutant Release and Transfer Register, PRTR and Promotion of Chemical Management, etc.), domestic laws on registration and evaluation of chemical substances were enacted in 2013. As we see the significance of preventing chemical substances from being threats to public health and the environment in advance, a systematic management system for chemical substances is highly required. As part of environmental protection, responsibility for waste generated has also been reinforced. Companies are actively developing waste treatment technologies, such as waste recycling and fuel conversion technologies with an objective to achieve zero waste. SK chemicals evaluates the environmental and human impact throughout the entire production process of our major products, from raw material input, use, to disposal, while focusing on waste reduction and recycling.

Target > Activities

Proving Less Hazard in the Product through LCA | SK chemicals has already obtained US FDA approval for major copolyester products to demonstrate the hazard reduction in our products. Also, 'PO3G', a polyol based on 100% biomaterial has about 20 to 30% carbon dioxide reduction effect compared to existing polyols, proven by Life Cycle Assessment (LCA) conducted in late 2020. We will conduct LCA to evaluate about 12 copolyester products for assessing harm to humans and the environment by 2021.

Reinforcing Hazardous Chemicals Management System | SK chemicals makes strenuous efforts to prevent threats to public health and the environment caused by chemical substances in advance. We have already reorganized the chemical substances management process in line with the Chemical Control Act, the Act on Registration, Safety Control of Dangerous Substances Act, and the Occupational Safety and Health Act. In the early 2021, we are in the process of building a Chemical Management System (CMS) led by the research center. Our plan is to complete the plant's CMS by the first half of 2022. In addition, Material Safety Data Sheet (MSDS), which contains information on chemical substances of all products, is disclosed on our website to help with understanding chemical substance management standards when using our materials in developing products.

Acquiring Waste Recycling Certification | In order to recycle waste generated at our business sites and increase the recycling waste, we are continuously looking for recycling ways in cooperation with a waste collection company. Continuously increasing the recycling rate of waste, we plan to acquire ZWTL (Zero Waste To Landfill) certification for the Ulsan Plant.

Due to the nature of the chemical materials business, we are prepared against potential chemical accidents at all times. Our chemical substance management begins from the moment when raw materials and process materials necessary for production enter the organizational boundaries of SK chemicals. Chemical substance management includes not only the control of the substance itself, but also the management of wastewater and waste generated during the manufacturing process as well as products using chemical substances. In terms of substance management for products, Life Cycle Assessment (LCA) proves that there is no environmental hazard while the approval from the US Food and Drug Administration (FDA) demonstrates that there is no harm to human body. The introduction of the Chemical Management System (CMS) for hazardous chemicals indicates our strong will to protect the natural environment and human body through our stringent management of chemical substances. In the case of wastes, we aim to further achieve a more meaningful waste reduction goal by identifying the actual recycling rate through recycling certification and developing recycling technologies and methods, rather than simply throwing them away.



Activities

Goal Conducting LCA for 12 products by 2021

Demonstrating Product Hazard Reduction through LCA

Preventive Policy against Product/Service Safety Accidents | SK chemicals has prepared and operated a hazardous chemical management system for the safety of products and services, while taking care of S (safety) H (health) E (environment) and Q (quality) so that no issues arise. The management, including the CEO addresses related key issues and makes decisions on them. One of our management criteria is the objective international certifications we received. Following the acquisition of ISO 9001, the international standard for quality management, in 1994, we received ISO 14001 for environmental management in 2005 and ISO 45001 for safety and health management in 2020.

All of the core products of Green Chemical Business pursue eco-friendliness. Our representative products equipped with an environmental element are; BPA-free copolyester, 'SKYGREEN', transparent heat-resistant copolyester 'ECOZEN' containing biomass-derived ingredients, 100% bio-based polyol, 'PO3G', and solvent-free hotmelt product, 'SKYBON EH'.

One of these products, Copolyester used for food contact has been approved by the US FDA. Currently, we are in the progress of LCA to prove that it is a product with reduced potential risks onto human body and environment compared to those of existing products.

T1 Evaluation Areas of LCA Environment and Harmfulness to Human Body

Global warming, destruction of ozone layer, acidification, eutrophication, photochemical smog, terrestrial toxicity, aquatic toxicity, human health, resource depletion, land use, water use

Our product, PO3G is estimated to reduce carbon dioxide by about 20-30% compared to existing polyols, which was proven through LCA at the end of 2020. Currently, LCA is in progress with a focus on copolyester, and evaluation of about 12 products will be completed by 2021.

Social Contribution of Our Products [p.10](#)

Among SK chemicals' products, particularly ECOGEN and SKYBON contribute to society with non-BPA products without endocrine-disrupting chemicals.



ECOZEN | ECOZEN is a modified plastic or an environmentally friendly product made from raw materials extracted from natural products, rather than petroleum. It is known that some plastics release endocrine-disrupting chemicals that have adverse effects on the human body when they come in contact with hot liquids. Our product, ECOZEN does not release bisphenol A (BPA), endocrine-disrupting chemicals harmful to the human body, even when it contacts with hot liquids. Therefore, ECOZEN is utilized in plastic products such as tumblers and kitchen containers for microwave use, which are areas of concern in regard to BPA.



SKYBON | As a chemical company, environmental issues are ineluctable. Putting considerable efforts, we came up with several products to address those problems. A coating agent is one of them among SKYBON products. The European Chemicals Agency (ECHA) estimated the social cost of bisphenol A to be about KRW 20 million per ton.

We will continuously enhance social value through the development of new products that can replace epoxy resins in the can-coating field. On top of that, we strive to develop SKYBON products performing the same functions without using solvents in accordance with the plan to minimize solvents, which are hazardous chemicals.

Goal Zero environmental/safety accidents related to chemical substances Zero violations of laws and regulations

Reinforcing Hazardous Chemicals Management System

SK chemicals has revamped our management process of chemical substances in accordance with Chemicals Substances Control Act, Act on the Safety Control of Hazardous Substances, and Occupational Safety and health Act. Through the reformed process, we deal with chemical substances within our business sites in an appropriate manner. We provide legal and specialized education for our employees on top of workers from partner companies. Inspection or evaluation are also conducted under preventive systems such as emergency management plans and process safety management (PSM). In addition, we continue to carry out swift emergency response training.

With an aim to prevent accidents caused by human error in chemical substance management, an online chemical substance management system is scheduled to be built in 2021. It will enable us to systematically manage all chemical substances flowing into our organizational boundary. For the purpose of preventing environmental safety accidents and complying with laws in the entire processes from purchase request/receipt of chemicals to use/release/disposal, we will establish a chemical management system (CMS) to bolster legal responsiveness and chemical safety along with the purchase portal system. From the purchase request process, we will block any possible risks in advance by thoroughly examining the chemical composition information and legal information of the chemical substances we purchase. In addition, the system will serve as a platform to pull out and manage risk information of the manufactured product by combining the acquired purchase information and legal information with the BOM (Bill of Material) information of the product. Risk information derived through the system will be stored in a material safety data sheet (MSDS) and be shared with customers. We

aim to achieve the goal of zero environmental/safety accidents as well as zero violations of laws and regulations on the foundation of the hazardous chemicals management system.

Classification	Boundaries	Unit	2018	2019	2020
Amount of hazardous chemicals usage	Ulsan Plant	ton	164,150	150,419	132,355

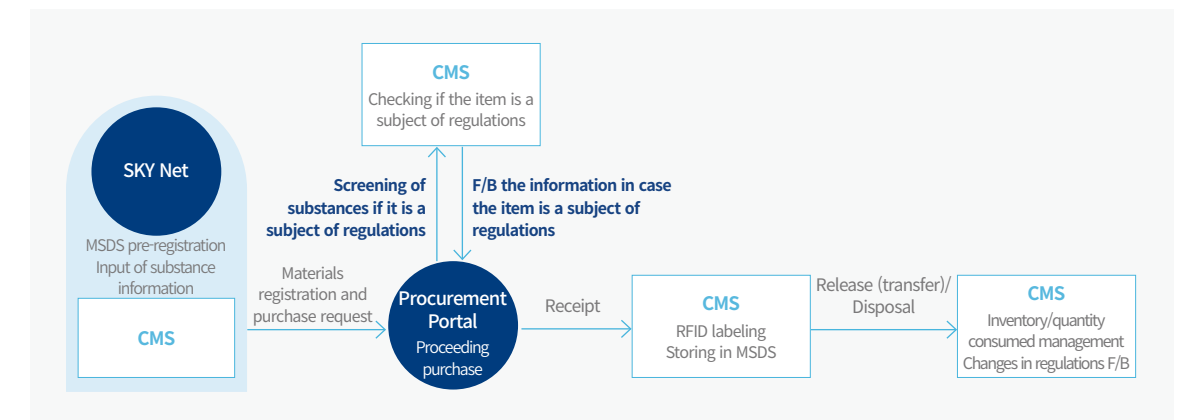
Obtaining Waste Recycling Certification

SK chemicals manages the amount of waste generated and the recycled amount under the resource circulation performance management system of the Korea Environment Corporation (KECO), and reports the results to KECO. In 2020, the waste recycling rate at the Ulsan plant was about 80%. We are cooperating with recycling companies to actively promote the recycling of waste generated from the business site. In the first half of 2021, we plan to find a way to use boiler ash as a building material while supporting recycling companies to invest in facilities and produce building materials. On the foundation of continuous efforts to raise the waste recycling rate, we will acquire a certification from an internationally recognized environment safety organization, Underwriters Laboratory (UL).

ZWTL (Zero Waste to Landfill, UL Korea)

Platinum grade (recycling rate at 100%)
Gold grade (95-99.9%)
Silver grade (90-94.9%)/Certification (80-89.9%)

SK chemicals' Chemical Management System



04 Future-Focused Area Zero Safety Accident in Business Sites

Safety accidents can occur at any time, anywhere, and under any circumstance. This type of accidents cannot be fundamentally prevented by raising the company's safety awareness alone. Hence, the government is planning to implement the 'Company Punishment for Severe Accident Act (Severe Accident Act)' in 2022. It is a bill to criminalize the business owner or the person in charge of management in the event of an occupational accident causing serious casualties at the business site. Since there are differences in major disasters that occur in each industry and different countermeasures are required accordingly, it is required to identify them through systematic diagnosis and to prevent accidents while improving the safety management system. Under the safety, health, and environmental management system, we consider the entire value chain, including business partners, as management targets. Therefore, we actively conduct safety, environmental and health activities so as to prevent and manage accidents by providing safety education and jointly conducting safety inspections.

Target

LTIR to Be Less than 0.05 | SK chemicals will strive to create a healthy and safe workplace with the goal of achieving a Lost Time Incident Rate (LTIR) at less than 0.05 of all employees by 2030. This is calculated on the basis of a condition when one or fewer accident occurs per year with the current number of members.

LTIR¹⁾ < 0.05

- Achieving 'Zero' SHE accident
- Complying with SHE-related laws/Pursuing SHE management beyond the legal requirements
- Establishing a global top-tier SHE management system
- Promoting GHG/pollutant reduction activities continuously

1) LTIR (Lost Time Incident Rate): Number of accidents X 200,000 / (total number of employees X number of working days per year X 8 hours)
*Number of accidents: Number of accidents that require treatment for more than one day among accidents occurred within the organization

Activities

Since the establishment of the SHE (Safety·Health·Environment) management system, SK chemicals has operated and improving the system at the level of SK Group, SK discovery, SK chemicals, and business sites. We regularly diagnose and manage workplace safety while striving to create an environment where safety accidents are thoroughly prevented. In addition, we are making continuous efforts to address the issues by prioritizing accident prevention and building a safety culture as our top priorities. As part of our efforts, we encourage our members to adhere to the Code of Conduct that puts safety first, and share real cases in meetings and workshops in which all parties participate and promote common advancement. Under the employee health promotion policy, diverse programs related to safety and health are implemented, and efforts are being made to strengthen the safety and health of our employees. Furthermore, by tracking safety accidents and disasters that occur within the workplace, we continuously identify the relevant status and come up with solutions for practical improvement.

TARGET
Lost Time Incident Rate
0.05 ↓
Achieving
ZERO in SHE
(Safety · Health · Environment)
accident

ACTIVITIES

- 01 Enhancing the SHE Management System
- 02 SHE Governance
- 03 Safety Inspection and Prevention of Environmental Accidents
- 04 Strengthening Safety and Health of Employees
- 05 Health Management of Employees

Activities

Enhancing the SHE Management System

SHE Management System | Under the SHE¹⁾ mission, 'recognizing people and the environment as the core value and creating a safe and clean environment', we actively protect safety, health, and environment through SHE management understand diverse interests, thereby realizing sustainable management by meeting the needs of stakeholders. On top of that, in order to achieve the SHE mission and target, we plan to establish a Code of Conduct for each position to encourage the participation of all members. The Code of Conduct includes the role of the management, taking the lead of SHE value management and the leader-level leading the SHE change. It also asks the members to voluntarily practice the Code of Conduct. By disseminating the 8 Code of Conduct to employees, we plan to internalize SHE behavior so that it can be voluntarily practiced anytime, anywhere.

1) SHE: Safety-Health-Environment

Goal
Zero SHE accident

Pursuing SHE management beyond the legal requirements

Establishing global top-tier SHE management system

Promoting GHG/pollutant reduction activities continuously

8 Code of Conduct for Members

- Members consider safety as the top priority in their work and must comply with SHE regulations/procedures.
- Members have a sense of ownership in all unsafe conditions and actions on site and take action on their own.
- Taking the initiative and set an example in regard of SHE, leaders give education for members and supervise on-site management.
- During construction/work, thoroughly carrying out safety measures such as risk assessment, installation of protective devices, equipment inspection, and wearing of protective gears.
- Protecting accidents in advance through continuous/repetitive on-site monitoring (DCS monitoring/on-site patrol)
- Reporting accidents and SHE issues immediately, disclosing them in an extremely transparent manner, and taking appropriate follow-up actions
- Complying with regulations/procedures, providing safety training, and supervising on-site management to enhance the SHE management of partner companies
- Suggesting SHE-related improvements in the field at any time, followed by immediate action by the company

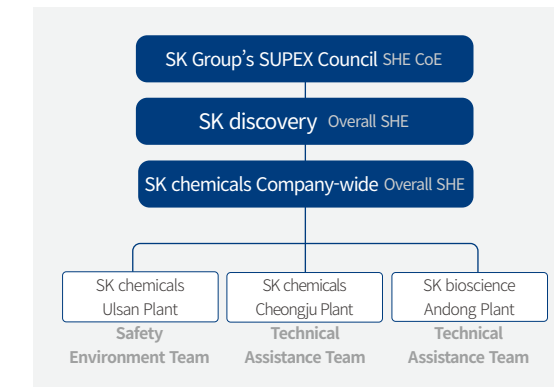


SHE Governance

Built on the management system, SK Group, SK chemicals, and the SHE organization of the business sites have operated and improved the management system at each level. The SHE organization of SK Group supports all affiliates to raise the SHE level. The company-wide SHE department plays the role of coordinator with the business sites dealing with SHE issues affecting the company for the group-wide SHE goals. The SHE departments at the business sites are integral in our SHE management system. They engage in the prevention of SHE accidents at the business site most directly. Every year, internal and third-party inspections are conducted to verify the effectiveness and adequacy of the SHE management system.

Ulsan Plant of SK chemicals holds a joint labor-management occupational safety and health committee, which consists of the same number of employee representatives and business entity representatives. The committee deliberates and decides on major safety and health-related issues. The committee allows us to prevent risks that may occur at work sites while managing the health of our employees.

SHE-related Governance Structure



Safety Inspection and Prevention of Environmental Accidents

Safety Inspection and Management | The safety environment inspection system of the Ulsan Plant consists of monthly SHE diagnosis on each department, theme inspection, weekly situation room inspection, and daily patrol conducted on a daily basis. For the SHE diagnosis on each department, the target department is selected every month and the managers in each SHE field conduct inspections. For the theme inspection, different themes are selected every month, and the entire plant is inspected focusing on the subject. In order not to loosen the safety environment management, an inspection team comprised of one team leader

and two managers is formed to inspect the process. Daily patrol is a safety inspection conducted every morning/afternoon mainly on construction sites inside plants. We manage the items pointed out as a result of the safety environment inspection so that they can be improved 100%.

Our safety inspection system is specified in three areas; regular, focused, and specific inspections. There were a total of 14 regular, focused, and specific inspections during 2020, and once, we conducted a joint inspection with other affiliates of SK Group to detect and improve safety risks from various perspectives. We also carried out field-specific safety management in 2020 after shutting down the entire plant for regular maintenance, special safety training for all employees, and patrolled intensively the construction sites, thereby completing the regular maintenance achieving 'no accident'.

On top of that, with an aim to confirm the safety of sites as well as to comply with regulations related to hazardous chemicals, we conducted an 'off-site risk assessment' on 11 operations including an investment corporate body, ENTIS, and have set the 'hazard management plan' in accordance with the evaluation results.

SHE Inspection on Business Sites

SHE Diagnosis	Monthly diagnosis for selected departments led by each safety/health/environment manager
Theme Inspection	Inspection on a social SHE subject selected considering law revisions and accident cases of other companies
Situation Room Inspection	Formation and operation of a three-person inspection team in preparation for safety risks that may occur on holidays without a manager
Daily Patrol	Daily monitoring on management system, process, facility, and work safety mainly in construction sites conducted every morning and afternoon

Prevention of SHE-related Accidents | Andong Plant actively implements a domestic PSM system to prevent serious industrial accidents, while putting in place a safety work permit system to prohibit risk factors during work in advance. We have prevented safety-related accidents by improving the work environment and conducting regular safety checks through the work risk assessment system and the identification of near misses. Ulsan Plant achieved an accident-free workplace by establishing a safety culture and a safety environment system as a key direction to prevent accidents through discovering risk factors, resolving risks in regard of regulations on safety and environment with compliance management, and improving education and training. We have made strenuous efforts to better the safety management

1) Four PSM ratings: P/S/M+/M-

level in 9 teams and 20 operations through providing training and conducting focused inspections and audits. As a result of these endeavors, we obtained 'S' grade in 2019 from the Ministry of Employment and Labor and the Korea Occupational Safety and Health Agency's PSM¹⁾ (Process Safety Management) out of four grades in PSM. Also, with a risk management plan in regard to chemicals, Ulsan Plant designs and implements external impact assessment and emergency response programs, then notifies related information to nearby residents. SK chemicals is striving to minimize damages in the event of chemical accidents by establishing related measures such as having plans for our own control and notification to residents in the vicinity of the plant.

Strengthening Safety and Health of Employees

Improving Safety Culture in Workplaces | SK chemicals discusses ways to improve safety environment and shares best practices of other business sites through meetings and talks with managers in charge of safety and environment at Ulsan Plant and workshops for managers and operators. Particularly a workshop for operators in charge of safety and process at the worksite plays a significant role in securing safety of operation through discussion on other outstanding cases and elements to be improved.

Through these efforts, we have improved a number of cases; safety boots improvement, prevention of suffocation during operation, installation of slip-resistance on staircase, improvement of surveillance camera for operation, and advancement in identifying and managing wastewater. In addition, we are providing corporate-wide training for newcomers so that they can grasp a better understanding of our SHE management system. We also include office workers in SHE training as they might have a lack of SHE awareness unlike workers in production or research departments where SHE activities directly affect their work, and inform them on how to cope with pandemic diseases and natural disasters.

Safety Inspection on Business Sites

Safety Inspection	Daily inspections on construction sites and dangerous production processes for the prevention of safety accidents.
Safety Audit	Internal audits on ISO and PSM
SHE Performance Evaluation	Clarifying company-wide KPI guidelines to evaluate SHE performance at plants and carrying out process assessment based on objectified data
Industrial Safety and Health Committee	Holding a meeting of the industrial safety and health committee every quarter to share the current status of safety with management and employees, improve safety and health-related issues, and collect opinions

Safety Green Card System	Dividing the level of safety management into a green, red and yellow card at the Ulsan Plant and applying the results to regular maintenance and construction site-related companies
Safety 7 Rules	Applying seven key safety rules to root out safety accidents for employees before entering the Ulsan Plant
Safety and Health Programs for Coexistence and Cooperation	Providing seven in-company suppliers and 30 external suppliers with various safety and health programs, including risk assessment training and joint safety inspection, at the Ulsan Plant

Health Management of Employees

Policy for Promoting Our Employees' Health | SSK chemicals operates a variety of systems to ensure safe work and good health of our employees while striving to prevent diseases. Each business site has a health management center within the company, which focuses on musculoskeletal disorders, stress prevention, and hazardous chemical management for workplace hygiene, health, and safety. As the laboratories handling hazardous chemicals are the subject of special examinations, we conduct special examinations in accordance with legal standards. In addition, safety guidelines within the laboratory are prepared to prevent safety accidents and diseases that may occur from handling chemical substances. SK chemicals supports regular health checkups for all employees, including contract workers. Individual interviews are conducted for employees who are diagnosed with diseases such as diabetes and high blood pressure, and follow-up management is carried out for them on a regular basis. In some cases, job relocation is implemented. On top of that, in order to help manage personal health, we carry out a walking 10,000 steps a day exercise program, a program for quit smoking and an alcohol counseling program introduced in 2019, CPR training, and an escape from obesity program for preventing adult diseases, while providing mental health promotion activities such as stress prevention and happy laughter therapy. In particular, we complied with the government guidelines due to the spread of COVID-19 in 2020 (distributed work system, wearing masks in the company, installing shields in cafeteria, etc.). And at the same time, we provided non-face-to-face mental and physical energy programs and customized programs for members in the workout center with an aim to promote healthy everyday life.

Goal
10% reduction annually in the number of people who have been diagnosed after health check-ups

Participation of Health Promotion Program

Program Name	Unit	2018	2019	2020	Total
Anti-smoking support program		5	1	3	9
Obesity eradication program	Person	14	15	20	49
Walking 10,000 steps a day program		-	32	43	75
Total	Person	19	48	66	133

Medical Checkup Support and Implementation Status

GRI 403-6 Promotion of Worker Health

Classification	Boundaries	Unit	2018		2019		2020	
			Eligible employees	Employee health screening	Eligible employees	Employee health screening	Eligible employees	Employee health screening
Comprehensive medical checkup	Headquarters (ECO Lab)	Person	862	861	560	547	973	941
	Ulsan Plant		241	241	525	522	285	284
	Andong Plant (L HOUSE)		12	12	175	175	31	31
	Cheongju Plant (S HOUSE)		155	155	58	58	159	159
General medical checkup	Headquarters (ECO Lab)	Person	1,009	1,008	767	765	1,137	1,105
	Ulsan Plant		431	431	525	524	498	497
	Andong Plant (L HOUSE)		47	47	94	94	53	53
	Cheongju Plant (S HOUSE)		164	164	155	155	159	159
Special medical checkup	Headquarters (ECO Lab)	Person	168	168	194	194	189	189
	Ulsan Plant		346	346	412	412	407	407
	Andong Plant (L HOUSE)		96	96	121	121	375	375
	Cheongju Plant (S HOUSE)		117	117	125	125	127	127

Safety Accidents and Work-related Damage Status

GRI 403-9 Work-related Injuries

Classification	Boundaries	Unit	2018	2019	2020
No. of accidents*			8	11	12
Death toll	Company-wide	Case	0	0	0
No. of lost days		Day	280	209	73
Lost Time Incident Rate (LTIR)**		%	2.34	3.08	2.94

*No. of accidents: All accidents requiring treatment for more than one day (revised number of cases is disclosed since 2018)

**LTIR (Lost Time Incident Rate): Number of accidents X 1,000,000 / (total number of employees X number of working days per year X 8 hours)

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Environment



Environmental Policy

SK chemicals is doing our best to minimize the environmental load on the earth and to make the working and living environment pleasant and safe. To this end, SK chemicals is achieving a balanced growth between our business and the environment by putting environment and safety one of the top priority in management tasks, and by selecting and implementing core tasks to reinforce related competitive advantage and execution capabilities.

With an aim to provide eco-friendly products and services for stakeholders, we seek for consistent innovation while rationalizing management in areas like production process to cut down energy, greenhouse gasses, and water resources. We have never stopped making efforts to minimize air and water pollutants, raise recycling rate of waste, and create a safe and pleasant working environment. On top of that, we have set up and operated a system for chemical substance management in regard of materials, products, and process, thereby fulfilling our social responsibility. Environmental indicators to be controlled and management goals are also established for systematic management.

Mid- to Long-term Goal by Environmental Index

GHG/Waste/Air Pollutants Target Management

Greenhouse Gases

Classification	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total amount of GHGs emitted		479	397	389	305	227	239	246	249	251	252
Total amount of GHGs directly emitted (Scope 1)	1000 tCO ₂ eq	387	320	314	246	183	193	199	201	203	203
Total amount of GHGs indirectly emitted (Scope 2)		92	76	75	59	44	46	47	48	48	48

Index Management

Waste

Classification	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total amount of waste discharged		27,107	14,810	14,810	14,810	14,810	14,810	14,810	14,810	14,810	14,810
Total amount of waste incinerated/landfilled	ton	4,744	3,854	3,854	3,854	3,474	3,474	3,474	3,474	3,474	3,474
Recycling		22,363	10,956	10,956	10,956	11,336	11,336	11,336	11,336	11,336	11,336
Recycling ratio	%	82.5	74.0	74.0	74.0	76.5	76.5	76.5	76.5	76.5	76.5

Air Pollutants

Classification	Unit	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
NOx	ton	248	117	115	113	110	110	110	110	110	110
SOx		144	0	0	0	0	0	0	0	0	0

Reduction of Energy and GHG

SK chemicals makes continuous efforts to curtail energy consumption and greenhouse gas emissions. Efficient operation reduces the level of energy consumption and the amount of thermal energy generated by utilizing waste materials such as biomass in the process while administering basic unit by managing the intensity level connected with sales figures. Although the amount of renewable energy generated is not significant yet, we plan to participate in K-RE100 (Korea's program to use 100% renewable energy).

GRI 305-1, 2 GHG Emissions

Classification	Boundaries	Unit	2018	2019	2020
Scope 1 emissions	Company-wide	tCO ₂ eq	428,672	388,037	401,603
Scope 2 emissions			103,146	104,130	96,081

GRI 305-4 GHG Emission Intensity

Classification	Boundaries	Unit	2018	2019	2020
Scope 1 intensity ratio	Company-wide	tCO ₂ eq/	31.4	34.9	33.1
Scope 2 intensity ratio		KRW 100 million	12.2	9.4	7.9

GRI 301-1, 2, 3 Materials Used by Weight or Volume

Classification	Boundaries	Unit	2018	2019	2020
Materials used by weight or volume	Ulsan Plant	ton	508,283	439,381	498,666
	Andong Plant (L HOUSE)		305	340	374
	Cheongju Plant (S HOUSE)		2,439	1,120	543

GRI 302-1 Energy Consumption within Company

Classification	Boundaries	Unit	2018	2019	2020
Coals	Company-wide	ton	151,362	138,785	144,471
Waste wood		ton	64,558	67,947	71,605

GRI 302-1 Energy Consumption within Company

Classification	Boundaries	Unit	2018	2019	2020
Gasoline	Company-wide	kl	10	40	48
Diesel		kl	44	102	68
Biodiesel and synthesis gas		ton	2,815	2,952	1,404
LNG		1000m ³	11,819	16,570	16,287
LPG		ton	32	4,709	29
Biogas		ton	10,686	9,565	10,203
Electricity		MW	160,920	253,937	226,083
Steam		TJ	71	105	742
Propane		ton	13,111	7,548	7,376
Process waste heat		TJ	50	86	0
Limestone		ton	3,431	3,742	4,104
SF ₆	kg	900	0	900	

GRI 302-1 Power Generation Using Renewable Energy

Classification	Boundaries	Unit	2018	2019	2020
Solar heat	Headquarters	MWh	8.4	7.8	8.8
Geothermal heat	(ECO Lab)	Gcal	36.2	69.6	0.0

GRI 302-2 Energy Consumption Outside Company

Classification	Boundaries	Unit	2018	2019	2020
Electricity	Ulsan Plant	TJ	1,123	474	170
Heat			3,132	2,687	2,384

GRI 305-6, 7 Intensity of Air Pollutants Discharged

Classification	Boundaries	Unit	2018	2019	2020
Dust	Ulsan Plant	mg/Sm ³	4	4	4
	Andong Plant (L HOUSE)		-	-	0
	Cheongju Plant (S HOUSE)		3	3	4
Sulfur oxide (SOx)	Ulsan Plant	ppm	39	28	16
	Andong Plant (L HOUSE)		-	-	0
	Cheongju Plant (S HOUSE)		0	0	0
Nitrogen oxide (NOx)	Ulsan Plant	ppm	56	66	36
	Andong Plant (L HOUSE)		-	-	0
	Cheongju Plant (S HOUSE)		64	48	65
Volatile organic compound (VOCs)	Ulsan Plant	ppm	1	0	1
	Andong Plant (L HOUSE)		-	-	0
	Cheongju Plant (S HOUSE)		18	78	85

Water Resource Management

The SK chemicals' Ulsan Plant sources raw water of Nakdonggang River from Korea Water Resources Corporation and Cheongju Plant sources wide area water from Korea Water Resources Corporation (Daecheongho Lake). SK bioscience (Andong Plant) is supplied water from Andong Purification Plant sourced from Andongho Lake.

Water Resource Policy | As part of measures to lessen water usage, SK chemicals keep cutting back the amount of wastewater discharged by reusing some of it that is discarded after use in the production process. Effluent is processed in the optimized wastewater treatment system before discharging so that it does not affect the water ecosystem, thereby we comply with legal standards in terms of discharging wastewater.

GRI 303-2 Management of Water Discharge-related Impacts

Classification	Boundaries	Unit	2018	2019	2020
BOD	Ulsan Plant		1	1	1
	Andong Plant (L HOUSE)		107	81	118
	Cheongju Plant (S HOUSE)		1	3	10
COD	Ulsan Plant	ppm	18	16	14
	Andong Plant (L HOUSE)		64	58	54
	Cheongju Plant (S HOUSE)		13	17	47
SS	Ulsan Plant		2	2	2
	Andong Plant (L HOUSE)		36	65	109
	Cheongju Plant (S HOUSE)		11	10	29

GRI 303-3 Water Withdrawal, GRI 303-5 Water Consumption

Classification	Boundaries	Unit	2018	2019	2020
Total water consumption	Headquarters (ECO Lab)	ton	55,316	69,470	70,351
	Ulsan Plant		8,645,644	7,426,416	7,131,235
	Andong Plant (L HOUSE)		97,863	104,573	86,683
	Cheongju Plant (S HOUSE)		49,957	50,671	45,075
Total water withdrawal and consumption from underground, recycled, and reused	Headquarters (ECO Lab)	ton	3,236	3,633	2,654
	Ulsan Plant		3,647,881	3,147,872	2,995,905

303-4 Water Discharge

Classification	Boundaries	Unit	2018	2019	2020
Total water discharge	Headquarters (ECO Lab)	ton	27,363	32,095	31,976
	Ulsan Plant		961,637	992,370	1,017,124
	Andong Plant (L HOUSE)		64,270	72,283	86,683
	Cheongju Plant (S HOUSE)		24,281	29,974	23,779

Diminution of Wastewater and Reuse of Recovered Resources

SK chemicals recovers materials from wastewater and reuses them with an objective of relieving environmental load required for disposal of wastewater while curtailing wastewater generation to save water resources.

Wastewater Reduction through Steam Ejector Installation | We installed a steam ejector to replace direct water injection system with heat exchanger indirect cooling system since the direct system generates a large quantity of wastewater and VOCs. The steam ejector helps us reduce waste water and organic compounds in great quantities. In detail, the amount of wastewater generated is decreased by 80% from an average of 300 to 60 tons a day. Likewise, the installation of the device enables us to fundamentally resolve the emission of organic compounds which induces odor and air pollutions possibly leading to legal and environmental issues. SK chemicals plans to invest a total of KRW 1 billion in additional seven steam ejectors to spread a circular economy and continue to discover ideas for new environmental value creation and execution of them.

Recovery and Recuse of Methanol in Wastewater | We recover and recycle 392 tons of methanol, which flows into wastewater from the cyclohexane dimethanol (CHDM) production process, to prevent the discharge of toxic chemicals into water systems in the vicinity. The water quality conservation act categorizes methanol as hazardous chemicals. Unprocessed methanol has adverse impacts on nearby water systems and even the process of wastewater, incurring additional cost. To solve this issue, SK chemicals installed a heat exchanger within the CHDM production process in 2019 so as to condense methanol contained in wastewater into the form of steam to recover. Recovered methanol gases are used as materials for DMT. By doing so, we expect the saving of KRW 324 million a year of 2020 as well as the diminution in the cost of wastewater disposal.

Waste Management

Over 30,000 tons of waste is generated yearly in SK chemicals. However, we try our best to recycle waste so that it is not scrapped as it is by discovering waste recycling companies. Recently, the waste recycling rate has shown 77-84%, and we plan to gradually increase the rate by putting more efforts and interest into waste recycling. ZWTL (Zero Waste To Landfill, UL Korea certification), a third-party verification is also considered to be introduced to receive the recycling rate of waste objectively.

GRI 306-3 Waste Generated

Classification	Boundaries	Unit	2018	2019	2020
Amount of generated regular waste	Ulsan Plant	ton	27,986	24,562	25,302
	Andong Plant (L HOUSE)		134	186	302
	Cheongju Plant (S HOUSE)		153	186	168
Amount of generated designated waste	Ulsan Plant	ton	7,408	7,152	7,954
	Andong Plant (L HOUSE)		79	92	53
	Cheongju Plant (S HOUSE)		1,852	2,173	2,073

GRI 306-4 Waste Diverted from Disposal, GRI 306-5 Waste Directed to Disposal

Classification	Boundaries	Unit	2018	2019	2020
Incineration	Ulsan Plant	ton	407	388	673
	Andong Plant (L HOUSE)		169	182	207
	Cheongju Plant (S HOUSE)		1,952	2,301	1,753
Reclamation	Ulsan Plant	ton	7,139	4,523	6,022
	Andong Plant (L HOUSE)		0	0	0
	Cheongju Plant (S HOUSE)		0	0	0
Recycling	Ulsan Plant	ton	27,396	26,765	26,561
	Andong Plant (L HOUSE)		44	96	149
	Cheongju Plant (S HOUSE)		65	72	488
Marine emissions	Ulsan Plant	%	0	0	0
	Andong Plant (L HOUSE)		0	0	0
	Cheongju Plant (S HOUSE)		0	0	0
Recycling ratio	Ulsan Plant	%	77	84	80
	Andong Plant (L HOUSE)		26	35	44
	Cheongju Plant (S HOUSE)		3	3	22

Investment in the Environment and Law Abidance

With an aim to invest in environment-related facilities and to deliver better results from environmental management, we classify management sectors into air, water, odor (including VOC), noise and vibration, waste, soil, toxic substances, and environmental technology development. Each sector is systematically managed in terms of its own investment details and refinements in order to make efficient investments. Total investments in the environment in 2020 amounted to approximately KRW 2.29 billion. The invested amount in 2018 was particularly large because we newly built a backup waste treatment facility owing to the fact that we could not comply with legal standards with the previous wastewater processing capacity in case the amount of waste increases following the expansion of production facilities. We have abided by laws and regulations related to the environment so that no case of violation will occur.

GRI 306-1, 2 Environmental Investment

Classification	Boundaries	Unit	2018	2019	2020
Environmental investment	Headquarters (ECO Lab)	KRW 100 million	0.0	0.0	0.0
	Ulsan Plant		147.2	30.4	22.5
	Andong Plant (L HOUSE)		0.0	0.0	0.0
	Cheongju Plant (S HOUSE)		0.6	0.3	0.4

GRI 307-1 Non-Compliance with Environmental Laws and Regulations

Classification	Unit	2018	2019	2020	
Violation of environmental laws and regulations	Punishment exceeding fines	No. of incidents	1	1	0
		Amount	KRW 1 million	2.0	0.5
	Fine (More than USD 10,000)	No. of incidents	1	0	0
		Amount	KRW 1 million	2.0	0.0

ESG Fact Book 02

Society



Our Members

Employee Status

GRI 102-8, 405-1 Total Number of Employees by Genders, Employment Type

Classification	Boundaries	Unit	2018	2019	2020
No. of employees	Male	Person	1,529	1,588	1,751
	Female		410	438	566
No. of employees by employment type	Full-time employees	Person	1,898	1,961	2,035
	Contract-based employees		41	65	282
Composition of executives	Male	Person	34	29	27
	Female		1	1	1
	Ratio of female executives		%	2.9	3.3
Composition of managers	Male	Person	188	190	171
	Female		12	15	36
	Ratio of female managers*		%	6.0	7.3

*Ratio of female managers: Number of female managers / total number of managers X 100

Employee Status by Business Site

GRI 102-8, 405-1 Total Number of Employees by Plants

Classification	Boundaries	Unit	2018	2019	2020
Male	Headquarters (ECO Lab)	Person	797	832	851
	Ulsan Plant		487	496	463

Classification	Boundaries	Unit	2018	2019	2020
Male	Andong Plant (L HOUSE)		140	156	329
	Cheongju Plant (S HOUSE)		105	104	108
Female	Headquarters (ECO Lab)		286	307	329
	Ulsan Plant		24	26	28
	Andong Plant (L HOUSE)		41	43	145
	Cheongju Plant (S HOUSE)		59	62	64
Full-time employees	Headquarters (ECO Lab)	Person	1,055	1,103	1,134
	Ulsan Plant		508	518	486
	Andong Plant (L HOUSE)		177	178	250
	Cheongju Plant (S HOUSE)		158	162	165
Contract-based employees	Headquarters (ECO Lab)		28	36	224
	Ulsan Plant		3	4	46
	Andong Plant (L HOUSE)		4	21	5
	Cheongju Plant (S HOUSE)		6	4	7

Employee Composition by Type

GRI 405-1 Composition of Employees_Diversity of Employees

Classification	Boundaries	Unit	2018	2019	2020
No. of disabled employee hired			20	19	43
No. of patriots and veterans hired	Company-wide	Person	36	33	33
No. of foreigners hired			2	0	0

Recruitment and Change of Jobs

GRI 401-1 Total Number and Rates of New Employees and Employee Turnover_Number of Retirees and Turnover Rate

Classification	Boundaries	Unit	2018	2019	2020
No. of new employees hired	Male		93	108	159
	Female		53	58	80
No. of retirees	Male	Person	60	86	117
	Female		37	43	36
	Total		97	129	153
Turnover rate	-	%	5.0	6.4	6.6

Parental Leave

GRI 401-3 Parental Leave

Classification	Boundaries	Unit	2018	2019	2020
Male	No. of employees who took maternity leave	Person	3	3	7
	No. of employees who returned after maternity leave		2	2	7

Goal
Achieving over 80% in the level of employee satisfaction

Work and Life Balance

Policy for Work-Life Balance | For raising the satisfactory level of work and the quality of life underpinned by the balance between work and life, we have been equipped with a variety of support system. Our support encompasses smart work environment such as working from home and various welfare systems including voluntary and ensured holidays and support for activities related to our employees' health, house, childcare, hobby and leisure. With the purpose of growing into a family-friendly company, we also help our members prevent career disruption and develop capabilities for themselves. After conducting a satisfaction survey on a regular basis for our members, we derive the implications contained in the results of the survey through analysis of the responses. The implications drawn from the survey will be used as the ground for future improvement tasks or program supplementation.

Holiday System | Besides, employees are encouraged to take a long-term leave for two weeks or more and the date of joint annual leave is designated, aiming to ensure employees' stable holiday. A family care leave is also strongly recommended. Family care leave was institutionalized so that it can be used when care is needed for family members in case of diseases of parents, spouses, and children, accidents, old-age, and child-rearing. Particularly in 2020, the use of family care leave was more actively encouraged in case there is a child in need of care due to COVID-19. Clearly identifying the number and cause of grievance-handling reports that occur in the workplace, we share them with all employees. We make efforts to create a workplace that is conducive to work with the ultimate goal of having no reports of grave negligence (abuse of power, sexual harassment, violation of laws) by reducing the number every year. Every year, we polish these holiday systems based on employee satisfaction survey, targeting above 80% in satisfaction level.

Welfare System | We are implementing a variety of welfare systems making our employees happier at work and more comfortable in life.

Classification	Contents
Financial Support	Supporting transportation fee, welfare points
Health Management	Providing regular health check-ups, medical fee (including fees for spouses), and organic food, operating a health care center and a corporate dental clinic
Residential Support	Offering loans for lease or purchasing a house and residential expenses for regional workers
Family and Children Support	Discretionary payments and holidays for family events, maternity leave, parental leave, day care center, tuition of children
Hobby and Leisure Support	Supporting condominiums, fitness center, internal club activities
Others	Rewards for long-service

Work Flexibility | For the purpose of striking balance between work and life, we put in place staggered work hours so that our employees can freely adjust their start and end working hours in consideration of the nature of each division and work. We also prepared a certain number of days for communal annual leave for enabling our employees to spend time with their families or for self-improvement. Furthermore, a variety of systems such as monthly-based optional work system and PC alarm are introduced or being operated to promote a flexible and efficient work culture. We regard the time spent outside the business sites as working hours for sales department with an aim to give them more flexibility to adjust their working hours. In 2020, a working from home system is all the more promoted owing to the special circumstances, the spread of COVID-19. As we make working from home obligatory for the protection against virus infection, we could also fully put 'Smart Work (working regardless of place)' into action, which was only on the planning stage, thereby we could secure flexibility of both time and place.

Classification	Boundaries	Unit	2018	2019	2020
Female	No. of employees who took maternity leave	Person	30	29	20
	No. of employees who returned after maternity leave		19	19	15
Male	No. of employees who have worked for more than 12 months since returning to work (Ratio)	Person (%)	0(0)	2(100)	3(43)
Female	No. of employees who have worked for more than 12 months since returning to work (Ratio)		11(58)	20(100)	10(67)

Goal
Zero reports on human rights-related grave negligence

Family-friendly Support | We have put our efforts into the establishment of various systems to make a culture of balanced work and life. For instance, we ensure that employees being pregnant or having young children are granted shortened workhour system for one year, childcare leave for up to one year, and 10 days of spouse childbirth leave. In addition, workplace nurseries are operated to prevent our employees from career break. In order to alleviate burdens of child rearing and to improve economic stability of each family, we assist in housing fund, school expenses of children, congratulatory money for children's entering school. Four-day condominium voucher is also offered to our employees so that they can spend their leisure time with their family members.

GRI 201-3 Defined Benefit Plan Obligations and Other Retirement Plans

Classification	Boundaries	Unit	2018	2019	2020
Size of retirement pension plan (Defined Benefit, DB)	Company-wide	KRW 100 million	978	1,162	1,270
No. of employees covered by the retirement pension plan (Defined Benefit, DB)		Person	1,556	1,637	1,666

Human Rights Management

Policy on Human Rights Protection | Taking precautions against direct or indirect human rights contravention in the workplace and human rights infringement derived from business relations, we set up a number of HR rules, SHE regulations, code of ethics, code of conduct for business partners and strictly comply with them in our management activities. To this end, solution channels for grievance at the workplace are operated in corporate culture department while education, counselling, and handling process regarding harassment at work are put in place as well. After clearly identifying the number and cause of grievance-handling reports that occur in the workplace, we share them with all employees. We make efforts to create a workplace that is conducive to work with the ultimate goal of having no reports of grave negligence (abuse of power, sexual harassment, violation of laws) by reducing the number every year.

Sexual Harassment Prevention | We provide education on sexual harassment prevention for our employees in order to prevent sexual harassment at the workplace and raise gender-related human rights awareness. The online education on sexual harassment prevention is conducted once a year for all members and the new and experienced employees are subject to education every year as well. If any internal incident related to sexual harassment is reported through an ethics management reporting channel, HR team and compliance team initiate an investigation, rigidly responding to those issues occurred internally by imposing dismissal, demotion, cutting wage, suspension, or relocation of department toward a perpetrator whose inappropriate deed is proved. Through this process, all our employees including the CEO put our all-out efforts to prevent internal sexual harassment, with an objective of zero sexual harassment in the company by 2025.

Labor Union Membership Status

GRI 402-1, 403-1, 4 Current Status of Labor Union and Labor-Management Consultative Body

Classification	Boundaries	Unit	2018	2019	2020
No. of persons with membership of labor union and labor-management consultative body	Company-wide	Person	520	608	421
Ratio of membership of labor union and labor-management consultative body		%	27.7	31.0	28.1
No. of meetings of labor management consultative body		Times	4	4	4

Evaluation and Reward

Fair Evaluation and Reward System | Since 2001, SK chemicals has operated an IT-based Performance Evaluation & Coaching System (PECS). We conduct quarterly assessment and give feedback to assist our employees in attaining their goals while furnishing coaching from the perspective of talent nurturing through absolute evaluation. Also, we have been equipped with a systematic reward system by achievement of each employee, offering monetary reward such as base pay, bonus pay, performance-related pay on top of non-monetary reward such as pride, sense of accomplishment, and acknowledgement.

GRI 404-3 Ratio of Employees Receiving Regular Performance Review

Classification	Boundaries	Unit	2018	2019	2020
No. of employees eligible for regular performance review			1,270	1,337	1,418
No. of employees who received regular performance review	Company-wide	Person	1,175	1,254	1,317
Ratio of employees who received performance review		%	92.5	93.8	92.9

GRI 405-2 Percentage of salary by gender and position*

Classification	Boundaries	Unit	2018	2019	2020
Administrative Position**	Company-wide	Rate	1.07	1.17	1.33
Non-supervisory Position	Company-wide	Rate	1.32	1.28	1.25

*Rate of average regular wage of male employees to that of female employees

**Administrative position: Above manager position

Education and Talent Development

Cultivating Top Talent | All members of SK chemicals are able to receive a variety of opportunities to develop knowledge and skills required to perform their duties. In particular, the employees who are selected as top talents through a fair process and in-depth discussion have opportunities to sharpen high level of capabilities in schools and professional training institutions in and outside Korea. They can also receive financial assistance required for the period of education and training so that they can solely concentrate on the competence development.

Assistance System for Acquiring Degree or Certificate | We operate an assistance system to obtain academic degrees or certificates for upgrading the work-related expertise of our employees. Aiming at encouraging them to become recognized experts in the field, we lend support to educational expenses for acquiring degrees or certificates after going through a selecting process.

Self-development Programs | At SK chemicals, it is possible for employees to design and operate their own competency development program called IDP (Individual Development Program) and to develop their own career with CDP program (Career Development Program). IDP is classified into a total of 45 jobs (5 jobs in the marketing group, 11 jobs in the production group, 11 jobs in the R&D group, and 18 jobs in the management support group). Individual members can design how their capabilities will be developed and how they will be evaluated by the achievement level of their own development plan. Employees design the CDP program and participate in it by selecting a desired job among the jobs in the IDP or the common job categories that they would like to develop for their professional expertise or job transfer.

GRI 404-1, 2 Training Hours and Investments for Employees

Classification	Boundaries	Unit	2018	2019	2020
Annual average training hours per employee		Hour	244	54	28
Annual average training costs per employee		KRW	1,254,969	1,395,820	1,212,983
Total training hours	Company-wide	Hour	533,930	114,144	65,350
Total amount of investments in employee training		KRW 100 million	28	29	29

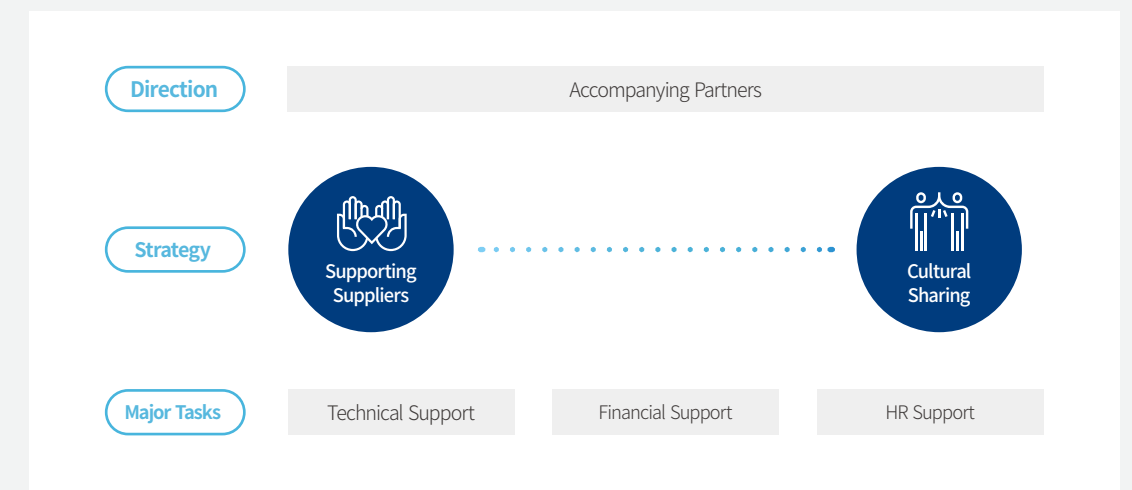
*Data from internal training programs for employees of Life Science Business is not counted in 2019 performance.

Shared Growth

Goal
Zero number of violations of company regulations related to subcontracting

Shared Growth System

Policy to Support Partner Companies | Zero number of violations of company regulations related to subcontracting SK chemicals aims to qualitatively improve mutual technological competitiveness through continuous collaboration with our partners while working hand in hand to solve social problems. By fulfilling SK's basic philosophy, 'pursuit of happiness with stakeholders', we are making every effort to promote shared growth with suppliers and spread a fair-trade culture on the foundation of a corporate culture of fair trade, safety, and ethical management. As for support for suppliers, we assist in sharpening the competitiveness of our suppliers with practical benefits such as technical, financial, and human resources support. The recommendation of the Fair Trade Commission is included in our company regulations (refer to internal regulations in conjunction with subcontract), specifying the action items including conclusion of a contract, selection of a supplier, operation of an internal deliberation committee. We cooperate with our partner companies with an objective of making zero case of violating concerning regulations. In 2020, we updated the list of excellent partner companies in 2020 reflecting the transaction performance and evaluation results of 2019 so as to provide support programs for each partner company. We plan to update the list in 2021 to offer support programs for each partner.



Programs for Mutual Growth with Partner Companies

SK Shared Growth Fund | Since 2013, we have raised and continuously managed SK Shared Growth Fund to help our partners and suppliers run their businesses in a smooth and stable manner. SK Shared Growth Fund allows our suppliers to secure funds required for their operation and facilities at a lower interest rate than that in the market. In 2020, an amount of KRW 7.5 billion was managed for the fund and about KRW 1.9 billion went to a total of 7 partner companies to assist them.

Subcontract Payment | For the convenience of our suppliers, we implement the policies to pay out cash for subcontract payment and make payments in the shortest period. Depending on the amount of the payment, we pay out cash within 10 to 50 days after issuance of the tax invoice so that our suppliers can practice stable business activities through smooth fund management.

Advance and Middle Payment | We operate a policy of advance and middle payment for suppliers to manage their cash flows. Partners supplying equipment materials or construction can apply for advance or middle payments and they can receive in cash so that they have no difficulty in supplying or proceeding with their work.

GRI 203-2 Mutual Growth Cooperation with Suppliers

Classification	Unit	2018	2019	2020
Amount of Shared Growth Fund for suppliers	KRW 100 million	75	75	75
Total amount of loans for suppliers		25.4	20.1	19.0
No. of suppliers with loans		7	8	7
No. of partners with temporary or permanent shutdown transactions	Number	3	0	2

GRI 102-9 Total Number of Business Partners Managed

Classification	Boundaries	Unit	2018	2019	2020
No. of business partners that are registered and managed	Company-wide	Business partner	954	962	1,028
Total procurements from business partners		KRW 100 million	7,825	7,273	7,391

Enhancing Partners' Competitiveness

SK chemicals help our partner companies secure top level competencies through supporting diverse programs such as online or offline training programs, seminars, and joint development.

Education for Higher Competitiveness | We strive to create substantive social values for our partner companies. To do so, we furnish various education programs such as 'shared growth e-learning', 'online training', 'SK shared growth MBA', and 'shared growth CEO seminar', thereby contributing to reinforcing the competitive edge of our suppliers. Particularly since 2017, the scope of those subject to educational programs were expanded, including SK group's Shared Growth Academy, SK Shared Growth MBA for top talents, and Shared Growth E-learning for entire employees, which were established in 2006. Shared Growth CEO Seminar was newly initiated for CEOs of our partner companies. In 2020, the Shared Growth CEO Seminars were changed to non-face-to-face from group-gathering type due to COVID-19. The Shared Growth MBA for top talents is temporarily suspended as it has to be conducted in person, but we are preparing a new type of education in combination with CEO Seminars in 2021. Meanwhile, the CEO Seminars in 2020 was joined by 24 CEOs of our partner companies.

Providing Safety Training | With an aim to elevate the level of safety management of our partners, we implement collective safety training twice a year for free. The first training is for managers of partner companies and the second one is for the entire members of them. The contents of the training include safety accident prevention, related laws and standards, SK chemicals' internal safety regulations, and emergency response system. In addition, the suppliers' council held every month shares and educates them on the regulations and internal standards to be changed and recent accident cases to the representatives of partner companies.

Joint Development and Benefit Sharing | SK chemicals is taking the lead in shared growth with SMEs by conducting cooperative research and business development with them who have advantages in various areas using PETS and ECOZEN. For instance, the eco-friendly Wood Plastic Composite (WPC)* jointly developed with Dongha is recognized one of the successful cases in shared growth between large company and SME. We transferred our copolyester material owned by us and our compounding technology to Dongha, a company specialized in synthetic wood, and closely cooperated from the stage of development, thereby successfully developing an environmentally friendly material which acquired excellent grade in procurement with more superb property compared to the existing synthetic wood. This material is exceptional in water-resisting quality and durability having few deformation derived from external temperature changes with 50 percent higher weight tolerance than earlier products, thereby it can lower the expenses for construction and maintenance. Thanks to this profile, the eco-friendly WPC can be utilized in outdoor decks of mountain trails and bike roads.

In 2018, SK chemicals participated in 'ANTEC 2018', the largest conference in the plastic field held in Orlando, Florida in the U.S. in 2018 with Dongha, and drew attention from the industry. Together with Dongha, we are further pushing ahead the global market entrance as well. Recently, we are working on the application of WPC into the use of cosmetics in collaboration with our cosmetic clients while recycling waste by developing 'coffee wood composite' capitalizing on waste coffee grounds instead of traditional material, wood.

*Eco-friendly wood: Product manufactured by blending waste plastic and wood

Goal
ESG evaluation of target partner companies 100% completed by 2025

Customer and Product Responsibility

ESG Evaluation of Suppliers for Shared Growth | We will hire external institutions to identify the ESG management status of our partner companies based on the global guidelines and will gradually apply the results of ESG risk evaluation of our major suppliers into our procurement decisions as a long-term procurement policy. The ESG evaluations of 84 partner companies are underway in collaboration with Nice Information Service, a provider of credit information, and Quantified ESG, Inc., a company specialized in ESG assessment. As of May 2021, the ESG evaluations have been conducted toward 16 partners. Our goal is to complete the ESG assessments of target partner companies 100% completed by 2025.

Creating an Win-win Environment

Building an Win-win Environment with SMEs | We have provided steam for SMEs adjacent to the Ulsan Plant since 2004. SMEs had a financial burden for steam as it takes a certain scale of steam generators for securing steam by themselves as well as extensive human and material resources for steam maintenance. Under the circumstances, we resolved the SMEs' concerns over investment cost and fixed expenses by providing steam for those in the vicinity of the Ulsan Plant. In return, we can reduce our fixed expenses by selling surplus steam. This steam supply and demand is a case in point for shared growth having mutual benefits.

Customer Satisfaction

Green Chemicals Biz.

SK chemicals developed a Customer Relationship Management (CRM) system to raise the efficiency of customer and grievance management and to ensure the reliability and stability of our products. We have expanded the scope of operation into the whole Green Chemicals Business since July 2018 and continuously upgraded the system to keep it optimized.

Our objective is to integrate the information provided to customers in the past such as technical support and sample production history by linking the operation of CRM system and ERP system. Through the customer management system, Green Chemicals Business efficiently accept and swiftly handles customer companies' difficulties, complaints, and grievances regarding the use of products and processing errors. On top of that, making integrated data in the database is managed statistically by period, followed by the regular report of it to each person in charge of marketing, production, research, and quality management departments as well as to CEO so that the statistical data can be actively reflected in the quality improvement of our products.

Life Science Biz.

Life Science Business of SK chemicals operates 'Voice of the Customer (VOC)' mainly led by our customer service center. The VOC is a process ranging from grievance acceptance stage receiving difficulties in the usage and complaints of medical product defects to settlement in accordance with the handling regulations. With the reasonable VOC process, we strive to seek for steady reliability from our customers. All submitted complaints and handling trails are recorded and managed in the grievance database, and the consulting contents and settlement details are reported every month to the persons in charge of marketing, production, research, and quality management teams as well as the CEO in line with our monthly statistics reporting system in order to apply them into the quality improvements in our medicine, packaging, and other areas. LS Biz. makes our strenuous efforts in customer satisfaction with an aim to turn complaints into more developed and quality products.

Classification	Unit	2018	2019	2020
The annual number of grievances accepted and processed in the DB	Case	58	46	51

Quality Management System

Green Chemicals Biz.

Establishment and Operation of Quality Management System | SK chemicals newly formed a QA team in October 2018 to enhance the quality management capabilities and establish related process and system comprehensively through QA and toll processing in the entire plant. The quality management process has been systematically realigned and managed under the leadership of QA team since 2019, and our global standard level quality management system is proven by a number of certifications: Ulsan Plant's ISO 9001 (certified in 1994), renewal of 2015 quality management system certification, new compound plant's IATF 16949, and 2016 automobile quality management system conformity certification. On top of that, we trace and track the products taking advantage of a barcode system and an automatic releasing system, thereby minimizing the customer complaints. The goal of Ulsan Plant's quality management organization is to make zero claim and complaint from our clients.

Life Science Biz.

Quality Management Considering Product Life Cycle | S HOUSE (Cheongju Plant) has been complying with Good Manufacturing Practice (GMP) since 2015 as the Ministry of Food and Drug Safety joined PIC/S* in July 2014. With an aim to make quality management considering product life cycle possible, we have established a quality management system based on risk assessment, laying the foundation for meeting GMP requirements. L HOUSE (Andong Plant) manages medical product quality at the production stage through the operation of QA (Quality Assurance) process and QMS (Quality Management System). Besides, its entire process is systematically managed through conducting internal and external audits, GMP quality management, incompatibility management, regular product review, and specification management.

Furthermore, the Safety Information Reporting System (SIRS) established in June 2021, enables us to gather all safety information about our products in accordance with relevant regulations and contracts, followed by reporting the collected safety information to regulatory authorities and partner firms. Pharmaceutical products are directly related to the lives of people, so quality-relevant accidents should not occur particularly in pharmaceutical products. Therefore, we make our utmost endeavors to make 'zero' quality accident at all plants in concert.

*PIC/S (Pharmaceutical Inspection Convention and Pharmaceutical Inspection Co-operation Scheme): It is an international organization leading the international harmony between GMP standards and quality systems of on-site inspection.

Customer Information Protection

Reinforcement of Information Security | SK chemicals strives to safeguard and manage information assets of customers and corporations through various efforts including the encryption of old DB, DB access control, and the replacement of server access control system. As part of efforts to effectively protect corporate information and assets, a strategic response system has been established with the regular amendment of our information protection policies (SK chemicals security management regulation). With the purpose of raising the security awareness of our employees and partner companies, we provide them with training on personal information protection and security on a regular basis while building a system for online consent and education to improve accessibility so that many employees can participate in educational programs. Furthermore, we reinforce a safety review process for new solutions so as to enhance safety while creating a safe and sustainable working system through long-term based diagnosis and management of vulnerable points.

Article 7 concerning the composition of security organization in the Chapter 3, Security Organization of SK chemicals Security Management Regulations stipulates that CEO assumes the role of information security officer, and has authority to appoint the Head of Management Support as well as duties to administer security organization regarding its budget and manpower. By doing so, we put efforts into refining the system for information safeguard on a yearly basis in order to prevent any related accident from occurring. Currently, we keep the record of zero accident regarding data leakage, and our goal is to be on track of maintaining this record down the road.

Goal
Zero Accident
Related to
Information
Leakage

Local Community

Goal
50% or more of
all employees
participating
in social
contribution
activities every
year

GRI 418-1 Protection and Loss of Customer Personal Information

Classification	Unit	2018	2019	2020
No. of customer data (including personal information) stolen	Case	0	0	0
No. of customer data (including personal information) lost		0	0	0

System for Social Contribution

Direction for Social Contribution | To stay true to our mission, 'we promote the health of humankind and protect the earth', SK chemicals performs our social contribution activities under the three themes; being eco-friendly, delivering social welfare, and spreading happiness. And we are in line with the UN Sustainable Development Goals (SDGs)* in this regard, thereby helping the international community accomplish the sustainable development goals.

SK chemicals has been in partnership with local social organizations to carry out social contribution activities reflecting the needs of local residents. In the sector of environment and education, we work with a social cooperatives, SEED CO_OP and Happy School, to develop and provide educational programs while interacting and cooperating with local welfare centers to identify the needs, develop programs and assess them so as to help local children and adolescents in low income group grow and become healthy members of the community. In addition, we work with professional volunteer working groups to design more autonomous and interesting volunteer works by associating the works with our business. In 2020, we developed non-face-to-face programs to constantly deliver CSR activities even in the face of COVID-19. In association with social enterprises, we conducted the various forms of social contribution activities including non-contact volunteer works to address diverse social issues. Furthermore, with the purpose of narrowing the divide in learning among students, online learning mentoring programs were developed and furnished in association with social enterprises for teenagers living in low income families who have difficulty accessing non-face-to-face learning systems. SK chemicals has set the target of 50% of the whole staff joining the activities for social contribution.

*UN Sustainable Development Goals (SDGs): UN SDGs are a collection of 17 global that countries, corporations, and organizations must achieve together for a better and more sustainable future. The SDGs were set up in September 2019 through the unanimous agreement of all 193 members of United Nations (UN).

Social Contribution Program

Eco-friendly Project for Social Contribution

Happy Green School | With an aim to raise the awareness of the gravity of environment and environmental protection, SK chemicals' first environmental education project dates back to 2012. Happy Green School is an environmental education program for children. This program is designed for our employees to become one-day teachers at elementary schools, providing eco-friendly education tailored to the level of elementary school students. From the very start of the project to the present, a total of 150 employees have become 'eco-friendly teachers' after going through the internal training course for teacher, and the classes offered by the eco-friendly teachers have been well received with a total of 9,700 elementary school students in Seongnam and Ulsan regions taking the classes. In addition, our employees help third graders of elementary schools easily understand why and how much the environment matters in an interesting way, taking advantage of teaching materials and board games suitable for the students. In 2020, we provided Happy Green School for 30 children due to COVID-19, but plan to develop environment-friendly online educational programs in 2021.

Myanmar Cookstove Supply Project | SK Group has conducted a cookstove supply project in coalition with Climate Change Center, an NGO, and Myanmar's Ministry of Agriculture, Livestock and Irrigation, and SK chemicals has also joined this project. Cookstove is a stove-looking cooking device made of cement. This device is designed to mitigate greenhouse gas (GHG) emissions, the amount of firewood used, and the amount of cooking time with better heat efficiency. Through the supply of the devices, SK chemicals has brought in higher income and better life to people in Myanmar who suffer from poor access to electricity and gas. Furthermore, we have contributed to the revitalization of local economies and job creation since we hire local people to produce, supply and manage cookstoves. On top of that, SK chemicals plans to furnish about 18,000 cookstoves every year for the next 5 years to local residents in dry zones located in the north central region of the nation, including Sagaing, Mandalay, and Magway. And we expect this supply to generate the effect equivalent to the planting about 6.83 million pine trees each year in terms of GHG mitigation and firewood usage reduction.

Support Project for the Marginalized

Hope Maker | 'Hope Maker' is a social welfare and social contribution project designed with the aim of supporting children and teenagers in low-income families as well as providing mentoring programs for them. SK chemicals has carried out this representative social contribution project in partnership with 12 community welfare centers since 2013, through which a total of 155 children and adolescents have been assisted in their economic and cultural activities. As part of the project, we have rendered economic assistance to those subject to Hope Maker, such as monthly donations along with holiday gifts, winter weather survival kit, Kimchi (through SK Happiness Kimchi-Sharing), and assistance for high school graduates. On top of that, we have operated 'Hope Maker School', a career mentoring program matching university students to help them become right members of society. To this end, we strive to make this program reflect more needs of students in constant discussion with local welfare centers every year. In 2020, we operated both online and offline 'Hope Maker School' even in the face of COVID-19 to help adolescents in Hope Maker project cultivate their learning skills and navigate their career paths. As a result, 56.2% of students participating in this program showed improvement in their learning, and 84.2% of third graders of high school students succeeded in gaining admission to universities or getting jobs.

Social Contribution Activities at Domestic Business Sites

One Company Two Village Support | Ulsan Plant strives to make sure that cooperative projects tailored to local residents are on track. As part of the projects, the plant has established sisterhood relationships with Geonam and Pyeondong villages in Nam-gu, Ulsan City, and has carried out a plethora of volunteer works such as rendering physical help during farming season, operating a communal weekend farm, purchasing agricultural produce of the villages, and supporting the host of village festivals and tours for parents.

Volunteer Club of Members | As part of efforts to be more actively involved in social contribution, Ulsan Plant has run a social contributing club called 'group of beautiful people'. The plant has made donations through the Child Fund Korea to support the healthy growth of local children. Furthermore, the plant plans to deliver a variety of assistance projects down the road, designing social contribution activities in cooperation with business sites.

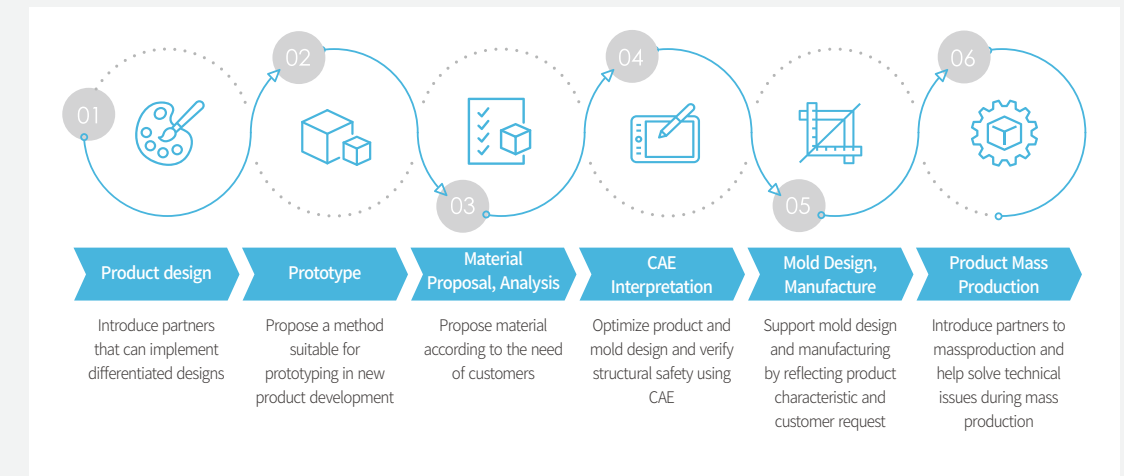
Lending Support to Social Enterprises

SK chemicals make every effort to cultivate social enterprises and create an ecosystem that works for them. As part of the endeavors, we purchased the products for holiday gifts and winter weather survival kits from social enterprises, thereby making contributions to the uplift in their sales. Furthermore, we have operated Project Lab since 2018 with the purpose of the creation of the ecosystem for social enterprises. Project Lab is designed to lend support to corporations who need our capabilities and knowhow on various molding and injection through our industrial infrastructure and networks of partner companies. Under this purpose, the lab has rendered assistance to social enterprises which manufacture and commercialize plastic products. In 2020, we identified the needs of product development in various areas encompassing product design, CAE* interpretation, mold manufacturing, product molding, analysis and evaluation, and injection equipment and peripheral facilities, and selected a total of four social enterprises. We identified their plans for product development and the requirements for those products, based on which we offered comprehensive solutions incorporating technologies and knowhow required through the whole process from the very initial stage of product design to production stage.

*Computer Aided Engineering (CAE): CAE refers to prior evaluation of manufacturing process and product functions by comprehensively processing information required for product manufacturing utilizing computer.

Goal
Lending support to more than 30 social enterprises per year by 2025

Co-operations in Project Lab



Our support for a social enterprise ecosystem goes beyond the primary social value creation, considering the social value to be created through the business of the supported social enterprise. Accordingly, our support policy is operated in consideration of the new business portfolio strategy on the basis of nurturing social enterprises and collaborating with them. We have conducted a variety of projects to address social issues up to date in 2020. These include counteracting safety and environmental issues, such as fine dust, and doing businesses for the socially vulnerable in partnership with social enterprises in various fields, thereby unlocking social values. In 2019, we opened up the website of Project Lab to put in place a system where we can accurately figure out the needs of customers and offer right solutions. In 2020, we helped social enterprises launch and commercialize their products. We added more social enterprises we support up to about 20 in 2021, and plans to annually increase the number of them by 10% until 2025 to give Green Chemicals Business-related capabilities to more than 30 enterprises on a yearly basis. By doing so, SK chemicals will contribute to forge an ecosystem for social enterprises. Going forward, we will polish the technological capabilities of our employees, network capabilities to attract external competencies as well as refine abilities to establish and operate platforms such as Project Lab so that more customers and service providers can find right partners and deliver social values we have never imagined.

Results of Voluntary Service

To be fully responsible as a corporate citizen, SK chemicals formed a 'SK chemicals Volunteer Group' in 2004, and all of our employees have participated in volunteer works for local communities. In 2019, a total of 353 employees spend 1,647 hours on volunteer works. The volunteer group consists of each business site's volunteer groups including headquarters, Ulsan, Cheongju, and Andong business sites. The secretariat has taken on multiple roles, such as driving directions of the group, developing volunteer programs at the company level, and cooperating with external institutions, with CEO assuming the head of the group. In 2020, we shifted from face-to-face volunteer works to non-contact ones including KIT production in partnership with social enterprises and blood donation campaigns in the face of COVID-19.

GRI 413-1 Theme-Based Social Contribution Performance

Classification	Unit	2018	2019	2020
Amount of investment in social contribution	KRW 100 million	3.6	3.2	23.0
Volunteer activity participation	No. of employee volunteers	Person	932	621
	No. of volunteering hours per employee	Hour	3.7	3.5

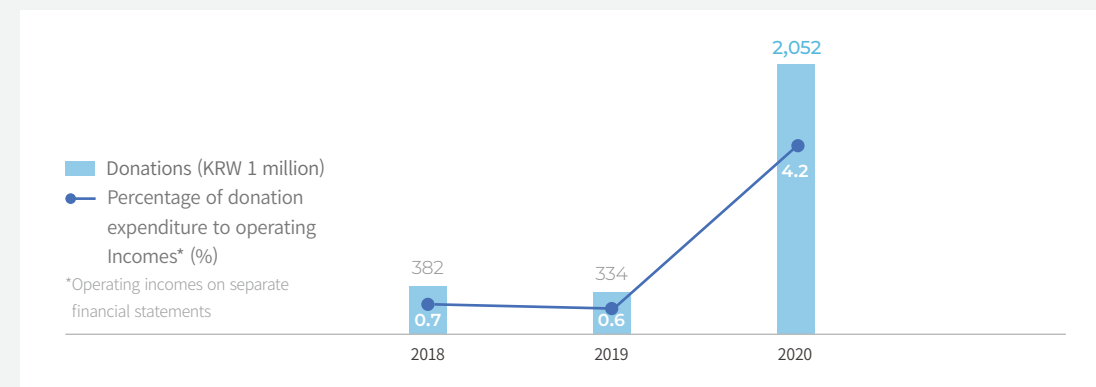
GRI 413-1 Theme-Based Social Contribution Performance

Classification	Unit	2018	2019	2020
No. of employees for environmental training	Person	360	1,950	30
Hope Maker Membership	%	93	75	84

Donation Performance

SK chemicals' Donation Performance | SK chemicals makes donations every year in order to share our economic achievements with more members of the community. In 2020, we donated a total of KRW 2.05 billion (4.2% of the operating income). This is a net amount of money donated excluding funds for labor welfare, monetary value of voluntary works, and incidental expenses for CSR program operations.

Gross Donation Performance



Research and Development

System and Strategy for Research and Development

Our Chemical R&D Institute conducts research and development (R&D) activities with three laboratories under the institute taking on major roles. The institute is devoting itself to developing eco-friendly products to protect the earth's environment, while promoting Open Innovation in addition to the strategy to improve our own capabilities to achieve our mid- to long-term R&D goal. To this end, we have dispatched our workers to overseas renowned research institutes to help them sharpen their capabilities and develop new technologies. Efforts are also being made to develop technologies in partnership with domestic research institutes or experts.

Our pharma business aims to enter the global market by developing innovative and improved new drugs led by our R&D center. To do so, we have established and reinforced our product portfolio particularly centered on innovative improved new drugs using our patent or medication technologies such as patch technology that was recognized globally for its high capability and release-control medicine technology. On top of that, we decided to expand investment in open innovation for the purpose of enhancing the efficiency of securing new drug candidates. As part of the efforts, a joint development with leading domestic artificial intelligence (AI) companies is currently being conducted.

Our vaccine business (SK bioscience) plans to reinforce our portfolio of preventive vaccines incorporating basic and premium vaccines through the utilization of the established platform technology along with the commercialization of SKYCellflu, SKYZoster, and SKYVaricella.

*Status of Chemical R&D Institute

- Eco-friendly Materials Laboratory: This laboratory takes in charge of the development of diverse copolyester and manufacturing procedures of monomers and polymers capitalizing on polyester technology. (It includes waste plastic recycling technology, which is a clean technology.)
- Highly-functional Materials Laboratory: Highly-functional materials laboratory specializes in developing highly functional polymers such as super engineering plastics and elastomers.
- Platform Technology Laboratory: The laboratory is dedicated to the development of adhesives and coating materials, identifying new monomers, catalysts and additives, product breakdown and the advancement of new analysis techniques.

Investment in R&D and Its Results

The Chemical R&D Institute was engrossed in the development of plastic recycling technology and finally released a product called 'ECOTRIA' in 2019 by recycling discarded plastics. A certain percentage of R&D expenses have been allocated in the research and development of waste plastic recycling products still now to expand the 'ECOTRIA' product line. SK chemicals allots about 5.3% of our total R&D expense to the development of waste plastic recycling products, a clean technology. We strain every nerve to increase the sales of eco-friendly products to make it account for 50% of the whole sales in Green Chemicals Business by 2025 and 100% by 2030.

In Chemical R&D Institute, the development project of 'ECOTRIA' utilizing recycled waste plastics is in progress with some portion of the budget allocated for R&D spent on the development of products made of waste plastics. Since 2009, the institute has worked on biodiesel and bio heavy oil businesses which are substitutes for the petroleum business we sold in May 2020. SK chemicals earmarked and spent 5.3% of the whole R&D cost on the development of clean technologies. Besides, we strain every nerve to increase the sales of eco-friendly products to make it account for 50% of the whole sales in Green Chemicals Business by 2025 and 100% by 2030.

The R&D Center, the research and development organization of our Pharma Biz., established an Open R&D TF in 2019 to conduct a joint research in partnership with global-level AI specialized companies. Through the discovery of new drug candidates based on artificial intelligence technology, effective compound screening for drug efficacy and toxicity is possible. This will allow us to shorten the development period of existing new drugs. Currently, we are conducting non-clinical research projects by deriving a number of candidate compounds, aiming to develop treatments for incurable diseases such as rheumatoid arthritis and pulmonary fibrosis. At the same time, an improved new drug is also being developed based on our strengths in slow-release medication and patch-type medication technologies. In 2020, we successfully launched Renexin Tab that made it easy for patients to take a medicine.

In our Vaccine Business, our target is to solidify our position in this filed by securing a pipeline consisting of cervical cancer vaccine, child enteritis vaccine, typhoid vaccine, and pneumococcus vaccine. As part of efforts to overcome this COVID-19 situation, we are currently developing our own COVID-19 vaccines on the basis of our vaccine development experience and the technologies we have accumulated while performing task projects funded by the Bill and Melinda Gates Foundation (BMGF) and the Coalition for Epidemic Preparedness Innovations (CEPI). We aim to finish the development of the vaccine in progress as we planned.

*Eco-friendly materials: It refers to r-Copolyester and r-PET products.

R&D Investment (Green Chemicals Biz.)

Classification	Unit	2018	2019	2020
No. of R&D employees	Person	148	149	134
R&D investment	KRW 100 million	291	289	276
Sales to R&D investment ratio	%	2.6	3.0	3.1
Sales of new products	KRW 100 million	0	0	0
Sales of new products to total sales ratio	%	0	0	0
Sales	KRW 100 million	11,261	9,714	8,976

*BE R&D costs are excluded due to the suspension of the BE business.

R&D Investment (Life Science Biz.)

Classification	Unit	2018	2019	2020
No. of R&D employees	Person	93	179	177
R&D investment	KRW 100 million	326	384	382
Sales to R&D investment ratio	%	9.4	9.3	8.0
Sales of new products	KRW 100 million	15	0	18
Sales of new products to total sales ratio	%	0.42	0.00	0.38
Sales	KRW 100 million	3,487	4,129	4,761

R&D Investment (SK chemicals, major affiliates)

Classification	Unit	2018	2019	2020
No. of R&D employees	Person	241	328	311
R&D investment	KRW 100 million	617	673	658
Sales to R&D investment ratio	%	4.2	4.9	4.8
Sales of new products	KRW 100 million	15	0	18
Sales of new products to total sales ratio	%	0.10	0.00	0.13
Sales	KRW 100 million	14,748	13,844	13,737

*BE R&D costs are excluded due to the suspension of the BE business.

Ownership of Intellectual Property Rights

Classification	Unit	2018	2019	2020
Domestic	Patent	16	32	Patent applied 25 / Patent registered 19 (total 44)
	Trademark	3	4	Patent applied 10 / Patent registered 5 (total 15)
Overseas	Patent	222	144	Patent applied 63 / Patent registered 103 (total 166)
	Trademark	1	9	Patent applied 18 / Patent registered 9 (total 27)
Total		242	189	Patent applied 116 / Patent registered 136 (total 252)

*Combined data of Green Chemicals Business and Life Science Business

Animal Protection Policy

In the course of drug development, experiments using animals are conducted following human clinical trials. At this stage, the Animal Testing Ethics Committee is operated aiming to conduct ethical animal testing.

Non-clinical Stage: Minimizing Animal Testing | In the animal testing for evaluating the efficacy and toxicity of candidate substances before conducting clinical trials, we abide by related laws and conduct regular training in order to minimize the pain of animals and avoid using animals in testing, conducting ethical animal testing. In this regard, SK bioscience's L HOUSE founded the Animal Testing Ethics Committee (3 external members and 4 internal members), and it reviews and approves animal experimentation plans for the year twice a year. In case any scientifically or ethically unreasonable or incomplete areas are found in the pre-approval process, corrective actions are taken before approval. In addition, we report to the Ministry of Food and Drug Safety and the Animal and Plant Quarantine Agency every year on the overall details of animal testing, including the activities of the Animal Testing Ethics Committee.

ESG Fact Book 03

Governance



Board of Directors

SK chemicals enacted Corporate Governance Charter in March 2021. The charter defines and details shareholders, the board of directors (BOD), an audit organization, the protection of stakeholders' rights and the policies for business operation monitored by the market. Especially in the section of the board of directors, BOD independence, BOD diversity, and the expertise of directors are clearly stipulated, which lays the foundation for our transparent management principles.

Composition and Independence of the BOD

The BOD consists of two internal directors and four outside directors as of March 2021. With the aim of empowering the board to implement more powerful checks and balances, the BOD makes it mandatory that the chairman of the board is elected among outside directors and the ratio of outside directors occupies the majority. Directors cannot assume two or more jobs at the same time in accordance with commercial law, and they are restricted from getting a job at a company that conflicts with SK chemicals in terms of interest.

Position	Name	Committee	Field of Expertise
CEO	Cheol Kim	- Management Committee - Independent Director Nomination Committee	Management
	Gwang-hyeon Jeon	- Management Committee	Management
Independent Director	Yang-ho Ahn	- Management Committee - Independent Director Nomination Committee	Administration, Finance
	Jung-soo Park	- Management Committee - Independent Director Nomination Committee	Economics
	Sung-hwan Moon (Chairman of the Board of Directors)	- Management Committee - Independent Director Nomination Committee	Management
	Hong-hee Cho	- Management Committee - Independent Director Nomination Committee	Finance

Goal

Appointment of one female outside director

Goal

Launch of ESG Committee and expansion of discussion/
Establishment of HR Committee and segmentation of performance evaluation scope by ESG sector

SK chemicals convened a total of 13 board meetings in 2020, reviewed and made decisions on agendas taking into account home and abroad market conditions. The very purpose of BOD meetings is to reach and actively reflect the opinions of our shareholders and stakeholders in our business management as well as to review and decide on key issues across a wide range of areas encompassing society, environment and economy. SK chemicals informs directors of contents concerning the convocation of the meeting through the secretariat at least five days before the meeting along with information on the date, location, agendas and things to be reported of meeting.

GRI 102-18, 33 Operation of the Board of Directors

Classification	Unit	2018	2019	2020
No. of regular meetings	Times	10	12	13
Issues voted down	Case	27	19	21
Issues passed		27	19	21

GRI 102-18, 33 Engagement of the Board of Directors

Classification	Unit	2018	2019	2020
Attendance rate for executive directors	%	100	100	100
Attendance rate for independent directors		100	97	100

Expertise and Diversity

Career and expertise comes first when we recommend candidates for directors. We publicly disclose the qualifications, appointment backgrounds and requirements for independence of all directors. Outside directors, composed of experts in various fields of industry and economy, allow the BOD to make reasonable decisions by reviewing the areas of their expertise and providing opinions. For the sake of improved professionalism of the BOD, we put in place three sub-committees under the umbrella of the board. In order to be more diverse in BOD composition, we plan to review the election of female outside director. (For more details, see Corporate Governance Charter enacted in March 2021).

Independent Director Nomination Committee | The committee discusses the composition and operation of the committee for candidate recommendation.

Audit Committee | It draws up audit plans, implements and evaluates audits, takes follow-up measures and provides remedy while conducting audits on legislation, articles of association and matters delegated by the BOD. The committee consists of only outside directors which is a clear demonstration of the transparency and independence of the BOD.

Management Committee | This committee, comprised of two internal directors, deliberates and makes decisions on matters in regard to business operation, and formulates plans to enhance business performance.

ESG Discussion within the BOD and Management Performance Evaluation/Compensation Policy

In addition to the committees above, we plan to launch 'ESG Committee' which will discuss risk factors of the business environment in the third quarter of 2021 and serve as a decision maker on this matter, and 'HR Committee' which will assume the role of discussing matters regarding the evaluation of BOD operation and the remuneration of the board, and of decision making on this. When ESG Committee is established, the reduction strategy for Scope 3 for the sake of GHG mitigation and the strategy for renewable energy utilization will be topics for discussion. And decisions on new businesses from the perspective of ESG and directions for business can also be discussed. HR Committee also takes on the role of approving the policies for compensation within the BOD, ESG strategies and the reflection of goal accomplishment level for sustainable management while conducting monitoring activities.

Policies for New Businesses and Investments

When reviewing a new business, we have to go through a review process to figure out whether the new business is in line with our mission, 'We promote human health and protect the environment'. Contributions to the improved quality of life, environmental

protection or environmental load mitigation are criteria used to determine its alignment with the mission. And we do not put the cases which don't align with the mission on the table as agenda items at the BOD or Investment Deliberation Committee. With the purpose of making responsible decisions on new businesses and investments, ESG Committee will be launched within the BOD so that the committee will discuss the relevant agenda items and make decisions.

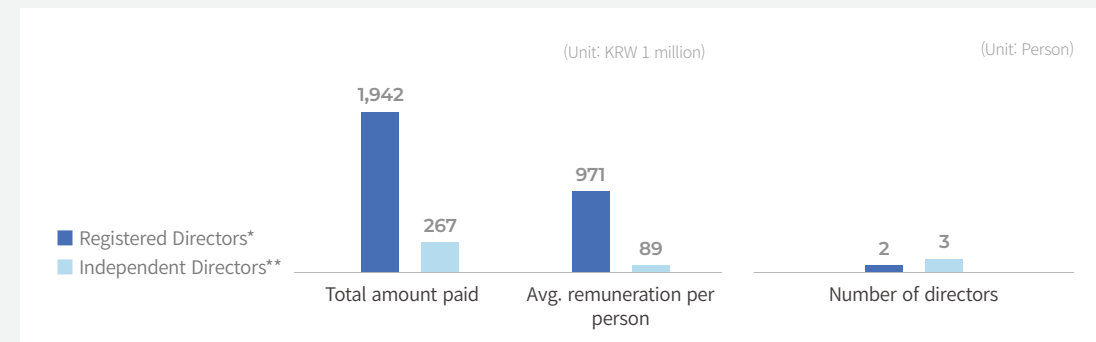
Performance Evaluation of the BOD

Decisions are made on whether to reappoint a director or not at the termination of his or her term after the performance evaluation as director. And their attendance rate is publicly disclosed in order to improve the level of transparency. The remuneration of directors should go through the approval process of the general shareholders' meeting to be implemented, and the amount of remuneration paid is determined within the bounds of total directors' remuneration. The value of roles and responsibilities determines the remuneration for internal directors while the remuneration for outside directors is set and evenly paid in accordance with the directors' payment procedure. As for performance incentive, both metrics and non-metrics are comprehensively evaluated for the calculation of incentive. Metrics include sales, operating income, and pre-tax profits while non-metrics encompass leadership, expertise, and other contributions. In 2020, the amount of remuneration approved was KRW 5 billion with a total of KRW 2.2 billion paid to two registered directors and three auditors including two outside directors newly elected in the shareholders' meeting in March 2020. An average amount of wage per capita stands at KRW 440 million. In compliance with relevant laws, we report the cases in which the amount of remuneration for an individual director or auditor surpasses KRW 500 million through our semi-annual and business reports.

As of March 2021, the BOD is comprised of six members including two registered directors, incorporating one newly elected, and four auditors. Currently, ESG-related issues, assessment and rewards are discussed mainly through Management Committee, but ESG Committee and HR Committee will take on these roles when they are launched in the third quarter.

2020 Remuneration of Board Memebers

As of December 31, 2020



*Registered Director: Independent directors and auditors excluded
 **Independent Directors: Auditors excluded

Transparent Disclosure

SK chemicals convenes general shareholders' meetings every year to share the current status of our management as well as to reflect their opinions in our future direction and operation, thereby protecting and serving the rights and interests of our shareholders. Key decisions on business operation made by the BOD are publicly and instantly disclosed to give our stakeholders including shareholders access to such information. Especially data and information closely related to investors' interests are open to public through the SK chemicals' website, the Financial Supervisory Service's electronic disclosure system, and the Korea Exchange.

Number of Shares and Shareholding Ratio

Shareholder	Number of shares owned	Share ownership*
Shareholders with 5% stake or over	SK discovery CO., LTD.	3,930,310
	National Pension Service	1,179,620
Minority shareholders	6,114,171	52.13%

*Shareholding ratio is based on total number of voting stocks issued (11,728,768).

Environment in Favor of Shareholders

SK chemicals has gradually expanded dividend payment as we are seeing an increase in net income since a spin-off in 2017. Going forward, we will make every effort to return profits coming from our growth to our shareholders on the strength of improved profitability in the long-term.

Dividend and Dividend Rate

Classification	Unit	2018	2019	2020
Dividends per share (KRW/share)	Common stock	400	450	2,000
	Preferred stock	450	500	2,050
No. of stock dividends (thousand/share)	Common stock	11,568	11,730	11,729
	Preferred stock	1,458	1,457	1,314
Ratio of dividend to stock price (%)	Common stock	0.6	0.7	0.5
	Preferred stock	1.8	1.8	1.2

Corporate Ethics

Code of Ethics

SK chemicals has in place the Code of Ethics embracing the basic management ideology of SK Management System (SKMS), which underpins our management philosophy and principles for behavior. In addition, as part of endeavors to provide guidelines on right behavior as well as to establish a transparent system for ethical management and the corresponding culture, various systems are put in place such as SKMS, code of practice, code of ethics, and code of conduct.

Code of Ethics Structure

- 1 SKMS SK Management System**
 - SK's highest value system, being a foundation of Code of Ethics
 - The SKMS basic philosophy consists of corporate vision, value, and management principle
- 2 Code of Ethics Guidelines for Code of Ethics**
 - Concrete elaboration of practices for SKMS, stipulating the responsibilities of members for stakeholders
 - Detailed code of conduct for the compliance of the Code of Ethics, presenting the standard of ethical decision-making and behaviors
- 3 FAQ**
 - Written in a form of questions and answers to make it easier for employees to understand and judge possible situations in the course of business

SK chemicals Code of Ethics

- The company must obtain trust from the customer by continuously satisfying the customer, and ultimately develop with the customer.
- The company shall create an environment for its members to work voluntarily and enthusiastically, and the members shall contribute to the development of the company and value creation of interested parties.
- The company shall enhance the value of its business so that shareholders' value can be generated, and to this end, it shall enhance transparency and manage efficiently.
- The company shall pursue joint development with a partner company and competes with its competitors in a fair manner.
- The company shall contribute to society through social and cultural activities along with its contribution to economic development, and manage according to social norms and ethical standards.

Expanding a Culture of Ethics

SK chemicals launched Compliance Teams specializing in each business area in Green Chemical Business, and Life Science Business, respectively in January 2016 with each team specializing in the corresponding business area so as to deliver systematic ethical management. As part of efforts to beef up the level of ethical management, we also conduct self-inspection each year. Diagnostic surveys are conducted and a variety of training and educational programs are also furnished to all of our employees including contract workers, such as online education and the workshop for leadership-oriented ethics practice, so that all of our employees can raise their practice level of ethical management with stronger will to put it into action. The workshop for leadership-oriented ethics practice deal with various anti-corruption subjects encompassing the prohibition of acts to gain private interests, of improper solicitation and bribery taking, of internal information utilization and the prevention of power abuse, and these issues are taught in a way of discussion with many relevant cases. In 2017, we solidified our robust will for more advanced ethical management through the declaration ceremony for ethical management. Furthermore, we plan to increase the percentage of employees who complete the course for ethical management from 93% to 100% by 2023, thereby raising our employees' awareness of the code of ethics. On top of that, some of our businesses (Life Science Business) will adopt the goal of 'zero violation' as one of its KPI to reflect this in their evaluation.

Anti-corruption Policy

SK chemicals internally conducts a preventive inspection and operates an external reporting system to beef up the level of our ethical management including anti-corruption. The internal preventive inspection deals with the businesses prone to corruption (favor seeking, embezzlement, unfair transaction, etc.) through our self-purification system. The reporting system guarantees the anonymity of the online site's users. When a case is reported, we commence conducting an investigation, making sure confidentiality of the case, and then report to the top management. The top management and relevant executive members come up with anti-corruption policies and preventive systems and manage them.

Corruption Reporting

Reports Concerning Ethics | In order to raise the transparency of our business and establish an ethical corporate culture, SK chemicals is receiving reports in relation to ethical management through various channels including the SK ethical management webpage (<https://ethics.sk.co.kr>), e-mail, phone call, and mail. Depending on the case of ethical management reports received, Compliance team will be in charge of the investigation on the issues of Green Chemicals Business And CP team will be responsible for the investigation on the issues of Life Science Business. In case of HR issues, HR department conducts investigations. In 2020, we received a total of five cases online related to ethics and compliance, and two out of them turned out to be violations. We gave appropriate answers and guidance to online reports we received. Reports regarding sexual harassment within the company, power abuse inside and outside the organization and breach of compliance can incur serious disciplinary action, and the disciplinary committee has authority to impose punishments such as suspension from work or even severe ones.

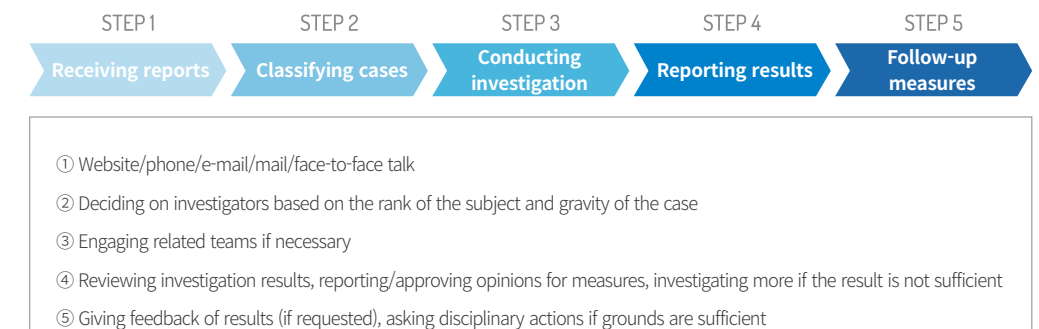
Goal
Achieving a 100% completion rate of anti-corruption education

Goal
Zero number of violations related to anti-corruption

Report Channels

SK ethical management website	https://ethics.sk.co.kr
SK chemicals website	www.skchemicals.com
SK chemicals intranet	www.mykm.co.kr
Group toktok (Mobile)	toktok.sk.com
E-mail	skchemicals.ethics@sk.com
TEL	+82-2-2008-2486
Mail	To the person responsible for ethical management in SK chemicals Compliance Team, 310, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

Report-handling Procedure | SK chemicals strives to safeguard informants, ensuring that reporting doesn't bring any disadvantage or any discrimination against them, and their identities are astutely protected. If an informant experiences any disadvantage stemming from reporting, the reporter can request Compliance Team to redress the situation and take protection measures, and the person who unfavorably treats the informant is liable to heavy punishment. The ethical management-related reports received go through the system below, and are processed in a fair and transparent manner.



※ Disciplinary procedure: Request for disciplinary action → Deliberation and decisionmaking in HR committee → Approval from CEO → Execution

GRI 102-17, 103-2 Number of Cases Reported, Found and Addressed by Official Ethics Management Reporting Channel

Classification	Unit	2018	2019	2020
No. of cases reported for the reporting period		6	5	5
No. of cases addressed for the reporting period	Case	6	5	5
Ratio of grievances addressed	%	100	100	100

Appendix

Fair Trade

Fair Trade Compliance Program | SK chemicals is keenly cognizant that autonomous compliance with competition order and fair competition regulations are integral parts of sustainable management. Accordingly, we have operated 'Fair Trade Compliance Program' dating back to 2006. Under the leadership of the manager appointed of the team, employees in charge at the working level of each department frequently carry out inspections through checklists. And an internal monitoring system has also been running, through which cases with high possibilities of breaching laws and regulations are reviewed with professional departments in advance.

Spreading a Culture of Fair Trade | SK chemicals released a manual for fair trade compliance that encompasses domestic related legislations including the Fair Trade Act and overseas anti-corruption laws such as the U.S. Foreign Corrupt Practices Act (FCPA), and the U.K. Bribery Act. Along with this, we provide the code of conduct for fair trade to ensure our executives and employees better understand the legal and ethical criteria they should follow. In addition, we encourage our employees to practice compliance and confirm whether they follow or not, while offering education on fair trade every year to let them know revisions to relevant laws and regulations. In 2019, educational programs on Subcontracting Act, Fair Agency Transactions Act and Chemical Substances Control Act were furnished, and there were no violation of our code of conduct for fair trade in transaction with external stakeholders.

Monitoring and Inspection | As part of efforts to embrace rapidly changing laws and social needs at home and abroad, and integrate them into our business operation for better response, SK chemicals diagnoses our management by ourselves. We implement management diagnosis for all of our functions including management status of the headquarters and our subsidiaries, performance, plans, and operation of internal regulations. In 2019, we carried out self-cleaning system checks in six areas including HR, Purchase/BP, cost, sales/receivables, investment, and special risk management (RM). The results showed that we have two areas of improvement, and consequently we have amended and refined our internal control system and internal regulations to consolidate our compliance.

Anti-Competitive Behavior and Non-Compliance with Laws

GRI 206-1 Anti-Competitive Behavior, Antitrust, and Monopoly Practices, and Non-Compliance with Laws and Regulations

Classification	Unit	2018	2019	2020
No. of cases of anti-competitive behavior, antitrust, and monopoly practices, and noncompliance with laws and regulations		0	0	0
No. of non-monetary sanctions of anticompetitive behavior, antitrust, and monopoly practices, and noncompliance with laws and regulations	Case	0	0	0
No. of lawsuits of anti-competitive behavior, antitrust, and monopoly practices, and noncompliance with laws and regulations (lost lawsuits determined)		0	0	0

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Financial Performance

Consolidated Statements of Financial Position

	Unit	2019	2020
Assets			
Current assets	KRW	792,022,789,246	923,286,317,987
Cash and cash equivalents		183,975,936,156	86,764,151,843
Short-term financial instruments		88,673,666,823	339,928,469,816
Trade and other accounts receivable	KRW	171,327,000,317	233,192,607,955
Inventories		330,606,087,802	252,930,309,986
Contract assets		-	979,914,679
Other current assets		17,440,098,148	9,490,863,708
Non-current assets	KRW	1,339,686,360,783	1,196,680,638,899
Long-term trading financial assets		1,040,369,549	32,500,000
Long-term trade and other accounts receivable		883,548,359	-
Other investment assets		23,376,057,843	24,492,063,443
Long-term loans		10,596,800,527	-
Investments in associates and joint ventures		8,776,408,020	9,104,020,171
Property, plant and equipment	KRW	1,165,064,920,158	1,069,999,627,343
Right-of-use asset		58,182,699,644	16,101,459,538
Intangible assets		37,429,393,743	36,955,864,384
Investment in properties		15,104,065,924	17,055,665,021
Other non-current assets		1,950,322,430	2,344,511,421
Deferred tax assets		17,281,774,586	20,594,927,578
Total assets	KRW	2,131,709,150,029	2,119,966,956,886
Liabilities			
Current liabilities	KRW	718,865,361,025	645,679,130,159
Trade and other accounts payable		231,781,907,093	232,021,734,019
Short-term borrowings		198,755,573,825	107,636,902,688
Current portion of long-term liabilities		241,571,981,995	96,947,494,138
Current portion of lease liabilities	KRW	11,534,922,051	3,038,108,909
Current portion of contract liabilities		10,291,411,717	96,226,901,452
Income taxes payable		7,825,912,130	69,339,226,370
Other current liabilities		17,103,652,214	40,468,762,583
Non-current liabilities	KRW	1,339,686,360,783	1,196,680,638,899
Bonds payable	KRW	558,680,066,667	460,480,569,890
Long-term borrowings		72,909,200,000	31,135,000,000

Consolidated Statements of Comprehensive Income

	Unit	2019	2020
Lease liabilities		46,935,964,988	9,392,925,411
Defined benefit liabilities		7,945,076,095	7,643,269,177
Contracts liabilities	KRW	7,595,408,331	-
Other non-current liabilities		-	4,085,315,565
Deferred tax liabilities		71,780,064	2,617,953,452
Total liabilities	KRW	1,413,002,857,170	1,161,034,163,654
Equity			
Equity attributable to owners of the parent	KRW	715,628,603,300	952,877,954,864
Issued capital		66,000,330,000	66,000,330,000
Capital surplus		264,314,596,680	264,314,596,680
Other components of equity	KRW	(9,889,506,203)	(18,117,669,311)
Accumulated other comprehensive loss		(2,594,106,840)	(2,624,096,023)
Retained earnings		397,797,289,663	643,304,793,518
Non-controlling interests	KRW	3,077,689,559	6,054,838,368
Total equity		718,706,292,859	958,932,793,232
Total liabilities and equity	KRW	2,131,709,150,029	2,119,966,956,886
Consolidated Statements of Comprehensive Income			
Sales	KRW	1,112,918,780,388	1,214,709,208,859
Cost of sales		841,891,816,357	864,396,627,211
Gross profit	KRW	271,026,964,031	350,312,581,648
Selling and administrative expenses		229,794,200,331	244,029,587,832
Operating income		41,232,763,700	106,282,993,816
Other income		9,265,991,579	12,707,639,715
Other expenses		38,384,532,975	80,462,536,647
Financial income	KRW	25,984,691,261	44,134,696,501
Financial costs		54,254,629,693	65,441,662,331

Financial Performance

Consolidated Statements of Comprehensive Income	Unit	2019	2020
Equity method gains on associate and joint venture investment		2,041,587,778	1,757,212,860
Profit(losses) before income tax from continuing operations		(14,114,128,350)	18,978,343,914
Income tax expense from continuing operations		8,882,122,426	10,003,498,170
Profit for the year from continuing operations		(22,996,250,776)	8,974,845,744
Profit before income tax from discontinued operations		36,962,802,883	325,274,984,871
Income tax expense from discontinued operations	KRW	8,944,998,298	79,088,620,840
Profit for the year from discontinued operations		28,017,804,585	246,186,364,031
Profit before income tax		22,848,674,533	344,253,328,785
Income tax expense		17,827,120,724	89,092,119,010
Profit for the year		5,021,553,809	255,161,209,775
Other comprehensive income		(4,036,863,352)	(2,877,570,874)
Other comprehensive income to be reclassified to profit or loss in subsequent periods			
Equity adjustments in equity method		17,308,041	307,469,584
Gain (Loss) from translation of foreign operations	KRW	579,448,852	(194,585,531)
Loss on valuation of derivatives		(76,943,579)	(145,731,021)
Other comprehensive income not to be reclassified to profit or loss in subsequent periods			
Re-measurement loss on defined benefit plans		(4,556,676,666)	(2,844,723,906)
Total comprehensive income (loss), net of tax	KRW	984,690,457	252,283,638,901
Profit (loss) from continuing operations attributable to:			
Owners of the parent	KRW	(17,420,365,921)	8,134,405,882
Non-controlling interests		(5,575,884,855)	840,439,862
Profit (loss) attributable to:			
Owners of the parent	KRW	10,597,438,664	254,320,769,913
Non-controlling interests		(5,575,884,855)	840,439,862
Total comprehensive income (loss) attributable to:			
Owners of the parent	KRW	6,589,776,677	251,484,529,872
Non-controlling interests		(5,605,086,220)	799,109,029
Earnings (loss) per share:			
Common stock earnings per share		802	19,421
Common stock earnings (loss) per share from continuing operations		(1,318)	621
Common stock earnings per share from discontinued operations		2,120	18,800
Preferred stock earnings per share	KRW	852	19,472
Preferred stock earnings (loss) per share from continuing operations		(1,400)	623
Preferred stock earnings per share from discontinued operations		2,252	18,849

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Stakeholder Engagement

In the SK Group's management system (SKMS) revised in 2020 has set the ultimate goal of SK's management as the sustainable happiness of our members. Since the happiness of stakeholders is a prerequisite for the sustainable happiness of our members, SKMS defined all the values created for our stakeholders' happiness as social values. Accordingly, it also stipulated the responsibility of the members for pursuing the happiness of all stakeholders. SK chemicals classifies major stakeholder groups into customers, shareholders and investors, employees, government and associations, partner companies, financial institutions, and local communities. We gather key issues through the communication channels for each group and reflect them in our management activities. Going forward, we will share values with stakeholders through corporate activities, thereby achieving stable growth and continuous advancement.

Stakeholder	Major Issue	Communication Channel	Concerned Matter	Our Response
Customers	<ul style="list-style-type: none"> Researching feedback on products and services 	<ul style="list-style-type: none"> Customer center VOC grievance-handling process 	<ul style="list-style-type: none"> Enhancing product quality management and stability Raising communication efficiency 	<ul style="list-style-type: none"> Establishing a quality management system led by QA team Building process for receiving and resolving grievances from customers
Shareholders and Investors	<ul style="list-style-type: none"> Participating in the strategic decision-making process related to business 	<ul style="list-style-type: none"> Investment briefing General shareholders' meeting Business Report Annual Report 	<ul style="list-style-type: none"> Sustainable growth Transparent disclosure of corporate data Profit-making and distribution 	<ul style="list-style-type: none"> Protecting rights and interests by collecting shareholders' opinions on corporate management Immediately disclosing key business matters decided by the BOD
Employees	<ul style="list-style-type: none"> Implementing the recruitment, training, and reward systems Improving the welfare system 	<ul style="list-style-type: none"> Labo-management council Company broadcasting Company magazine Survey targeting employees Satisfaction survey Culture Survey (once a year) Industrial Safety and Health Committee 	<ul style="list-style-type: none"> Raising corporate value Fair performance evaluation and rewards Work-life balance Health of employees 	<ul style="list-style-type: none"> Operating IT-based performance evaluation system and reflecting feedback Introducing various welfare benefit systems and supporting capacity-building Establishing policy for employees' health
Government and Associations	<ul style="list-style-type: none"> Participating in the government's or the local governments' business 	<ul style="list-style-type: none"> Local government council Government meeting 	<ul style="list-style-type: none"> Shared growth Fair-trade and compliance Safety and health at work sites 	<ul style="list-style-type: none"> Creating a shared growth ecosystem Operating a fair-trade compliance program Response through identifying current government regulations and converting the business portfolio Preventing accidents through regular safety diagnosis and management
Partner Companies	<ul style="list-style-type: none"> Pursuing shared growth with partner companies Fair-trade Establishing a SHE culture 	<ul style="list-style-type: none"> Meeting with partner company Capacity-building training for partner companies SK Group's Shared Growth Academy CEO seminar SK Shared Growth MBA 	<ul style="list-style-type: none"> Win-win environment Management and education support for suppliers 	<ul style="list-style-type: none"> Operating win-win cooperation programs Supporting partner companies with technology, financing, education and human resources
Financial Institutions	<ul style="list-style-type: none"> Integrating ESG-related investments Disclosing financial data transparently Managing risks 	<ul style="list-style-type: none"> Business Report Annual Report Sustainability Report 	<ul style="list-style-type: none"> ESG risk management Transparent disclosure of corporate information 	<ul style="list-style-type: none"> Newly setting up the ESG Committee in the third quarter of 2021 and planning to discuss investments in new businesses Disclosing ESG information ESG assessment on value chain
Local Communities	<ul style="list-style-type: none"> Developing and engaging in local communities 	<ul style="list-style-type: none"> Local council Voluntary groups in local community 	<ul style="list-style-type: none"> Strategic social contribution activities Collaborative social contribution activities 	<ul style="list-style-type: none"> Operating Project Lab for supporting social enterprises Researching and reflecting community needs joint-development and evaluation of programs

TCFD Task Force on Climate-related Financial Disclosures

Goal Risk/opportunity analysis derived from climate change (by 2022) → strategies based on risk factors (by 2023) → reinforcement of climate change countermeasures (by 2025)

TCFD is an initiative enacted in 2015 by the Financial Stability Board (FSB), mandated by the G20 financial ministers and central bank governors, aiming to promote the disclosure of information related to climate change. Stakeholders in and outside Korea have utilized TCFD information in their decision-making such as in the investment decisions. SK chemicals publicly announced our climate change information and related corporate activities in accordance with 11 detailed items based on the information disclosure framework as follows. Going forward, we will prepare our detailed roadmaps.

Recommendations from TCFD	Disclosure of SK chemicals' Responses	Page
Governance	Disclose the organization's governance around climate-related risks and opportunities.	
1 The board of director's oversight of climate-related risks and opportunities	SK chemicals is on the verge of establishing an ESG Committee within the BOD in 2021 to manage climate change risks and preemptively respond to opportunities. The ESG Committee, led by the management, will review issues relevant to climate change and regularly identify the response status at the headquarters level, thereby laying the foundation of an environment-friendly management system. Under the environment-friendly management system, we will take issues regarding climate change into consideration in the major decision-making process such as setting, implementing and monitoring the organization's performance goals.	36, 75
2 Management's role in assessing and managing climate-related risks and opportunities	For the effective response to climate change, risks and opportunities are identified and managed in advance mainly led by the management. Among the issues related to climate change, carbon neutrality is found to be of the highest importance. The management of SK chemicals has established company-wide eco-friendly policies and mid- to long-term carbon neutrality goals and reviewed the plan to realize carbon-neutrality. By doing so, our goal is to mitigate carbon emissions by 50% by 2030 and to achieve carbon neutrality by 2050.	36-39
Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	
3 Climate-related risks and opportunities the organization has identified over the short, medium, and long-term.	As regulations including the carbon emission trading system are continuously discussed, climate change has emerged as a salient risk for business operations. It is not just a short-term risk, but an issue that determines future sustainability. From a more mid- to long-term perspective, climate change can bring about extreme weather conditions, leading to natural disasters, pollution, disease, and a lack of clean water and food, increasing health risks for the whole people in the world. SK chemicals has been making multifaceted efforts to turn a huge crisis related to climate change into an opportunity. For the purpose of mitigating GHG, the main cause of climate change, we develop eco-friendly technologies and apply them to product production, while reducing energy consumption by increasing the efficiency of energy use at our business sites.	36-39
4 The impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning.	In the midst of the COVID-19 situation, the amount of plastic waste has significantly increased due to the growing use of medical waste and protective gears for quarantine and the rising consumption of delivery food. In consideration of the impact of the organization's business and strategy on social issues, SK chemicals develop, produce, and commercialize eco-friendly materials, bio plastics, renewable macromolecule plastics, and carbon composite materials specialized in light weight, thereby contributing to GHG mitigation (carbon footprint) and product circulation. Furthermore, we sold our bio energy business in May 2020 to accelerate our advancement toward a global eco-friendly material company.	32-35
5 The resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Depending on the implementation of the GHG mitigation policy, the projected increase in temperature by 2100 changes significantly. The government is actively pursuing a low-carbon strategy by declaring Net Zero to achieve zero in net carbon emission by 2050. To join the efforts, SK chemicals develops GHG reduction technology within the existing business and applies it to the process. We will reduce carbon emissions by 50% by 2030 through business portfolio adjustment, fuel conversion, and higher energy efficiency in business sites, thereby promoting the GHG mitigation policy.	36-39

Recommendations from TCFD	Disclosure of SK chemicals' responses	Page
Risk Management	Disclose how the organization identifies, assesses, and manages climate-related risks.	
6 The organization's processes for identifying and assessing climate-related risks	Aiming to effectively cope with future changes owing to climate change, SK chemicals identified climate change-related issues and established environmental indicators that explicitly show the level of risks posed by each issue. Our unique measurement indicators include greenhouse gas, energy, water, general waste, and hazardous waste. Long-term goals and annual roadmaps are being established for each indicator. Through this, we want to secure a systematic risk identification and evaluation process for climate change issues.	52-57
7 The organization's processes for managing climate-related risks	For various risks that our business sites and partner companies may face, we have established a response process that takes into account the scale and uncertainty of risks. Recognizing the need to establish company-wide policies and guidelines, the headquarters is in the process of establishing them to advance the process. We also included production activities, facilities, products, services, distribution, waste, and suppliers in the management scope.	36, 65
8 Integration of identification, assessment, and management process of climate-related risks and company-wide risk management system	We define the framework and responsibilities for risk management across the group, and disclose key policies, procedures, regulations and other operational documents governing risk management for each category. The risks and opportunities posed by climate change are prominent within the Group's risk area, and are an integral part of this process. Therefore, we set the right priorities to ensure that risks are managed as systematically and efficiently as possible.	36-39
Indicators and Targets of Reduction	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	
9 Indicators used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process	Companies can promote sustainability in a sustainable environment. SK chemicals sets detailed indicators in connection to energy and greenhouse gas, water resources, waste, environmental investment and compliance with laws. Then, we analyze the data for each indicator collected annually. Through this, we turn crises into opportunities. We preemptively respond to risks that may be encountered in the course of business operation and adopt solutions like increasing the proportion of eco-friendly materials production.	52-57
10 Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions	SK chemicals divides direct (Scope 1) and indirect (Scope 2) sources of GHG emissions that bring about climate change to calculate emissions, thereby reporting more accurate status. At the company level, Scope 1 emissions were 401,603 tCO ₂ eq and Scope 2 emissions were 96,081 tCO ₂ eq. Currently, a management guide for other indirect sources (Scope 3) is being established at the group level. SK chemicals is also devising our own management plan for customized management reflecting the characteristics of our unique business.	36, 53
11 Targets used by the organization to manage climate-related risks and opportunities and performance	Considering the GHG emissions in 2020, we are disclosing a clear goal for the GHG reduction rate and the target time to be achieved. Besides, we have established a roadmap towards the goal of '100% conversion to Green Portfolio by 2030'. We are currently in the process of developing biodegradable biomaterials, which are evaluated as an alternative to reducing carbon and plastic waste, and commercializing chemical recycling technology.	32-39

SASB

Goal Preparing measures to improve accessibility to SASB public information (by 2022)

We will faithfully disclose information in compliance with SASB standards and formulate management policies for the related information.

SASB Code	Accounting Metrics	Unit	2018	2019	2020	Note
Sustainability Disclosure Topics & Accounting Metrics						
Greenhouse Gas Emissions						
RT-CH-110a.1	Scope 1 Emissions	Metric tons (t) CO ₂ -e	428,672	388,037	401,603	
	Scope 1 Percentage covered under emissions-limiting regulations	%	100	100	100	
RT-CH-110a.2	Scope 1 Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, analysis of performance against those targets		SK chemicals has an organization dedicated to GHG management in place to measure and manage the amount of GHGs emitted by business site. We set a target of a 50% GHG reduction from the 2020 BAU level by 2030, and implemented our response strategies to fight against climate change. As a result, the final amount of GHGs emitted was 497,684tCO ₂ eq, of which Scope 1 emissions amounted to 401,603tCO ₂ eq and Scope 2 to 96,081tCO ₂ eq. For further GHG mitigation, we will develop an eco-friendly technology which enables energy use reduction and the replacement with energy sources emitting far less GHGs, thereby accelerating the amelioration of processes beyond our products and services.			
Air Quality						
RT-CH-120a.1	Air emissions of the following pollutants	NOx (excluding N ₂ O)	321.705	318.77	311.507	
		SOx	299.0	305.4	215.8	
		Volatile Organic Compounds (VOCs)	1.812	11.142	10.485	
		Hazardous Air Pollutants (HAPs)	N/A	N/A	N/A	
Energy Management						
RT-CH-130a.1	Total energy consumed	Gigajoules (GJ)	9,043,043	7,809,831	8,060,448	
	Percentage grid electricity	%	24.4	28.7	24.4	
	Percentage renewable	%	0.0052	0.0031	0.0039	
	Total self-generated energy	Gigajoules (GJ)	15.5	14.1	15.0	
Water Management						
RT-CH-140a.1	Total fresh water withdrawn	m ³	5,197,663	4,499,625	4,334,785	
	Total water consumed	m ³	8,848,780	7,651,130	7,333,344	
	Percentage in regions with 'High' or 'Extremely High' baseline water stress	%	0	0	0	

SASB Code	Accounting Metrics	Unit	2018	2019	2020	Note
Water Management						
RT-CH-140a.2	Number of incidents of non-compliance associated with water quality permits, standards, and regulations	Number	0	0	0	
RT-CH-140a.3	Description of water management risks and discussion of strategies and practices to mitigate those risks		Our procedures use large amounts of water, which is inevitable due to the nature of our business, manufacturing. So, we put efforts into water management. As for water intake, we put a focus on curtailing the absolute amount of water used while utilizing around 40% of recycled water. For wastewater, a spare wastewater treatment facility has been established to prepare for potential surges in water pollution triggered by abnormal production activities (procedural accident, unexpected rise in output).			
Hazardous Materials Management						
RT-CH-150a.1	Amount of hazardous waste	Generated	Metric tons (t)	9,339	9,417	10,080
		Percentage recycled	%	73.1	78.4	75.9
Community Relations						
RT-CH-210a.1	Discussion of engagement processes to manage risks and opportunities associated with community interests		SK chemicals has a huge impact on the local communities where we operate, and vice versa. Accordingly, we went beyond the corporate-centric perspective to take different views of the stakeholders in the communities into consideration when we identified risks and opportunities and established a response system. We are well cognizant that we need to reach a consensus among the members, based on which we directly and indirectly communicate with the stakeholders in the local communities. We identify the needs of them, taking advantage of the communication channels with local welfare centers and prioritize issues which require us to give solutions in consideration of those involved. Capitalizing on our human resources and business capabilities, we do our best to remedy the issues and disclose the level of enhancement through our sustainability reports.			
Workforce Health & Safety						
RT-CH-320a.1	Total recordable incident rate (TRIR)	Full-time employees	Rate	0.47	0.62	0.78
		Contract employees	Rate	0	0	0
	Fatality rate	Full-time employees	Rate	0	0	0
		Contract employees	Rate	0	0	0

SASB

SASB Code	Accounting Metrics	Unit	2018	2019	2020	Note
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Workforce Health & Safety

RT-CH-320a.2	Discussion of management systems used to integrate a culture of safety					The safety of our employees and partner companies is directly connected with the sustainability of our business. Therefore, SK chemicals has been working on enhancing our working environment so that all of us can enjoy a safe and healthy life. As part of efforts to figure out health-related key issues, we conduct medical check-ups for all employees and provide individual health consultations and regular follow-up care for people at risk of a health problem. On the basis of the results, we have developed various fitness programs such as programs for quit-smoking, escape from obesity, and walking 10,000 steps. Furthermore, Industrial Safety and Health Committee has been organized and operated with the representative of Ulsan Plant and the employee representative participated in order to proactively respond to risks related to our employees' fitness or occupational safety and health.
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Product Design for Use-phase Efficiency

RT-CH-410a.1	Revenue from products designed for use-phase resource efficiency	KRW	N/A	N/A	N/A	
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Safety & Environmental Stewardship of Chemicals

RT-CH-410b.1	Percentage of products that contain Globally Harmonized System of Classification and Labeling of Chemicals (GHS) Category 1 and 2 Health and Environmental Hazardous Substances	Percentage (%) by revenue	N/A	N/A	N/A	
	Percentage of such products that have undergone a hazard assessment	%	N/A	N/A	N/A	
RT-CH-401b.2	Discussion of strategy to (1) manage chemicals of concern and (2) develop alternatives with reduced human and/or environmental impact					More stringent regulations on chemical substances demonstrate the larger impact of risks on corporations that may arise from every stage of chemical substances management process and the raised social awareness of these risks. The nature of our business entails dealing with chemicals, so SK chemicals has established a systematic management system for chemical substances and developed waste recycling technology, thereby reducing our impact on the environment. In addition, we have developed eco-friendly substances which have better performance than the existing ones but do not emit endocrine disruptors causing various diseases such as diabetes, obesity or cardiovascular disorders. These products are combined with various products, thereby contributing to reducing our impact on humans and the environment.

Genetically Modified Organisms

RT-CH-401c.1	Percentage of products by revenue that contain genetically modified organisms (GMOs)	Percentage (%) by revenue	0	0	0	
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SASB Code	Accounting Metrics	Unit	2018	2019	2020	Note
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Management of the Legal & Regulatory Environment

RT-CH-530a.1	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry					Korea highly depends on trade, so we need to stay on top of the trends regarding climate change response policies such as the discussions on the adoption of carbon border tax. In line with the global trends, the Korean government has established the vision for 2050 Carbon Neutrality and implemented diverse policies to make the vision realized. In response, SK chemicals set targets of a 50% reduction by 2030 and carbon neutrality by 2050 with a GHG mitigation roadmap drawn up. And various activities have been conducted to achieve the targets. In addition, we have kept track of continuously changing regulations and policies put forward by the government, such as regulations on plastic, medical insurance and drug pricing, and personal data protection. And the findings are shared with all of our employees including the management so that they are keenly aware of these issues and come up with strategies to respond to them.
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Operational Safety, Emergency Preparedness & Response

RT-CH-540a.1	Process Safety Incidents Count (PSIC)	Number	8	4	4	
	Process Safety Total Incident Rate (PSTIR)	Rate	0.47	0.22	0.20	
RT-CH-540a.2	Process Safety Incident Severity Rate (PSISR)	Rate	0	0	0	
	Number of transport incidents	Number	0	0	0	

Activity Metrics

RT-CH-000.A	Production by reportable segment	Copolyester resin, DMT etc.	ton	350,400	334,400	373,320	
		Bio Diesel	ton	200,000	240,000	64,235	Sold in May 2020
		BON	ton	10,220	10,220	15,330	
		Vaccine	dose	137,760,000	138,880,000	157,920,000	
		Tablet	T	1,053,089,100	755,310,686	767,542,438	
	Patch	P	65,091,600	65,356,200	66,414,600		

Independent Assurance Statement

To readers of 2020 SK chemicals Sustainability Report 2020

Introduction

Korea Management Registrar (KMR) was commissioned by SK chemicals to conduct an independent assurance of its 2020 Sustainability Report (the Report). The data and its presentation in the Report is the sole responsibility of the management of SK chemicals. KMR's responsibility is to perform an assurance engagement as agreed upon in our agreement with SK chemicals and issue an assurance statement.

Scope and Standards

SK chemicals described its sustainability performance and activities in the Report. Our Assurance Team carried out an assurance engagement in accordance with the AA1000AS v3 and KMR's assurance standard SRV1000. We are providing a Type 2, moderate level assurance. We evaluated the adherence to the AA1000AP (2018) principles of inclusivity, materiality, responsiveness and impact, and the reliability of the information and data provided using the Global Reporting Initiative (GRI) Index provided below. The opinion expressed in the Assurance Statement has been formed at the materiality of the professional judgment of our Assurance Team.

Confirmation that the Report was prepared in accordance with the Core Options of the GRI standards was included in the scope of the assurance. We have reviewed the topic-specific disclosures of standards which were identified in the materiality assessment process. We also confirmed that the report was prepared in accordance with the TCFD recommendations and SASB.

- **GRI Sustainability Reporting Standards**
- **Universal standards**
- **Topic specific standards**
 - GRI 201: Economic Performance
 - GRI 305: Emissions
 - RI 308: Supplier Environmental Assessment
 - GRI 403: Occupational Health and Safety
 - GRI 404: Training and Education
 - GRI 413: Local Communities
- **SASB Sustainability Disclosure Topics & Accounting Metrics**
- **TCFD recommendations**

As for the reporting boundary, the engagement excludes the data and information of SK chemicals' partners, suppliers and any third parties.

KMR's Approach

To perform an assurance engagement within an agreed scope of assessment using the standards outlined above, our Assurance Team undertook the following activities as part of the engagement:

- reviewed the overall Report;
- reviewed materiality assessment methodology and the assessment report;
- evaluated sustainability strategies, performance data management system, and processes;
- interviewed people in charge of preparing the Report;
- reviewed the reliability of the Report's performance data and conducted data sampling;
- assessed the reliability of information using independent external sources such as Financial Supervisory Service's DART and public databases.

Limitations and Recommendations

KMR's assurance engagement is based on the assumption that the data and information provided by SK chemicals to us as part of our review are provided in good faith. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. To address this, we referred to independent external sources such as DART and National Greenhouse Gas Management System (NGMS) and public databases to challenge the quality and reliability of the information provided.

Conclusion and Opinion

Based on the document reviews and interviews, we had several discussions with SK chemicals on the revision of the Report. We reviewed the Report's final version in order to make sure that our recommendations for improvement and revision have been reflected. Based on the work performed, it is our opinion that the Report applied the Core Option of the GRI Standards. Nothing comes to our attention to suggest that the Report was not prepared in accordance with the AA1000AP (2018) principles.

Inclusivity

SK chemicals has developed and maintained different stakeholder communication channels at all levels to announce and fulfill its responsibilities to the stakeholders. Nothing comes to our attention to suggest that there is a key stakeholder group left out in the process. The organization makes efforts to properly reflect opinions and expectations into its strategies.

Inclusivity

SK chemicals has a unique materiality assessment process to decide the impact of issues identified on its sustainability performance. We have not found any material topics left out in the process.

Responsiveness

SK chemicals prioritized material issues to provide a comprehensive, balanced report of performance, responses, and future plans regarding them. We did not find anything to suggest that data and information disclosed in the Report do not give a fair representation of SK chemicals' actions.

Impact

SK chemicals identifies and monitors the direct and indirect impacts of material topics found through the materiality assessment, and quantifies such impacts as much as possible.

Reliability of Specific Sustainability Performance Information

In addition to the adherence to AA1000AP (2018) principles, we have assessed the reliability of economic, environmental, and social performance data related to sustainability performance. We interviewed the in-charge persons and reviewed information on a sampling basis and supporting documents as well as external sources and public databases to confirm that the disclosed data is reliable. Any intentional error or misstatement is not noted from the data and information disclosed in the Report.

Competence and Independence

KMR maintains a comprehensive system of quality control including documented policies and procedures in accordance with ISO/IEC 17021:2015 - Requirements for bodies providing audit and certification of management systems. This engagement was carried out by an independent team of sustainability assurance professionals. KMR has no other contract with SK chemicals and did not provide any services to SK chemicals that could compromise the independence of our work.

Global Initiative

SK chemicals is actively supporting the philosophy and principles of the UN's UN SDGs and UNGC. By actively responding to ESG-related assessments (MSCI, DJSI, KCGS, CDP), we participate directly or indirectly in related global initiatives. On top of that, we release information, which is to be disclosed according to the SASB and TCFD guides. Our subsidiary, SK Bioscience, is also active in business initiative, for example, receiving up to USD 14.2 million support from the Coalition for Epidemic Preparedness Innovations (CEPI).



UN Sustainable Development Goals (UN SDGs)

The UN Sustainable Development Goals (SDGs) contain 17 main goals and 169 detailed goals under the slogan of 'Leave no one behind'. SK chemicals has selected 11 goals according to our unique business nature that provides eco-friendly materials and total healthcare solutions and is conducting related activities. Going forward, we will carry out activities in consideration of more goals in wider areas.

UN SDGS	Our Activities	
Goal 3	Ensure healthy lives and promote well-being for all at all ages	<ul style="list-style-type: none"> Contributing to disease treatment through pharmaceutical business Contributing to disease prevention through vaccine business
Goal 4	Ensuring quality education and giving more opportunities for lifelong education	<ul style="list-style-type: none"> Supporting to earn job-related degrees and certificates Implementing personal information protection and security training Providing safety training and education for the company and for partner companies Supporting training for partner companies to strengthen their competitiveness Offering an environmental education program for elementary school students Providing a career education program for low-income youth
Goal 6	Ensure availability and sustainable management of water and sanitation for all	<ul style="list-style-type: none"> Reducing wastewater by establishing eco-friendly process and sites

UN SDGS	Our Activities	
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all	<ul style="list-style-type: none"> Raising energy efficiency through the establishment and operation of eco-friendly business sites Converting to high-calorie fuel and increasing the usage rate of renewable energy Supporting the use of energy through our Myanmar Cookstove supply project
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment	<ul style="list-style-type: none"> Creating quality jobs through making support system and policies. Encouraging the growth of partner companies through financial support programs
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	<ul style="list-style-type: none"> Investing more in R&D regarding the protection of global environment Rigorously investing in R&D regarding the improvement of human health
Goal 10	Reduce inequality within and among countries	<ul style="list-style-type: none"> Mitigating inequality through human rights system
Goal 12	Ensure sustainable consumption and production patterns	<ul style="list-style-type: none"> Striving to recycle wastewater or waste materials generated in the course of production
Goal 13	Take urgent action to combat climate change and its impacts	<ul style="list-style-type: none"> Newly establishing and operating a management organization solely responsible for climate change risk Establishing and implementing goals for GHG reduction and biomaterial development Making efforts to mitigate GHG emissions through the use of waste resources
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	<ul style="list-style-type: none"> Reducing marine pollution risks through the development of eco-friendly plastic products
Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	<ul style="list-style-type: none"> Evaluating ESG management status of partner companies and supporting their systematization Building a comprehensive solution based on various infrastructures and partner networks Promoting global partnership activities for sustainable management

Membership Status

Korea Economic Research Institute	Korea Employers Federation	Seongnam Chamber of Commerce	Korean Fair Competition Federation
Korea Industrial Technology Association	Korean Association of Occupational Health Nurses	Seongnam Branch of Korea Industrial Safety Association	



To minimize impact on environment and use of natural resources, spot color and coating are avoided, and soybean oil is used for printing process.