# SK chemicals Sustainability Report 2012


SK chemicals

Healthcare & Earthcare

# About This Report

**This is the second report on sustainable management that SK chemicals is publishing, following the first *2011 SK chemicals Sustainability Report* it published in June 2012. This report specifies the efforts and activities of SK chemicals to ensure sustainability across all areas of its management and operations and to fulfill its economic, environmental, and social responsibilities. SK chemicals publishes sustainability reports annually to communicate, in great detail and with transparency, its efforts and achievements in sustainable management to all stakeholders. It is our hope that this report would demonstrate SK chemicals' commitment to the cause of sustainability.**

**Cover Design**

The *2012 SK chemicals Sustainability Report* employs a series of intuitively designed icons to help and guide the reader's understanding. The icons on the cover represent the major areas of, strategies for, and achievements in SK chemicals' operations.

**Report Framework**

This report has been written by applying the GRI 3.1 Guideline from the Global Reporting Initiative. The financial information this report lays down conforms to the Korean International Financial Reporting Standards (K-IFRS). This report also discusses how the information it provides relates to the seven core subjects and issues of ISO 26000, as well as to the principles of the UN Global Compact (UNGC).

**Report Period**

The indicators of performance listed in this report are based on the data pertaining to SK chemicals' operations and activities that took place from January 1, 2012 to December 31, 2012. Data from the years 2010 and 2011 have been added wherever necessary to facilitate the reader's understanding based on comparisons of yearly trends. Data from other years in which the Company's major activities or programs were initially introduced are also provided to assist the reader's recognition of trends.

**Report Scope**

In principle, this report discusses the activities of the domestic sites of SK chemicals' operations (the Company headquarters, R&D center, and its four plants in Korea) with respect to sustainable management. The report indicates otherwise where this is not the case. The basic currency used in this report is the Korean won. This report also follows the metric system.

**Report Verification**

This report has been verified by an independent third party, i.e., Lloyd's Register Quality Assurance (LRQA), in April 2013. The verification report, affirming the validity and reliability of this report, can be found on page 78.

**Contact Information**

All reports that SK chemicals publishes on its sustainable and environmental management efforts can be viewed on SK chemicals' official website (www.skchemicals.com) and the environmental management website (www.skecoweb.com). Should you have any queries or comments regarding the *2012 SK chemicals Sustainability Report*, please feel free to contact us.
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# CEOs' Message



**Pursuing the mission of promoting the health of humankind and protecting the environment of the Earth, SK chemicals continues to practice sustainable management that increases the happiness of all, generates increasing values, and ensures continued growth.**

Lee Moon-Suk, CEO
SK chemicals

**Dear readers,**

Notwithstanding the economic stagnation at the local and international level, or the increasing governmental regulations that are transforming the business environment, SK chemicals managed to produce visible achievements in a number of strategic areas in 2012, successfully completing its restructuring, identification of sources for its future growth, and enhancement of the competitiveness of its existing businesses.

Throughout 2012, all the members of SK chemicals remained unified in pursuing the common goal of sustainable growth, by pressing for the investment in the PPS project, which is expected to lead the Company's future, and by facilitating the successful completion of the vaccine R&D milestones. The Company also sought to strengthen the sustainability of its existing operations by expanding the copolyester plant and by adding a new unit to the plant at Cheongju.

The Green Culture, Green Process, and Green Products campaign that had sustained SK chemicals' environmental management has been extended in scope to apply to all areas of the Company's sustainable management efforts. Thanks to these and its other accomplishments, SK chemicals managed to be included in the Dow Jones Sustainability Index (DJSI) Korea for three years in a row, and also went on to win the Carbon Disclosure Project (CDP) Award.

The Green Culture, Green Process, and Green Products campaign at SK chemicals seeks to enhance the sustainability of the Company, society, and individuals, in the belief that doing so affects the happiness of stakeholders. More specifically, the campaign seeks to help solve the problems of environmental degradation and the growing income inequality that are the byproducts of the advancement of civilizations. SK chemicals seeks to create an ecosystem of coexistence, which heals nature and people's minds while ensuring continued benefits for civilizations. The Company thus ensures and manages operations in ways that minimize the burden on the natural environment, generate new values for the future, and narrow the socioeconomic gaps among people.

The efforts SK chemicals has made, setting examples for environmental management worldwide, include its campaigns to maximize the energy efficiency of its operations and to minimize the environmental burdens from its business activities. Various business sites of SK chemicals are following the Company's Carbon Neutrality Roadmap, using biofuels, solar energy, and geothermal generation to support their operations. The Company also produces an increasing range and number of eco-friendly products, including the heat-resistant plastic ECOZEN® and biodiesel. The Company building, EcoLab, earned the Platinum rating from the Leadership in Energy and Environmental Design (LEED). The Company also plans to complete the construction of Korea's largest vaccine plant in Andong, thereby enhancing the synergy in the research and development of chemicals and biotechnology.

As part of its efforts to bridge growing socioeconomic gaps, SK chemicals supports children around the world through its sponsorship of Compassion, while employees continue to participate in an increasing range of volunteer works that support children and youth financially and otherwise. The Company also seeks to narrow the urban-rural gap by promoting the purchase of organic agricultural produce from rural communities. In addition to the Silver Theater it provides for the entertainment of seniors, the Company also patronizes artists and humanities organizations, enabling beneficiaries to apply their talents as widely as possible.

It is our hope that this report on our sustainable management activities, the second of its kind to be published, will properly inform all stakeholders of the economic, social, and environmental efforts we are making. We hope that this report will advertise our commitment to, and practice of, sustainable management both inwardly and outwardly, while also helping all the members of the Company to become "warm professionals" with big hearts and great capabilities.

We humbly ask you to continue to support us in our journey toward comprehensive sustainable management with your attention and encouragement.

Thank you.

Lee In-Serk, CEO
SK chemicals

SK chemicals Profile

# Company Overview



## Chemicals for nature, pharmaceutical science for humans, and innovation for the future

Since its foundation as Sunkyong Fibers Ltd. in 1969, SK chemicals has been shaping the chemical and pharmaceutical industries of Korea by setting examples of transformation and innovation. In 2011, the Company announced a new vision: promoting the health of humankind and protecting the environment of the Earth. It has since restructured itself, centered on two chief divisions: the Green Chemicals Business Division and the Life Science Business Division. A leading provider of world-class, topnotch, chemical and pharmaceutical solutions, SK chemicals is now transforming itself into an international leader of comprehensive healthcare solutions.

## Vision and Mission

**Slogan**

**Healthcare and Earthcare**

**Mission**

Healthcare and Earthcare: We promote the health of humankind and protect the environment of the Earth.

**Vision**

To become an international leader of eco-friendly materials and comprehensive healthcare solutions.

**Core Values**

**Healing**
**Safeguarding life from threats of diseases and injuries.**
We provide effective and important pharmaceutical solutions that protect the lives and health of humankind.

**Preventive Management**
**Making the world a safer and healthier place.**
Our vaccines and "new healthcare" products provide innovative solutions for disease prevention and health management.

**Environmental Protection**
**Protecting nature.**
Our eco-friendly materials provide attractive alternatives to petrochemical varieties and protect the natural environment.

**Energy Efficiency**
**Preventing the depletion of fossil fuel reserves.**
Our compound materials and energy storage devices are compact and these materials facilitate the effective use of new and renewable energy.

**Goals**

| For Customers | For Shareholders | For Society | For Members |
|---|---|---|---|
| Providing comprehensive healthcare solutions. | Generating profits through endless innovation. | Ensuring eco-friendly management and operations. | Providing enjoyable and exciting workplaces. |





## Company History

**1969.**
- Founded as Sunkyong Fibers Ltd.

**1989.**
- Launched the Life Science Research Center.

**1999.**
- Developed Korea's first new drug, SUNPLA®, which is the third-generation platinum complex anticancer agent.

**2001.**
- Established SK chemicals Qingdao Co., Ltd. in China
- Successfully developed SKYGREEN®, an eco-friendly and highly functional synthetic resin.

**2002.**
- Launched Joins® for arthritis treatment, Korea's first natural drug.

**2006.**
- Successfully developed the technology for producing biodiesel.

**2007.**
- Successfully developed Mvix®, a drug for treating erectile dysfunction.
- Acquired In2Gen, a biopharmaceutical venture enterprise.

**2008.**
- Acquired UBcare, a healthcare venture enterprise.

**2009.**
- Launched ECOZEN®, a bio-based polyester.

**2010.**
- Eco Prime®, SK chemicals' biodiesel brand, won the Ministerial Award at the Green Technology Awards.
- ECOZEN® became one of the Ten New Technologies of Korea and won the Silver Award at the Korea Technology Awards.
- Decided the site for the construction of a new cell-culture vaccine plant (Andong).

**2011.**
- Became the first in the world to launch a film-type erectile dysfunction treatment, Mvix®-S.
- EcoLab earned the Platinum rating from the LEED and won the Grand Prize at the Korea Architectural Culture Awards.
- ECOZEN® gained approval from the U.S. FDA.

**2012.**
- Began construction of the new vaccine plant (to be completed in 2013).
- NBP601, a hemophilia treatment, is named one of the Ten New Technologies of Korea and won the Minister of Knowledge Economy Award.

## Management Performance

SK chemicals earned 1.48 trillion won in total revenue in 2012, thanks to the significantly improved profitability of the existing businesses as well as the new businesses successfully launched by both the Green Chemical Business Division and the Life Science Business Division. Despite the numerous setbacks that confront the Company, including market stagnation and changing government policies locally and internationally, the Company has set its eyes upon a target revenue of 1.66 trillion won to be earned in 2013, 12 percent up from the previous year's revenue.

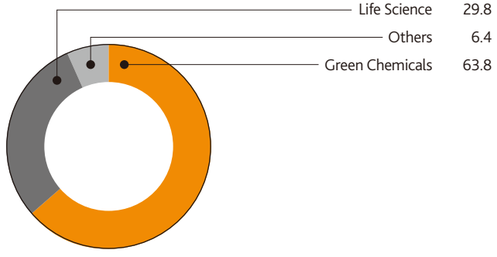
**Revenue** (billion won)

| | |
|---|---|
| 2012 | 1,476.2 |
| 2011 | 1,546.1 |
| 2010 | 1,334.5 |

**Net Term Profit** (billion won)

| | |
|---|---|
| 2012 | 39.3 |
| 2011 | 30.8 |
| 2010 | 39.9 |

**Revenue Distribution by Division** (%)



## Areas of Business

### Chemicals for Nature: Green Chemical Business Division

The Green Chemical Business Division, overseeing the production and distribution of all the Company's chemical products, has been producing for the international market a series of eco-friendly chemicals of topnotch quality since 1978, when it first introduced polyethylene terephthalate in Korea for making bottles. Seeking to become a provider of eco-friendly solutions, the Division has identified four core areas of research and development: compound materials, highly functional materials, bio materials, and energy storage materials. The Division's advanced technology has been proven with the successful development of ECOTRAN®, a highly functional polyphenylene sulfide (PPS), and SKYGREEN®, a polyethylene terephthalate-glycol resin. SK PLA, a bio-plastic, and ECOZEN®, a polyester containing biomass, are already leading the eco-friendly material market. Eco Prime®, the No. 1 biodiesel brand in Korea, is also poised to enter and sweep the international market with its superior performance.

The Green Chemical Business Division seeks to provide solutions for some of the most urgent environmental problems facing everyone today by providing products that enable the sustainable management of natural resources. The Division will help make SK chemicals become an international leader of sustainable solutions with its advanced science and records of success.

### Pharmaceutical Science for Happiness: Life Science Business Division

The Life Science Business Division, overseeing the production and distribution of all SK chemicals' pharmaceutical and healthcare products, seeks to become a provider of a comprehensive range of healthcare solutions, encompassing the diagnoses, prevention, and treatments of diseases. The Division has helped SK chemicals become the sole leader of the Korean pharmaceutical industry since 1999 by launching three original formulae: SUNPLA®, Korea's first cancer treatment drug; Joins®, Korea's first natural drug for the treatment of arthritis; and Mvix®, Korea's own erectile dysfunction treatment. With its accumulated research and development experience in synthetic and biomedicines, the Division is now spearheading research on cell-culture vaccines. The innovative products and the expanding global network of the Life Science Business Division are strengthening SK chemicals' position in the international market. The Division now seeks to ensure its continued growth by pioneering ubiquitous healthcare, applying the latest information technology.

The progress in technology has dramatically extended the average human lifespan and also raised the expectations of quality of life, thus brightening the future prospects of the healthcare industry worldwide. The Life Science Business Division will continue to research and develop solutions that satisfy the changing needs of our times and that strengthen the health of humankind.

**Green Chemical Business Division**

Four Core Areas

- Composite materials
- High-performance materials
- Bio materials
- Energy storage materials

Main Products

- Highly functional PETG resin
- Polyester resins for adhesives.
- Materials and chemicals for automobiles.
- High-purity solvents, Display materials, and electrolytic solutions for super- capacity capacitors.
- Carbon fiber Prepreg.
- PET resins
- Biodiesel.

**Life Science Business Division**

Three Core Areas

- Pharmaceuticals
- Vaccines
- New Healthcare

Main Products

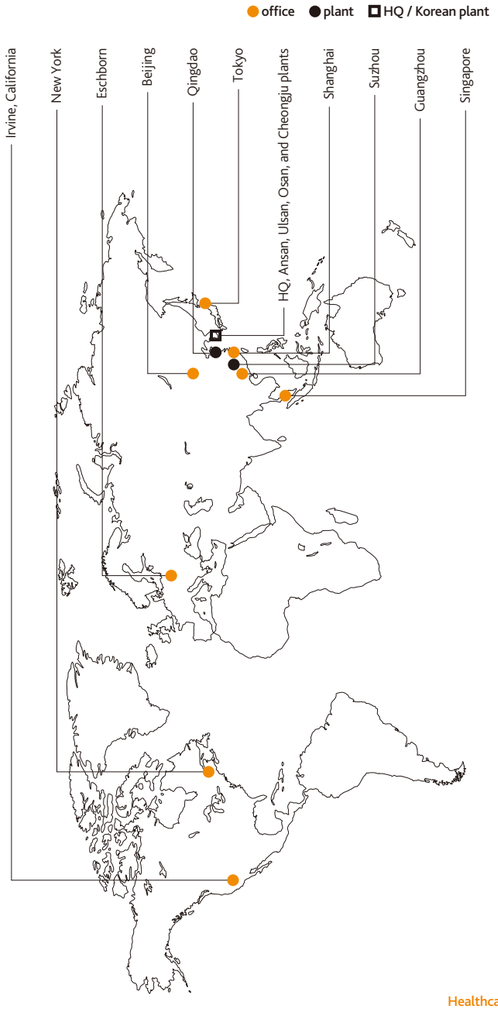
- Synthetic drugs
- Natural drugs
- Drug delivery systems
- Vaccines and biomedicines
- New healthcare solutions





## Global Network

SK chemicals operates its headquarters and four plants in Korea (at Ulsan, Osan, Cheongju, and Ansan). The Ulsan plant produces the products of the Green Chemical Business Division. The Osan, Cheongju, and Ansan plants provide the products of the Life Science Business Division. The Company also operates a number of plants and offices in other countries, including China (Qingdao and Suzhou), Germany, Singapore, and the United States.




## Subsidiaries and Investments

SK chemicals

**SK E&C**
Engineering and construction
Ownership ratio 25.4%

**SK Gas**
LPG importation, storage, distribution, etc.
Ownership ratio 45.5%

**TSK Water**
Basic environmental facility operation, etc.
Ownership ratio 25.0%

### Green Chemicals

Subsidiaries / Investments in Korea

**SK CYTEC**
UV-curable resins
Polyester resins for powder coating
Ownership ratio 50.0%

**SK Syntec**
Management consulting, etc.
Ownership ratio 100.0%

**SKCA**
SKYGREEN®, ECOZEN®
Ownership ratio 100.0%

Subsidiaries / Investments Abroad

**SK chemicals Qingdao**
Prepreg.
Ownership ratio 100.0%

**SK chemicals Suzhou**
Polyester glues, small PETG packaging materials
Ownership ratio 100.0%

**ST Green Energy**
Trading raw material for biodiesel, etc.
Ownership ratio 50.0%

### Life Science

Subsidiaries / Investments in Korea

**UB care**
EMR solutions, distribution of medical devices, pharmaceutical marketing solutions, e-commerce.
Ownership ratio 44.0%

Subsidiaries / Investments Abroad

**SK Pharma Beijing**
Trast®, Albumin, etc.
Ownership ratio 100.0%

**SK chemicals GmbH**
Pharmaceuticals, etc.
Ownership ratio 100.0%

SK chemicals Profile

# 2012 Highlights



SK chemicals continues to practice sustainable management in order to not only increase its profits, but also to enhance the welfare of society, protect the environment, and benefit humankind. The successful development of harm-free ECOZEN® and the cell-culture influenza vaccine, which is free of defects associated with other similar vaccines, shows how a company, in trying to excel at what it does, also contributes to the environmental protection and the welfare of humankind. SK chemicals has also established plans to return part of its gains to society, by distributing its vaccines in developing countries and vice versa. SK chemicals recognizes the social responsibilities it bears as a corporate citizen, and engages in activities that attest to its commitment to sustainability. The Company's efforts to practice responsible and sustainable management has allowed it to be included in the DJSI Korea for three years in a row and also named a CDP Leader company in 2012.

This section highlights some of the major accomplishments and efforts of SK chemicals in sustainable management in 2012. These records of success are what strengthen SK chemicals' resolve to fulfill its responsibilities and make progress in 2013 and beyond.

## Sustainability Overview

Chairman Kim
Wins Forbes CEO Award

### Chairman Kim Wins Forbes CEO Award

Chairman Kim Chang-geun of the Association for the Pursuit of SUPEX(former Vice-Chairman of SK chemicals) won the 2012 Forbes CEO Award for Communication. In his address at the awards ceremony, Chairman Kim emphasized: "The first priority is to communicate with all the members of the company in order for our new attempts to gain acceptability. I share today's honor with my colleagues at SK chemicals, who have taught me that what matters to communication are not the programs, but the CEO's will to communicate and the trust he earns from employees." SK chemicals also celebrated 42 years of experiencing no labor-management disputes.

• Chairman Kim served as Vice-Chairman of SK chemicals from 2004 to December 2012.

**94%**

SK chemicals scored 94 out of 100 on the 2012 CDP Korea 250 Survey.

### Included in DJSI Korea for 3 Consecutive Years and Named CDP Leader

SK chemicals was named the Raw Material Leader on the 2012 Carbon Disclosure Project (CDP) Korea 250 Survey, conducted by the Carbon Disclosure Project Korea Committee. The CDP Korea 250 Survey requires 250 companies listed on stock exchanges to disclose information on their carbon activities, and awards companies with exemplary records on reducing carbon emissions. SK chemicals was also included in the Dow Jones Survey Index (DJSI) Korea for three years in a row. The DJSI Korea reflects the evaluation by Dow Jones and SAM of the sustainability of the 200 largest companies in Korea. These recognitions prove the strength of the Company-wide systems for sustainable management that SK chemicals has developed over the years.





## Business Domain

**50%**

The new cell-culture influenza vaccine is expected to halve the production cycle (from six to three months).

### Korea's First Cell-Culture Influenza Vaccine

The Government-wide New Influenza Vaccine Project Group and SK chemicals have collaborated successfully over developing Korea's first cell-culture influenza vaccine, whose clinical trial plan has recently been approved by the Korean Ministry of Food and Drug Safety. When the technology is completed, large quantities of the cell-culture influenza vaccine will be produced in much shorter periods of time, even without the use of fertilized chicken eggs. The vaccine, once manufactured on a mass scale, will thus better protect the public against sudden and acute epidemics, such as avian influenza, and can also be administered to people with egg allergies. The new vaccine provides a groundbreaking and much better alternative to the currently available vaccines.

**3 countries have approved**

The eco-friendliness of ECOZEN® is certified by authoritative agencies in Korea, the U.S., and Japan.

### ECOZEN® Becomes First Korean Resin to Be Certified by JHOSPA

SK chemicals' original eco-friendly resin, ECOZEN®, has been certified for its safety and hygiene by the Japan Hygienic Olefin and Styrene Plastic Association (JHOSPA). The certification makes ECOZEN® the first Korean resin of its kind to be certified not only in Japan, but also in the United States (by the FDA) and Korea (Bio-plastic No. 1, certified by the Korea Bio Material Packaging Association). ECOZEN® is the first biomass-based, highly heat-resistant transparent plastic that SK chemicals has commercialized for the first time in world history. The material not only withstands corrosion by various chemicals, but is also free of harmful substances like bisphenol-A. Thus, it boasts of a wide range of applications across almost all areas of industrial and household activities.

**2x+**

The margin by which CSL627, a new biomedicine for treating hemophilia, has increased safety.

### Clinical Tests of New Bio Drug, CSL627, Begin in the U.S. and the EU

The clinical trials of CSL627, an original biomedicine formula that SK chemicals developed on its own and exported to CSL Limited of Australia in June 2009, began in the United States and the European Union. Non-clinical tests of the formula revealed that it was a much safer choice than the existing hemophilia treatments and it has also radically increased the half-life of the human body. At present, both the first and third phases of clinical trials are being performed to demonstrate, respectively, the formula's safety and efficacy on patients with Type-A hemophilia.

• Name of SK chemicals' new hemophilia treatment formula, NBP601, after it was exported to CSL.

**16.7%**

The margin by which Mvix®-S has increased the rate of absorbency compared to the previous format.

### Mvix®-S Sells 1 Billion won in Just 15 Days Following Its Launch

Mvix®-S, an erectile dysfunction treatment in a new format, sold over 1 billion won in just 15 days following its launching on the market. Mvix®-S 50 mg, the world's first orally dissolved film-type (ODF-type) erectile dysfunction treatment, is so thin and light that it can be easily inserted in a wallet. It is garnering praises for how easy it is to carry around and consume.

## Environmental Performance

**100,000tons**

The margin by which the plant at Ulsan reduces greenhouse gas emissions by using the Eco Green Boiler.

### Ulsan Plant Wins Minister Award for Reducing Greenhouse Gas Emissions

SK chemicals' plant at Ulsan, now emerging as one of the most eco-friendly industrial sites in Korea, won the Minister of Environment Award. The award recognizes the plant's efforts to form a resource-recycling community and minimize greenhouse gas emissions by running the Eco Green Boiler system that converts scrap wood into fuels for energy, and another industrial boiler system that uses the biogas from a local food waste processing plant to fuel its operations.

**Green Triple 40!**

SK chemicals' Green Management Policy: 40 hours of volunteer work per employee, 40-percent reduction in $CO_2$ emissions, and 40-percent increase in the revenue from eco-friendly businesses.

### Topping Green Rankings for Two Years in a Row

SK chemicals topped the Green Rankings Survey for two years in a row, co-organized by the Ministry of Knowledge Economy, the *Joong-ang Ilbo*, Sustinvest (a corporate evaluation agency) and FnGuide. The Green Rankings Survey ranks leading companies of Korea in terms of their determination for eco-friendly management, the amounts of pollutants they emit, and the extents to which they disclose environmental information. SK chemicals was highly praised for launching an organization specializing in environmental management in 2010, and seriously promoting its Green Triple 40 Campaign. The campaign seeks to encourage each employee to perform 40 hours of volunteer work a year, to reduce carbon dioxide emissions by 40 percent, and to increase the Company-wide revenue from eco-friendly businesses by 40 percent by 2020.

## Social Commitment

**10,000,000**

The number of people in developing countries who can benefit from SK chemicals' vaccine

### MOU for Distributing Vaccine to 10 Million People in Developing Countries

In November 2012, SK chemicals signed a memorandum of understanding with the International Vaccine Institute for collaboration over the development of a typhoid vaccine. Typhoid infects 27 million people and leads to the death of 200,000 worldwide each year. The two organizations will share the basic technology for developing a vaccine, which aims to put a stop to this tragedy. Their collaboration will also encompass worldwide clinical trials of the vaccine and obtain preapproval from the World Health Organization. The two organizations will then distribute 10 million doses of vaccines to developing countries via UNICEF.

**1,100**

The number of employees who work at SK chemicals in Korea and participate in the campaign.

### Hope Maker CSR Campaign Launched

SK chemicals signed agreements with the city of Seongnam in Gyeonggi-do and social service organizations in the region to extend support and aid to the underprivileged via the Company's CSR campaign, Hope Maker. Hope Maker involves SK chemicals employees donating part of their monthly wages to the local social service centers for youth, and also sharing their time and talents. SK chemicals, which has been supporting 300 or more children in developing countries via Compassion, thus now supports and helps poor children and teenagers in Korea as well. The Company plans to form partnerships with social service centers in Bundang and other cities in the vicinity to provide donations for over 150 children and teenagers. It also encourages employees to share their time, talents, and knowledge by visiting the centers they support on a weekly basis.





SK chemicals Profile

# Governance Structure

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SK chemicals is working hard to establish a management system that is centered on the Board of Directors. Such a system will be necessary to ensure the protection of stakeholders' rights and interests as well as the Company's continued growth in the long run. The Board of Directors presides over the Management Committee, the Auditing Committee, and the Nonexecutive Director Nomination Committee, that enhance the efficiency of the Board's operations. The Auditing and Nonexecutive Director Nomination Committees, in particular, are led by independent nonexecutive members of the Board.

## Board Structure and Decision-making System

The Board at SK chemicals consists of four independent, nonexecutive directors, and three internal directors. The nonexecutive directors are persons who have been nominated to the General Shareholders' Assembly by the Nonexecutive Director Nomination Committee who have reviewed their qualifications. The General Shareholders' Assembly, in turn, decides whether to appoint the nominated candidates as nonexecutive directors to the Board, and also whether to elect the candidates for internal directorship to the Board.

SK chemicals compiles the agenda for the Board to deliberate and notifies each director of the agenda for an upcoming meeting at least five days before the meeting takes place. Once a meeting is convened, the Company keeps the minutes of the deliberations and records of the resolutions passed. The Company also informs the directors of important matters immediately after each Board meeting ends. In 2012, the Board held 12 meetings in total, and thoroughly discussed and decided major issues. They also heard reports on economic trends locally and internationally, and deliberated counterplans. The average rate of attendance in Board meetings was 88.8 percent, and 85.4 percent among nonexecutive directors, in 2012.

In order to ensure the transparency of the Board's decisions, SK chemicals ensures that more than a majority of its members are nonexecutive directors. The Auditing Committee, entirely comprised of nonexecutive directors, also actively checks and prevents the Company or the Board from engaging in any illegal activities. As a result, no violations of laws applicable to the production and distribution of products or services were reported in 2012. SK chemicals also operates the Board Secretariat, whose reports facilitate the Board's timely identification and discussion of the Company's achievements in economic, environmental, and social aspects of management. The Board is required to convene at least one meeting each month to hear and discuss opinions from shareholders and employees. The Board Secretariat informs all the directors of each meeting, and its location, date, and agenda, at least five days before the scheduled meeting.

### Board Structure

as of May 31, 2013

| Type | | Member |
|---|---|---|
| Board of Directors | Internal | Choi Chang-won (President and Vice-Chairman) |
| | | Lee Moon-Suk (CEO, Green Chemicals) |
| | | Lee In-Serk (CEO, Life Scinece) |
| | Nonexecutive | Kang Bo-hyeon, Kwon Tae-shin, Heo Gi-ho, Ahn Deok-geun |
| Auditing Committee | | Kang Bo-hyeon, Kwon Tae-shin, Ahn Deok-geun (all nonexecutive) |
| Nonexecutive Director Nomination Committee | | Lee Moon-Suk (internal), Kang Bo-hyeon, Kwon Tae-shin, Ahn Deok-geun (all nonexecutive) |
| Management Committee | | Lee Moon-Suk, Lee In-Serk (both internal) |

### Major Shareholders

as of December 31, 2012

| Shareholder | No. of shares owned | Ownership ratio (%) |
|---|---|---|
| Choi Chang-won | 2,122,761 | 10.18 |
| National Pension | 1,966,100 | 9.43 |
| Mirae Asset Management | 1,561,316 | 7.49 |
| Employee Stock Holders Assoc. | - | - |

SK chemicals Profile

# Communication with Stakeholders



The business activities of a company affect stakeholders and the society at large in diverse ways. SK chemicals recognizes that maintaining continued communications with diverse groups of stakeholders affected by its products, services, and activities, is crucial to its goal of sustainable growth. SK chemicals continues to cooperate closely with various groups of stakeholders in order to gain a better understanding of social expectations of its activities and to handle the tasks of sustainable management better.

**1.48 trillion won**

### Customers

SK chemicals provides eco-friendly plastics for industrial clients and pharmaceutical solutions for the treatment and prevention of diseases for the general public. These customers help SK chemicals earn revenue by purchasing its products. SK chemicals intends to grow by providing, with its continued research and development, products with improved performance, more reasonable prices, and less harm to one's health and the environment. In 2012, these efforts resulted in the total yearly revenue of 1.48 trillion won.

**783.8 billion won**

### Business Partners

SK chemicals paid 783.8 billion won in total to its Business Partners that supplied raw materials, energy, and services for SK chemicals' production. Ensuring reliable supplies of safe raw materials and energy is one of the key factors of SK chemicals' competitiveness. The Company continues to strengthen relations with these Business Partners on the basis of mutual trust, and provides them with a wide range of support to help them enhance their capabilities.





## Government Subsidies

million won

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Tax exemptions/deductions | 10,939 | 10,411 | 12,533 |
| Investments and R&D subsidies | 2,249 | 4,716 | 1,387 |
| Rewards | - | - | - |

## Sharing with Stakeholders

million won

| Stakeholder group | Item | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| Shareholders | Dividends | 10,353 | 8,310 | 8,310 |
| Creditors | Interest charges | 22,116 | 30,187 | 35,494 |
| Business Partners | Payments for goods and services provided | 694,368 | 906,967 | 783,789 |
| Members | Wages and rewards | 86,541 | 92,072 | 80,815 |
| | Severance benefits | 7,504 | 8,444 | 7,581 |
| | Fringe benefits | 15,307 | 17,245 | 17,518 |
| Local Communities | Donations | 10,366 | 1,082 | 283 |
| Government | Income tax | (2,215) | 992 | (8,984) |
| Total | | 844,340 | 1,065,299 | 924,806 |

**105.9 billion won**

### Members

All products and services of SK chemicals are made possible because of the focus and dedication from Members. SK chemicals continues to make efforts to recruit and retain "warm professionals" with big hearts and big talents. The Company also invests significantly in ensuring sustainable career development and forming enjoyable workplaces for all Members. The Company spent 105.9 billion won in 2012 on the wages and fringe benefits for Members.

**43.8 billion won**

### Shareholders and Creditors

Shareholders are actual owners of SK chemicals. The Company seeks investments from these shareholders throughout the year to generate even greater values, returns part of the proceeds to shareholders, and also pays the promised interests to creditors. Fulfilling its obligations to shareholders and creditors, SK chemicals spent 43.8 billion won in 2012.

## SK chemicals Profile

# Materiality Evaluation



In order for the *Sustainability Reports* to serve their intended purposes of communicating with stakeholders, they need to provide sufficient and adequate information on SK chemicals' efforts for sustainability by disclosing the Company's records on sustainable management with transparency. In order to decide which types of information and issues had to be reported, SK chemicals performed a materiality evaluation, analyzing what issues were perceived by stakeholders as important, how pertinent those issues were to the Company's management, and what discrepancies were there between stakeholders' perceptions and the management's perceptions regarding these issues.

## Method

SK chemicals conducted surveys on different groups of stakeholders to derive quantitative data that could be used in materiality evaluation. How well or poorly stakeholders understood the concept of sustainability also affected how reliable or unreliable their answers were. In order to give greater weight to the more reliable answers from stakeholders, the surveys asked respondents to evaluate their own understanding of each category of sustainability-related issues.

The survey sought to identify material issues for sustainable management from the perspectives of both the management and stakeholders, while also determining how well the internal stakeholders understood the concept. The opinions from the management and stakeholders surveyed will help to shape the future strategies and plans for sustainable management. The internal stakeholder survey concerned eight top executive members of the management and 205 employees of the Company. The external stakeholder survey concerned customers, Business Partners, shareholders and investors, governmental organizations, nongovernmental organizations of the Local Communities, industrial associations and societies, and the academia. The answers from 34 external stakeholders were used in the final materiality evaluation.

## Process

Guiding SK chemicals' materiality evaluation was the section in the GRI 3.1 on "Technical Protocol: applying the Report Content Principles." The GRI 3.1 provides principles for evaluating the materiality of issues of sustainable management, including the completeness, the background factors and the materiality of related issues, as well as stakeholder participation. The materiality evaluation process it outlines consists of issue identification, prioritization, and relevance evaluation.

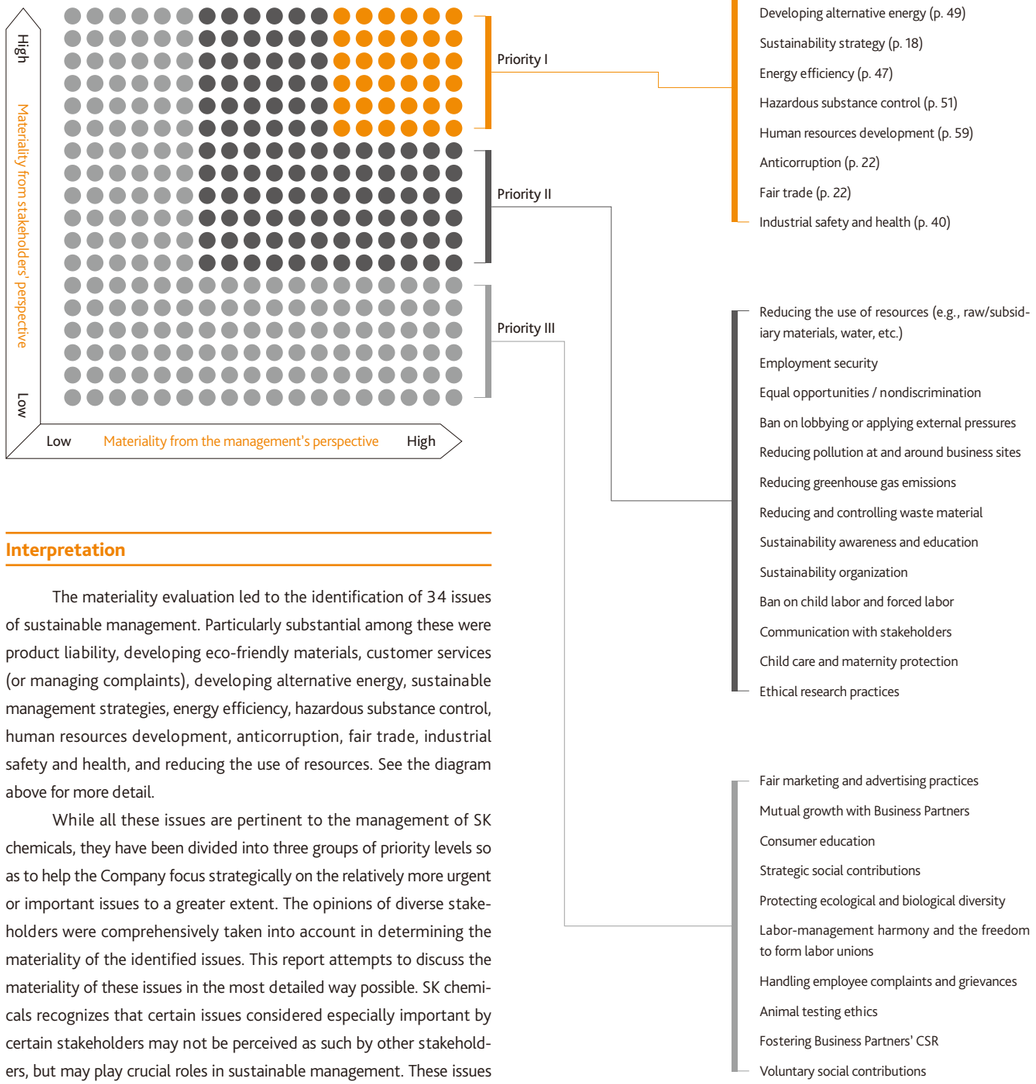
**Process**

| | | |
|---|---|---|
| Issue identification | Surveying and analyzing the following types of information to derive pertinent issues. | • External guidelines<br>• The media<br>• Management strategies<br>• Internal guidelines<br>• Benchmarking sources |
| ▽ | | |
| Prioritization | Prioritizing the issues and deciding the material ones from the two perspectives. | • Stakeholders' perspective<br>• The management's perspective |
| ▽ | | |
| Effect evaluation and report planning | Deciding and planning the issues to be discussed in the report. | |





## Findings

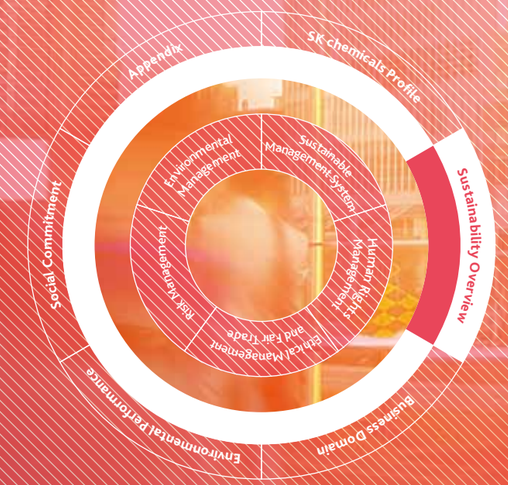



## Interpretation

The materiality evaluation led to the identification of 34 issues of sustainable management. Particularly substantial among these were product liability, developing eco-friendly materials, customer services (or managing complaints), developing alternative energy, sustainable management strategies, energy efficiency, hazardous substance control, human resources development, anticorruption, fair trade, industrial safety and health, and reducing the use of resources. See the diagram above for more detail.

While all these issues are pertinent to the management of SK chemicals, they have been divided into three groups of priority levels so as to help the Company focus strategically on the relatively more urgent or important issues to a greater extent. The opinions of diverse stakeholders were comprehensively taken into account in determining the materiality of the identified issues. This report attempts to discuss the materiality of these issues in the most detailed way possible. SK chemicals recognizes that certain issues considered especially important by certain stakeholders may not be perceived as such by other stakeholders, but may play crucial roles in sustainable management. These issues were considered not only in the *Sustainability Reports*, but in the overall strategy of SK chemicals for sustainable management as well.

# Sustainability Overview




**How can we ensure a virtuous circle of corporate activities that promote the sustainability of the company, the society, and the environment?**

The mission of SK chemicals is to add to the happiness of all humankind by providing chemical and bio-pharmaceutical solutions that protect health and the Earth. Our slogan, "Healthcare and Earthcare," effectively captures our management philosophy based on respect for life and love of nature.

At SK chemicals, we think of sustainable management as the indispensable basis for realizing our management philosophy and achieving our mission. We have developed various systems, along with practical strategies and goals, across all areas of our management and activities. By continually improving these systems and carrying out our strategies, we are working hard to achieve a virtuous circle of corporate activities that maximize the sustainability of, and harmony among, the Company's employees, Business Partners, local communities, and the natural environment.

## Sustainability Overview

# Sustainable Management System



The SK Management System (SKMS) is a unique system of management that the SK Group launched in 1979, which is based on building consensus among all Company members. The SKMS embodies a management philosophy that a company is to achieve stability and growth on a permanent basis, generating values for customers, employees, and shareholders, playing a core role in social and economic development, and thereby contributing to the happiness of all humankind. Coupled with SK chemicals' mission of promoting the health of humankind and protecting the environment of the Earth, the SKMS forms a core backbone of the sustainable management system at SK chemicals. SK chemicals seeks to become a leader of sustainable environmental, social, and economic management by doing the right things and by generating profits.

## Sustainable Management Roadmap


## Sustainable Management Strategy and Implementation

Driving SK chemicals' sustainable management is the Company's commitment to the SK Group's management philosophy of respect for humanity. We believe that a sustainable society is realized when individuals can raise happy families and are happy with their work at good companies. In order to convert the individual's happiness into the sustainable economic growth, we must overcome two major problems: namely, environmental destruction and income inequality. This recognition shapes SK chemicals' sustainable practices and strategy.

The three keywords to SK chemicals' sustainable management strategy are: Green Culture, Green Processes, and Green Products. SK chemicals has organized units specializing in ensuring the sustainable management, and monitors each unit's progress on a continued basis in light of the core tasks it achieves.

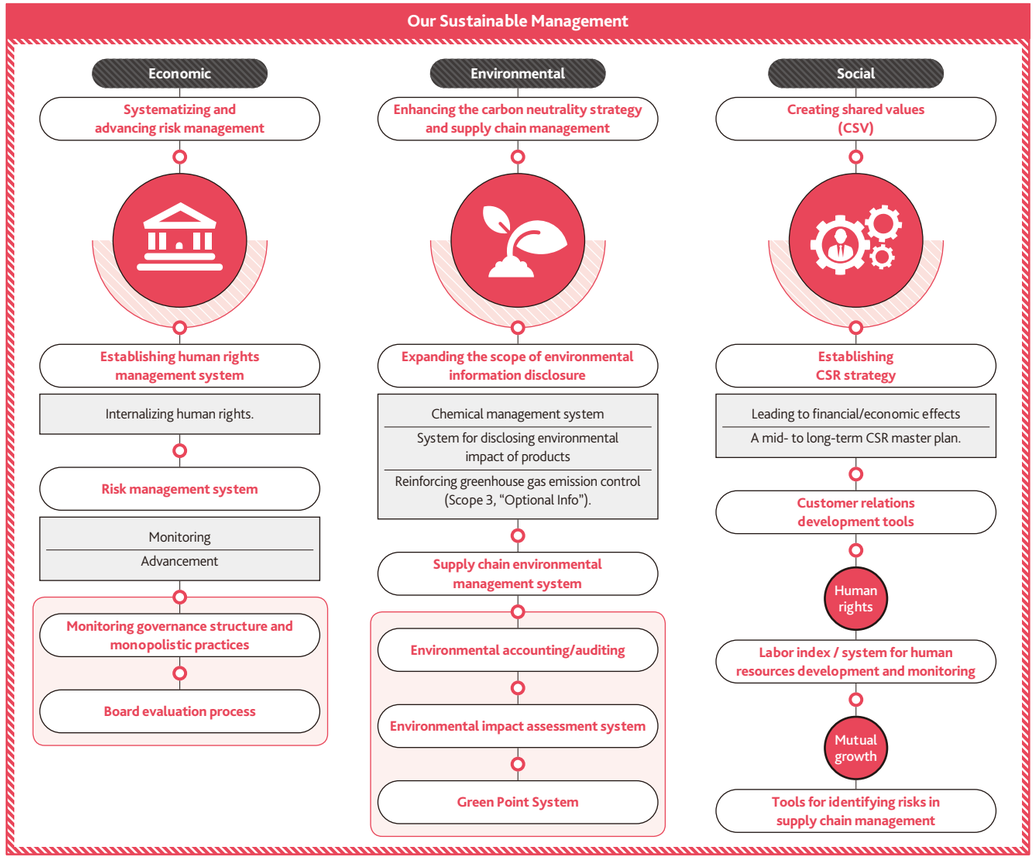
For the economic sustainability unit, the core tasks include completing the human rights and risk management systems, and monitoring the governance structure and monopolistic practices. with systematic activities. In 2012, SK chemicals succeeded in constructing an integrated company-wide risk management system, while also increasing the scope of information disclosure.

For the environmental sustainability unit, the core tasks include controlling greenhouse gas emissions control, establishing the Green Point System, introducing an environmental accounting and auditing system, and ensuring an eco-friendly management of the supply chain. The Green Point System was expanded in 2012 to encourage greater eco-friendly activities and consciousness among employees. The Company has also expanded its portfolio of alternative energy facilities to achieve its goal of complete carbon neutrality by 2020.

For the social sustainability unit, the core tasks include enhancing the synergy among different actors, developing a corporate social responsibility (CSR) strategy, developing a labor index and a system for human resources development, and identifying risks in the supply chain. In 2012, SK chemicals established its CSR strategy and strengthened ties to local communities by increasing its participation in policy and social issues, thereby preparing the ground for creating shared values with stakeholders.





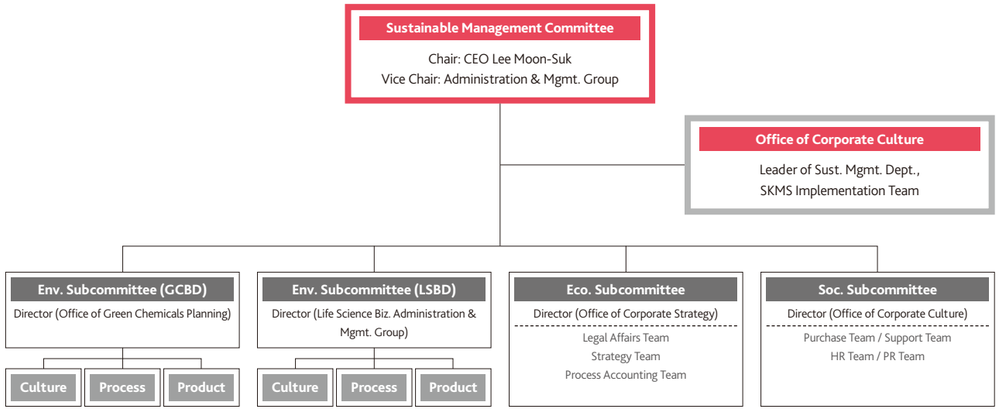



With these efforts, the sustainable management system at SK chemicals is capable of adapting to changes in the management environment and also satisfying the changing demands of different groups of stakeholders.

## Sustainable Management Organization

SK chemicals operates the Sustainable Management Committee, which has launched an action group in January 2012 named the Sustainable Management Department within the SKMS Implementation team, to ensure the monitoring and implementation of sustainable management. There are assistant administrators assigned at the four plants of the Company in Korea who administer and implement efforts for sustainability at their respective locations. The Sustainable Management Department oversees Green Culture-related activities, while the plants enforce their respective Green Process- and Green Product-related activities. The Sustainable Management Department also analyzes external trends in sustainable management. It supports interdepartmental cooperation, while also serving as a channel for internal and public communications. The Sustainable Management Committee meets quarterly to review progress and make the necessary improvements.

**Sustainable Management Committee Organization**




- Responsible departments at the plants: Safety and Env. Team at Ulsan / Tech. Innovation Group at the Ulsan Manager's Office / Management Team at Ansan / Management Team at Osan / Management Team at Cheongju / SKMS Implementation Team at the HQ
- Sustainable Management Secretariat: Sustainable Management Department (part of the SKMS Implementation Team)

## Education on Sustainable Management

In an effort to improve employees' and board members' consciousness of sustainable and environmental management as well as capability for practice, SK chemicals provides training and education programs. These programs are mainly divided into three levels: introductory, common, and level-up (advanced). Introductory courses enlighten new employees of the basic concepts of sustainable and environmental management, help them understand its importance, and inform them of the major achievements SK chemicals has achieved in this field. Common courses are provided to build Company-wide consensus on special issues of sustainable and environmental management, and encourage communication and participation. Level-up courses deliver the latest information on sustainable management worldwide to employees and board members of certain ranks to help them become internal specialists of sustainable management. These systematic courses help SK chemicals' members internalize the green culture and improve their capability for making efforts for green processes and products. These are the keys to inducing voluntary participation in sustainable and environmental management.

### Education Progress, 2012

| Level | Course | Duration | Description |
|---|---|---|---|
| **Introductory** | Sustainable Management Course for New Employees | 6 hours | Provided as part of the biannual group education for new employees and the education for new employees with experience. |
| **Common** | Company-wide Special Lecture on Sustainable Management | N/A | N/A |
| **Level-up** | In-depth Courses for Assistant Administrators and Managers | 4 hours | Environmental information disclosure system |
| | | 4 hours | Corporate social responsibility (CSR) |
| | | 3 hours | Carbon emission rights trade |
| | | 4 hours | Greenhouse gas and energy target management |
| | Advanced Courses | 8 hours | Workshops for assistant administrators and managers. |





Sustainability Overview

# Human Rights Management

18 Sustainable Management System | 21 Human Rights Management | 22 Ethical Management and Fair Trade | 24 Risk Management | 25 Environmental Management

The mission of "promoting the health of humankind and protecting the environment of the Earth" forms the basic ground and guiding light for all decision making at SK chemicals. The mission reflects our belief in the respect for human rights. Respect for human rights forms a crucial premise of any company's management, and is a value that must be pursued not only at the public and governmental level, but also by individuals and the private sector. As a corporate citizen of society, SK chemicals clearly recognizes its responsibility for respecting and protecting human rights, and will spearhead the efforts for protecting the health and happiness of humankind by fulfilling it.

## Human Rights Management System

SK chemicals has developed and implemented its policy of human rights management based on the Self-Assessment Index for Corporate Human Rights Development, provided by the National Human Rights Commission of Korea. Based again on the Self-Assessment Index, the Company also plans to integrate the separate policies governing human resources development, labor-management relations, and employee welfare and fringe benefits. SK chemicals' policy for human rights management forbids child and forced labor, exploitation of aboriginal rights, and discrimination against sex and employment status (whether full-time or contract-based). SK chemicals has also clarified the division of roles among the related departments. It also continues to monitor and improve the status of the policy's implementation on all sites of its operations. In order to ensure that all employees correctly understand the purpose of human rights management, the company plans to distribute practical guidelines and educate all employees and the three dozen security guards on the importance of human rights at least once a year. The practical guidelines and the educational courses will reflect employees' feedback. The human rights monitoring system will also be assessed and improved when necessary. While the Company does not keep track of the number of complaints filed by employees, it plans to complete a complaint-handling process by 2014.

As part of human rights management, SK chemicals also provides education on sexual harassment and treatments, and respect for the disabled. 99 percent of all employees completed these education programs in 2010. These courses were provided for employees who did not take them in 2011 as well as new employees in 2011. Company-wide education against sexual harassment was again provided in 2012.

With the goal of establishing human rights management throughout the Company's network, SK chemicals encourages all of its business partners to adopt human rights policies in their management, and plans to provide its own policy, practical guidelines, and educational programs for business partners lacking the needed resources. While human rights have not been used as a prerequisite for the Company's investment in these business partners, the Company plans to require these businesses to undergo review in terms of human rights management in the future cases of investments and supply contracts.

### Human Rights Management Policy

| Category | Subcategory |
|---|---|
| **General** | 1. Support for human rights protection |
| **Nondiscrimination** | 2. Nondiscrimination against employment status |
| **Employee safety and health** | 3. Individual right to safety |
| | 4. Safety devices |
| | 5. Safety practices |
| **Labor** | 6. Freedom of collective bargaining |
| | 7. Forced labor |
| | 8. Child/minor labor |
| | 9. Industrial health and safety |
| | 10. Employment retention |
| | 11. Fair remuneration |
| | 12. Working hours and breaks |
| | 13. Fringe benefits |
| | 14. Education and training |
| **Business Partners** | 15. Human rights at Business Partners |
| **Local communities** | 16. Human rights in local communities |
| **Anticorruption** | 17. Obligation of anti-corruption |
| **Government** | 18. Respect for governance |
| **Customers** | 19. Obligation of customer protection |
| **Environmental protection** | 20. Obligation of environmental protection |
| **Internal management** | 21. Management rules |
| **Monitoring** | 22. Monitoring and reporting |
| **Regulation** | 23. Regulation, evaluation, and rewards |

## Sustainability Overview

# Ethical Management and Fair Trade



SK chemicals operates an ethical management system to ward off all forms of unethical practices and behavior throughout the Company's operations, including unfair handling of tasks, unfair demands, giving and receiving bribery, engaging in various forms of corruption, and political lobbying. In order to promote fair competition that conforms to the market order, the Company has also been operating the Compliance Program (CP) since 2006. In addition, the Company has developed its own Compliance Guide and self-correction system to enforce ethical management, while regularly educating and training employees on the importance of workplace ethics regularly. To establish ethical management as part of the Company's culture, SK chemicals also encourages employees to sign the Pledge of Practicing Ethical Management, which all employees signed in 2012. Thanks to these and other efforts for ethical management and compliance with rules of fair trade, SK chemicals won an "A" grade on the Compliance Program Survey conducted by the Fair Trade Commission in 2009. No cases of unfair competition or monopoly involving SK chemicals were reported in 2012.

### Self-Correction Committee

In order to meet society's expectations of ethical demand and establish ethical management as part of the Company's culture, SK chemicals has been running the Self-Correction Committee since 2009. The Committee, working directly under the CEO, is chaired by the Director of the Corporate Culture Office and consists of the heads of the Human Resources, Accounting, Purchase, Legal, and Strategy and Planning Offices of both divisions as permanent members. The Committee conducts semiyearly assessments of the Company's ethical practices across five areas: human resources management, accounting, purchases, execution of budgets, and business management. No violations of the Company's Code of Ethics were found in the assessments in 2012.

### Counseling and Reporting Systems

SK chemicals allows internal and external stakeholders to seek consultation on, or report, the Company's or employees' ethical or unethical activities to the SK Group's ethical management website at https://ethics.sk.co.kr. The Company also displays the principles of reporter protection and provides programs to protect the anonymity of reporters so that reports could be filed without worries of possible disadvantages. A total of six reports were received at the website in 2012. Two of these reports were found as fabricated. The required changes and corrections were immediately made regarding the other four reports.

### Compliance Program

In order to ensure compliance with the rules and laws on fair trade, SK chemicals introduced the Compliance Program in 2006, opening up a bulletin board for fair trade on the Company's intranet and launching a separate section on fair trade as part of the Company's website in 2009. The officer enforcing the Compliance Program is appointed by the board's resolution. Managers of fair trade compliance at various departments monitor the practice of fair trade using checklists. The internal monitoring system also requires consulting specialist departments regarding the Company's activities with implications of violating the law. Copies of The Handbook on Fair Trade are distributed to all departments and displayed on the online fair trade bulletin board. The fair trade bulletin board is also used to inform everyone of the latest amendments to laws, court decisions, and internal and external events at the Fair Trade Commission. Since 2007, the Company has also been e-mailing the *Legal Affairs Newsletters* each month to share updates on the latest fair trade events or scandals. Copies of the Compliance Guidebook have also been distributed throughout the Company.

Since signing the Fair Trade Agreement with Subcontractors in 2008, SK chemicals has also been monitoring whether the rules on fair trade with subcontractors are complied with. Having signed the Agreement on Fair Trade and Mutual Growth between Large and Smaller Companies in July 2012, SK chemicals continues to provide diverse forms of support to benefit its suppliers.





**2006**

The year in which the Compliance Program was introduced to strengthen the culture of ethical management.

**60**

The number of business partners that signed the Agreement on Fair Trade and Mutual Growth between Large and Smaller Companies in July 2012.

**2012**

The year in which the Compliance Control Standard was established and the Compliance Assistant System was introduced.

### Fair Trade Education Programs

Since adopting the Compliance Program in 2006, SK chemicals has been providing education and training so as to help employees internalize the importance of fair trade. Employees working in purchase, sales, and marketing departments, who are exposed to greater risks of violating the law, are given fair-trade education biannually, for two hours each. New employees as well as fair trade managers are also given education and updates frequently. The Company began to develop an online education system in partnership with SK Telink in 2009. Since October 2011, all employees have been taking online courses on fair trade, reflecting the latest amendment to the Fair Trade Act.

**Programs**

| | |
|---|---|
| **Internal transmission courses** | For all employees and board members (as needed) |
| **Departmental visit courses** | For certain departments that are exposed to greater risks (biannually). |
| **Workshops** | For fair trade managers of different departments (biannually) |
| **New employee courses** | For new employees (when necessary) |

### Compliance Assistant System

SK chemicals introduced the Compliance Assistant System in 2012. The board appointed the Head of the Legal Affairs Team as the Compliance Assistant in June 2012, and began the implementation of the system in July 2012 after adopting the Compliance Control Standard (CCS) with a resolution. The CCS is SK chemicals' highest system of rules that provides the basic framework for enforcing compliance and defines the scope of authority for the Compliance Assistant. The Compliance Assistant implements education and training programs on compliance according to the CCS, and reports its results to the board once a year.

Since its introduction, the new system has helped SK chemicals to monitor the status of compliance with fair trade laws regarding subcontracts (especially in terms of unfair decreases in the contract values and whether written contracts have been signed), and to educate the heads of respective departments on the legal prohibitions and obligations regarding fair trade with subcontractors. In connection to the Compliance Program, the Compliance Assistant System will provide an increasing range of education courses and monitoring efforts, while enabling employees and board members to comply with laws not only on fair trade, but also on other key areas of the Company's operations.

Sustainability Overview

# Risk Management



With the business environment growing increasingly unpredictable and competition worldwide growing fiercer, it has become mandatory for companies to predict and prepare for the future. SK chemicals operates a strong risk management system in order to predict and identify possible risks so as to control them better. The risk management system, led by the SKMS Implementation System, requires close interdepartmental cooperation among the finance, strategy, legal affairs, public relations, safety and environment departments. It is designed to render comprehensive analyses of possible risks so that the Company can manage and prepare for them.

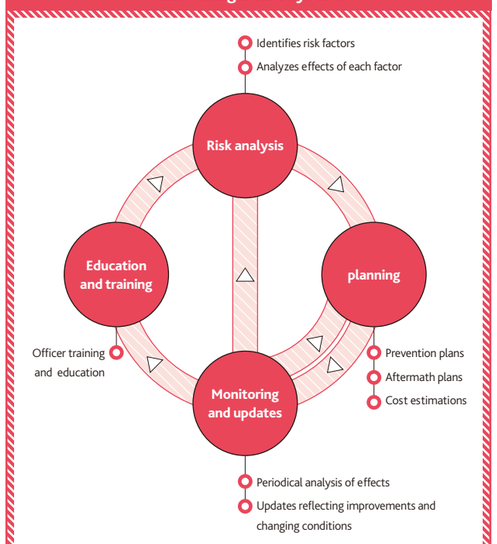
## Organization and Roles

SK chemicals has appointed the SKMS Implementation Team, the overseer of sustainable management in general, as the leader of the risk management system to ensure its effective operation. The SKMS Implementation Team thus develops practical policies for risk management and implements programs to heighten employees' consciousness of risks. Taskforces are organized upon reports of crises in order to prevent their amplification or deterioration. These crisis-managing taskforces are comprised of members of the core groups who are capable of managing the given crises with expertise. The system manager oversees the development and execution of plans, evaluates and monitors implementation, and reports on the outcomes of such plans.

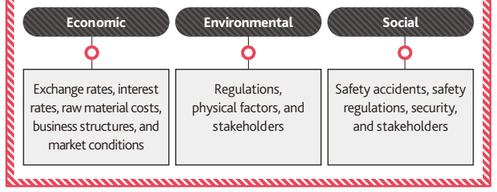
## Operating the Risk Management System

In order to ensure an integrated and effective management of diverse risk factors and analysis techniques, the SKMS Implementation Team defines the scope of issues each department is required to monitor and report on, and distributes the required document forms and guidelines. Risk-managing officers at different departments then develop risk management plans, analyzing risk factors using these documents. The SKMS Implementation Team then compiles and reviews the records on risk management at different departments on a regular basis so as to minimize possible risks. The team also regularly invites risk-managing officers to briefings and shares the required materials and data on the Company's intranet.

**Risk Management System**




**Risk Factor Classification System**








Sustainability Overview

# Environmental Management



In order to usher in a more sustainable future, we need to constantly find new solutions to protect natural environments and resources better. SK chemicals continues to implement quantitative and scientific environmental management, seeking to achieve its Green Triple 40 goals by 2020. The Company has also been operating the Environmental Management Committee since 2010.

In order to solve environmental problems, cooperation with the business community is necessary. SK chemicals has thus launched the Integrated Environmental Information Management System in order to ensure a better management and organization of information on the Company's environment-affecting activities. The Company operates all its plants and offices according to international standards. The Company is also working on completing its Supply Chain Environmental Management (SCEM) system. In addition, the Company has acquired Environmental Product Declaration certificates as part of its efforts to reduce the environmental impact of its products. The Company is also working hard to meet the demands of international environmental regulations, including the Registration, Evaluation, Authorization, and Restriction of Chemicals (REACH) and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

## Strategy and Goals

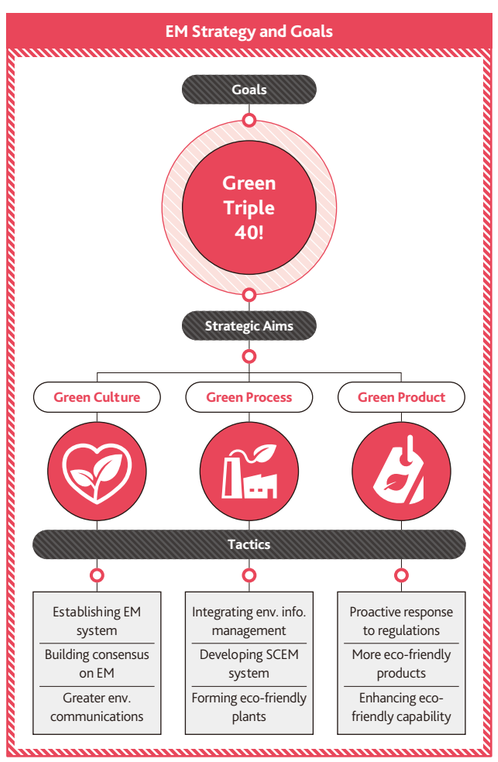
SK chemicals implements environmental management in order to achieve its Green Triple 40 goals by 2020. The Green Triple 40 goals, in turn, have been linked with the three major aims of the sustainable management system, i.e., "Green Culture," "Green Process," and "Green Products," for better monitoring and management of progress. The goals of "Green Culture" include establishing a Company-wide consensus on environmental management and green culture. The goals of "Green Process" include forming green plants by improving the processes of Company-wide environmental management. The goals of "Green Products" include developing new eco-friendly products and strategies.

Green Triple 40 sums up the strategy of SK chemicals' environmental management system. The Company intends to increase each employee's contribution to volunteer works to 40 hours a year, reduce greenhouse gas emissions by 40 percent, and increase the proportion of eco-friendly products in the revenue structure to 40 percent by 2020. These specific figures help SK chemicals focus better on minimizing the environmental impact of its products and business activities, and creating new values by promoting diverse efforts for environmental protection.

## Environmental Management Organization

SK chemicals has been operating the Environmental Management Committee since 2010. The SKMS Implementation Team serves as a project management officer enforcing the environmental man-

**EM Strategy and Goals**



## Green Triple 40: Progress and Plan

hour

**No. of hours of voluntary work per employee: 40 hours a year.**

| | 2010 | 2011 | 2012 | 2013 | 2015 | 2017 | 2020 |
|---|---|---|---|---|---|---|---|
| Goal | 2.5 | 6 | 10 | 13 | 20 | 30 | 40 |
| Progress | 2.5 | 2 | 2 | - | - | - | - |
| Tactics | Defining social issues to be tackled and contributions thereto. | Developing CSR programs. | Consolidating CSR programs. | Revitalizing CSR programs Company-wide. | Encouraging team-unit CSR activities. | Encouraging families' participation in CSR. | Establishing a culture of monthly CSR activities. |

• The goal of 40 hours began to be met in 2013, after the completion of the system in 2012.

tCO₂e, %

**Reducing carbon dioxide emissions (BAU)**

| | 2010 | 2011 | 2012 | 2013 | 2015 | 2017 | 2020 |
|---|---|---|---|---|---|---|---|
| BAU emissions | - | 500,000 | 520,000 | 545,000 | 780,000 | 800,000 | 830,000 |
| Target decrease | - | 4.4 | 7.2 | 12.6 | 22.5 | 24.2 | 40.0 |
| Actual emissions | 490,265 | 495,204 | 467,163 | - | - | - | - |
| Actual reductions | - | 0.8 | 11.9 | - | - | - | - |
| Strategy | | EGB running on wood wastes | Additional use of liquefied and gasified biomass | Increasing use of liquefied, gasified, and solidified biomass | Increasing use of wood wastes | Continuing to find new sources of biomass and energy | |

• Measuring business-as-usual (BAU) emissions: combining the expected amounts by which $CO_2$ emissions increase annually since 2010, and the expected amounts of $CO_2$ emissions after all the planned improvements are made (the amounts of $CO_2$ emissions are expected to increase significantly beginning in 2015 due to the expansion of the energy business).

%

**Proportion of eco-friendly products in overall revenue: 40 percent**

| | 2010 | 2011 | 2012 | 2013 | 2015 | 2017 | 2020 |
|---|---|---|---|---|---|---|---|
| Goal | 14.6 | 16.0 | 17.0 | 19.0 | 25.0 | 30.0 | 40.0 |
| Progress | 14.6 | 16.6 | 17.6 | - | - | - | - |

• Increasing the output of eco-friendly products each year: the production of PPS (a super plastic) and vaccines is to begin in 2015, and the production of the premium vaccine in 2017.





### Roles and Responsibilities

| Key Role | Culture | Process | Product |
|---|---|---|---|
| Dept. Head | Dept. Head | Dept. Head | Dept. Head |
| Setting examples with attention, encouragement, and practice. | Internal and external spokesperson.<br>Encourages environmental management among board members.<br>Oversees CSR activities. | Reviews environmental regulations and systems on processes.<br>Develops inventory and certification processes.<br>Takes responsibility for reducing the environmental impact of processes (managing greenhouse gas and energy-related targets). | Defines strategic environmental aims of new businesses.<br>Handles internal communications on regulations applying to products. |
| Asst. Administrator | Asst. Administrator | Asst. Administrator | Asst. Administrator |
| Serves as project management officer at each location. | Ensures environmental management at each location (in close partnership with SKMS Implementation Team).<br>Serves as a channel for communication with local community.<br>Ensures education and training of employees at each location. | Manages compliance with laws on low-carbon and sustainable growth.<br>Develops and verifies greenhouse gas inventory.<br>Manages environmental performance at each location. | Compiles on-site data on carbon emission rights.<br>Manages compliance with product regulations.<br>Searches and shares environmental information on new products. |

agement committee at the Company headquarters, while assistant administrators and managers at different plants and offices also serve as project management officers for their respective locations. These officers are brought into quarterly meetings to share updates on the environment-related issues and progresses of their respective locations. In 2012, the Company also created the Sustainable Management Committee, which now oversees the Environmental Management Committee and its activities.

## Integrated Environmental Information Management System

SK chemicals has developed an integrated environmental information management system to ensure a better management of the environmental information of different plants and offices, while coordinating more effective responses to external evaluations and regulations. The system provides information on the amounts of output;

### Ecoweb

In 2012, SK chemicals launched a new website, Ecoweb. Ecoweb provides a glimpse into the environmental goals, strategies, and achievements of the Company headquarters and its plants.
The menu on "Green Culture" introduces the Green Point System, which converts the eco-friendly activities of the Company and employees into certain amounts of money, which are then used to form the Green Fund that supports environmental and social causes. The section also provides a carbon meter for calculating the amounts of greenhouse gas emissions from various daily activities, as well as information on SK chemicals' eco-friendly CSR and management programs. The "Green Process" menu introduces the efforts at the Company for reducing pollutants and minimizing energy consumption. It also explains how the Company manages compliance with increasing environmental regulations, by building green plants and managing the greenhouse gas and energy consumption targets. The "Green Products" menu introduces SK chemicals' eco-friendly products and its product evaluation system and progress with the carbon neutrality plan.

eco.web

the amounts of raw materials, energy, and water consumed; and the amounts of waste and pollutants generated by each location and across the entire Company. The Web-based system is easy to access and operate, enabling operators to obtain tables and graphs by year or business location, just by entering certain primary data. The Company plans to link this system to other IT systems so as to obtain not only the quantitative data on the input and output, but also the analyses of implications for finance, safety and health, and greenhouse gas inventories.

## Building Environmental Management Systems at Plants

The SK chemicals plant at Ulsan, responsible for over 90 percent of the Company's total output (measured in weight), acquired the ISO 14001 certificate for its environmental management system in 2005. The plants at Osan, Ansan, and Cheongju, responsible for the products of the Life Science Business Division, also comply with all the requirements of the Korean Ministry of Food and Drug Safety. SK chemicals ensures that the environmental management policies at its plant satisfy the international standard, with systematic programs for preventing environmental problems, analyzing risks, and training and educating employees. The Company also regularly assesses its achievements in environmental management, and conducts on-site environmental reviews to ensure the updates and improvements of the systems in place.

In 2009, Sony certified SK chemicals for possessing products and systems that meet the requirements of its Green Partner Program. Sony's Green Partner Program monitors the entire range of manufacturing processes at its Business Partners, including the supplies of raw materials and the release of finished products from warehouses. The GPP certificate indicates that the environmental system of SK chemicals' meets the high standards of leading multinational companies.

## Supply Chain Environmental Management (SCEM)

SK chemicals recognizes that its achievements in environmental management crucially depend on similar efforts at business partners. The environmental management of its business partners exerts significant influence on the environmental impact and quality of SK chemicals' products. Supporting the environmental management of these businesses is thus crucial for the advancement of the overall corporate community. SK chemicals thus began to develop the Supply Chain Environmental Management (SCEM) system. From 2011 to 2012, the Company defined the scope of businesses to be brought into its reach as well as its features, and produced a draft design of the system. Copies of *The SCEM Guideline for Business Partners* will be distributed to businesses that are in the upper 50th percentile of the list of SK chemicals' suppliers in terms of trade value. The recipients will be required to submit records on compliance and future plans. Based on these submitted materials, SK chemicals will divide Business Partners between exemplary and nonexemplary groups. Exemplary businesses will be provided with incentives to keep up with their good work. The Company is still working on deciding specific incentives. SK chemicals intends to implement the SCEM system phase by phase, year to year, gradually expanding the scope of its application simultaneously. The system is expected to strengthen SK chemicals' ties to its business partners, while also improving the eco-friendliness of the Company's products.

## Managing Environmental Regulations

Hazardous chemicals pose significant threats and harms to the human body, as well as to the environment, and thus need to be controlled with thorough care. Since 2007, the European Union and other countries have adopted the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), a regulatory regime seeking to minimize the impact of chemicals and clarify the responsibility for controlling them. The Korean government is also strictly enforcing its Toxic Chemicals Control Act. SK chemicals is working hard to act as a responsible corporate citizen, minimizing the use of environmentally harmful raw materials.

### Managing the REACH

The REACH is the latest regulatory regime set up by the European Union to ensure the control of chemicals. CHDM, a product of SK chemicals, is subjected to the scope of the REACH, and had to be registered as of October 2010. The Company manages the information on the chemicals involved in its production, using the Safety, Health, Environment, and Quality (SHEQ) system for managing chemicals.

**REACH-Controlled Products**

| Quantity of output in or exported to EU | Registration deadline | No. of subject SK chemicals products |
|---|---|---|
| **1,000 t or greater** | Nov. 30, 2010 | 1(CHDM) |
| **100 – 1,000 t** | May 31, 2013 | - |
| **1 – 100 t** | May 31, 2018 | 7 |





### Managing the GHS

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS) classifies chemicals according to the extents of risks and harms they present, and inform the public of their hazards using standardized warning labels and material safety data sheets (MSDSs). Each country operates its own system for enforcing the GHS. SK chemicals has met all the requirements of the Korean GHS and the European Union's Classification, Labeling, and Packaging of Substances and Mixtures (CLP).

- Material Safety Data Sheets (MSDSs): introduced on July 1, 1996, for the purpose of protecting workers' safety and health against chemicals.

**GHS Deadlines**

| Region | Type | Deadline | No. of subject SK chemicals products |
|---|---|---|---|
| **South Korea** | Single compounds | July 1, 2010 | 143 |
| | Mixtures mixing two or more single compounds | July 1, 2014 | N/A |
| **EU** | Single compounds | December 1, 2010 | 4 |
| | Mixtures mixing two or more single compounds | June 1, 2015. | N/A |

## Improving the Eco-friendliness of Products

SK chemicals produces a wide range of intermediate and consumer goods with many applications. The sheer breadth of the scope of applications for SK chemicals' products indicates that the Company has a big responsibility for reducing the environmental impact of not only its manufacturing processes, but also of the consumption of its products. The more we reduce environmental impact, the more environmentally competitive our industries have become, and the healthier people can be. Recognizing this responsibility, SK chemicals continues to research and develop better products containing less harm, and thoroughly assesses its environmental impact on a constant basis.

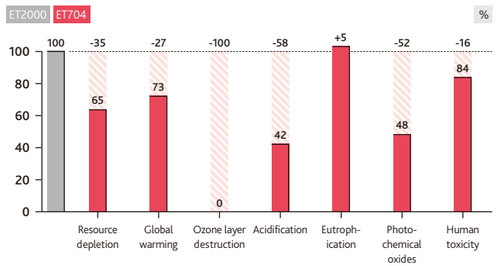
### Environmental Product Declaration Certificates

SK chemicals earned an Environmental Product Declaration Certificate in 2010 with its SKYBON toner resins (ET2000 and ET704). Toner resins are intermediate materials. The Company has documented the amounts of carbon emissions associated with these resins before and during their manufacturing, and consequently gained the certificate. The Ministry of Environment administers these certificates, which indicate the amount of greenhouse gases a product emits throughout its lifecycle. SK chemicals intends to increase the range of products certified accordingly in order to let clients and consumers make more eco-friendly decisions based on the accurate information they receive.

### Lifecycle Assessment

In an effort to improve the eco-friendliness of its major products, SK chemicals performs life cycle assessments (LCAs) of such products. An LCA is a technique that estimates the environmental impact of a product from its production to its consumption and its disposal. It involves assessing a product across seven areas of environmental impact, including resource depletion, eutrophication, global warming, ozone layer depletion, acidification, creation of photochemical oxides, and human toxicity. In 2010, the Company performed life cycle assessments of two of its SKYBON toner resins: ET2000, and ET704, which has been created by replacing the bisphenol-A (BPA) of ET2000 with cyclohexane dimethanol (CHDM). A comparison of the two products revealed that ET704 generated far less environmental impact than ET2000, in the area of eutrophication and others. It was about 40 percent more eco-friendly than its predecessor overall. SK chemicals plans to perform life cycle assessments to its increasing range of products in the future, and make the needed improvements accordingly. The Company is currently performing a life cycle assessment of its bio-plastics.

**Lifecycle Assessments of Toner Resins**



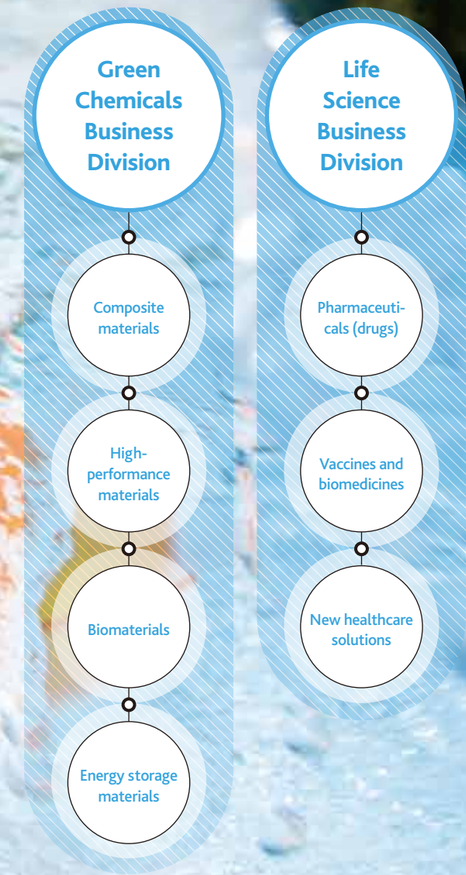

**Environmental Product Declaration Certificate**

# Business Domain


## Can we produce competitive products that also promote social and environmental sustainability?

From toys, televisions, stand lamps lighting nights, to building materials, automobiles, and computers: our daily lives are filled with plastics, which are products of advanced chemical engineering. No one can deny the urgent need for eco-friendly chemicals, given the breadth of the scope of their applications and their close involvements in our lives. The more the population grows and the longer the human life span becomes, the more important drugs become. All these developments require an unprecedented level of innovation and ingenuity from companies.

SK chemicals has restructured itself, mainly dividing itself between Green Chemicals Businesses and Life Science Businesses. The outcome of this restructuring is a series of innovative products newly researched and developed. SK chemicals is working hard to provide harm-free and better-performing intermediate materials, alternative sources of energy, and a comprehensive range of healthcare solutions and drugs.



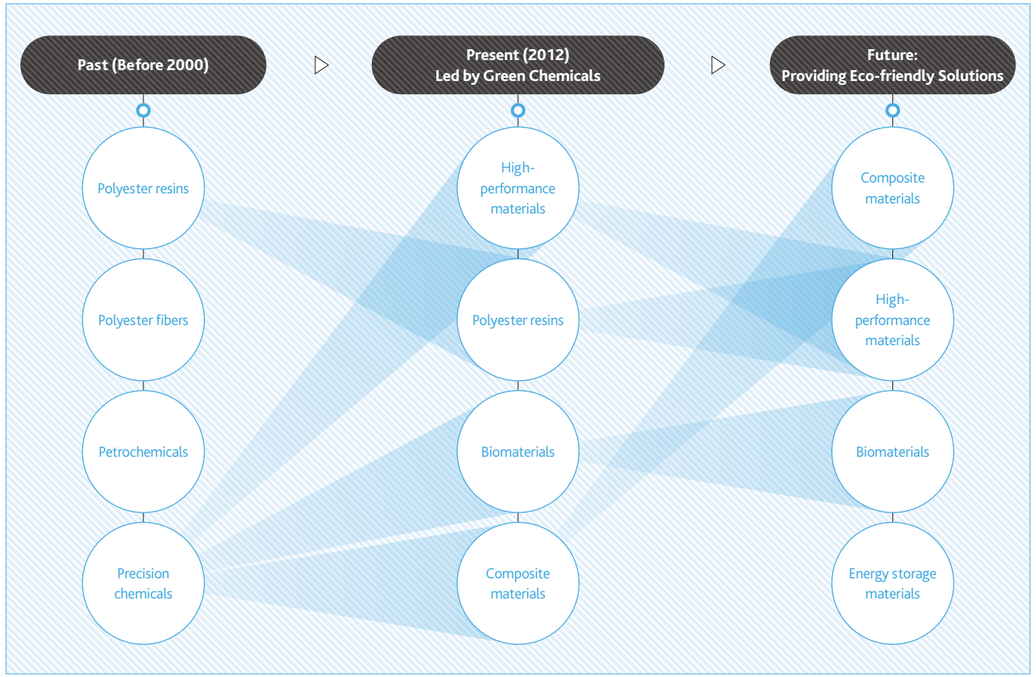
# Business Domain
# Green Chemicals



The Green Chemical Business Division at SK chemicals seeks to become a provider of all eco-friendly materials and solutions, reinforcing its capability to produce eco-friendly and innovative products. An eco-friendly material is something whose impact on the environment throughout its life cycle is minimal, which is made with as little fossil fuel as possible, and/or made with nature-derived ingredients. In order to concentrate better on eco-friendly materials, SK chemicals has boldly closed its polyester textile and petrochemical businesses, shifting its focus to the development of polyester resins and precision chemicals.

The Company is now hard at work developing new composite and high-performance biomaterials for polyester resins and precision chemicals. In the future, the Company will combine its focus on polyester resins with the focus on developing high-performance materials, while also researching and developing energy storage materials. With these new initiatives, SK chemicals intends to increase its revenue and operating income by twofold by 2015, and become an international leader of its field by 2020.

## Evolution of SK chemicals' Chemical Businesses



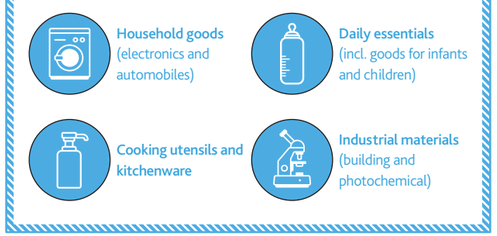





## Composite Materials

A composite material refers to the product of combining two or more substances, often for the purpose of producing a much better and more durable product than would otherwise have been available by using a single substance. SK chemicals began in 2004 to produce Prepreg, a composite material mixing reinforced fiber and carbon fiber. Carbon fiber is lighter than aluminum, but stronger than reinforced steel. It is 10 times as strong as reinforced steel, with only 20 percent of the reinforced steel's weight. Carbon fiber is thus widely used as a key material for building space shuttles and aircrafts. It is now emerging as an effective alternative material for making automobiles, as automakers are seeking ways to lighten the weights of their products in response to the increasing regulations on gas emissions. Carbon fiber is also increasingly used to create lighter and more effective blades for wind energy generators. In 2012, SK chemicals signed an agreement on a strategic partnership with Mitsubishi Rayon for the development and supply of Prepreg to be used as material for wind energy generator blades. Mitsubishi Rayon, together with Toray and Teijin, occupies 70 percent of the international carbon fiber market. The recent agreement thus gives SK chemicals a competitive partner providing reliable supplies of carbon fiber.

**Applications of ECOZEN®**




- A bio-copolyester that SK chemicals was the first in the world to develop, ECOZEN® is an eco-friendly material containing biomass. It boasts of a high level of transparency and durability. Withstanding heat up to 110°C, the material boasts of a wide range of applications, including for household goods, daily essentials, kitchenware, and even industrial uses. The performance and eco-friendliness of ECOZEN® have been recognized and certified by authoritative institutions in Korea, the United States, and Japan. The material was also named Korea's Highest Brand of 2012.

## High-Performance Materials

SK chemicals produces a wide range of high-performance materials, including high-purity solvents, display materials, electrolytic solutions for super-capacity capacitors, sound-absorbing insulators, ECOZEN®, PETG resins, PET resins, and attachable polyester resins.

The high-purity solvent, developed in alliance with Honeywell of the United States, is now seeing a rapid expansion of its market bases to include not only China, but also other countries of Asia. The markets for SK chemicals' display pixel materials for LCD or PDP panels based on organic synthesis and super-capacity electrolytic capacitors are similarly expanding worldwide as well.

Polyphenylene sulfide (PPS) resins, which SK chemicals has succeeded in developing without the use of harmful substances, such as chlorine, form a super-engineering plastic that is light yet durable in shock and heat. The demand for this material is increasing, especially for manufacturing electronics and automobiles. Chlorine is used as a chemical ingredient for plastics, such as PVC, or as a bleacher and disinfectant for other plastics. Manufacturers in the United States and Europe are increasingly required to find alternatives, since chlorine is classified as a harmful chemical. In order to ensure an efficient production of PPS, whose market is expected to grow at an annual rate of seven percent until 2020, SK chemicals has signed an agreement with Teijin to launch a joint venture. The construction of the new plant, to be capable of producing 12,000 tons of PPS, is scheduled for completion in 2015.

ECOZEN®, a bio-copolyester, which SK chemicals was first in the world to develop, is an eco-friendly material containing biomass. SKYGREEN®, a high-performance PETG sheet, is another eco-friendly alternative containing no bisphenol-A, and is now rapidly replacing such conventional materials, such as PC, PMM, and PVC.

The PET resin SK chemicals began to produce for making plastic bottles in 1978 received approval from the U.S. Food and Drug Administration, and is still widely recognized around the world for its quality. The attachable polyester resin SK chemicals produces emits no environmentally harmful substances and is increasingly used as an imaging material used with laser printers and toner binders of high-speed photocopiers.

### ECOZEN®: A Bio-Copolyester

SK chemicals launched ECOZEN®, a bio-based plastic, in 2009. ECOZEN® not only lacks the shortcomings of petrochemical-derived plastics, but also significantly reduces dependency on petrochemical ingredients and thereby helps to reduce greenhouse gas emissions. Acrylic is a transparent material that is often too brittle. Polycarbonate may be stronger, but it contains bisphenol-A, a harmful substance. Polyethylene terephthalate glycol may be transparent and strong, but it cannot withstand much heat. ECOZEN® is transparent, durable, and can withstand heat up to 110°C. It thus boasts a much wider range of applications, including as washers, microwavable containers, building materials, and so on. ECOZEN® has thus been certified as a safe food contact substance (FCS) by the U.S. Food and Drug Administration; as "Bio-plastic No.1" by the Korea Bio Material Packaging Association; and as a safe and hygienic plastic by the Japan Hygienic Olefin and Styrene Plastics Association. It was also named one of Korea's "Highest Brands" in 2012.

## Biomaterials

Biomaterials are made with ingredients derived from biological sources. Biomaterials provide effective alternatives for petrochemical counterparts, and can thus help delay the depletion of fossil fuels. SK chemicals launched its leading bio polylactic acid (PLA) in 2010, and has so far been distributing it to textile, automobile, and electronics industries. SK chemicals also manufactures Eco Prime®, a biodiesel derived from palm oil.

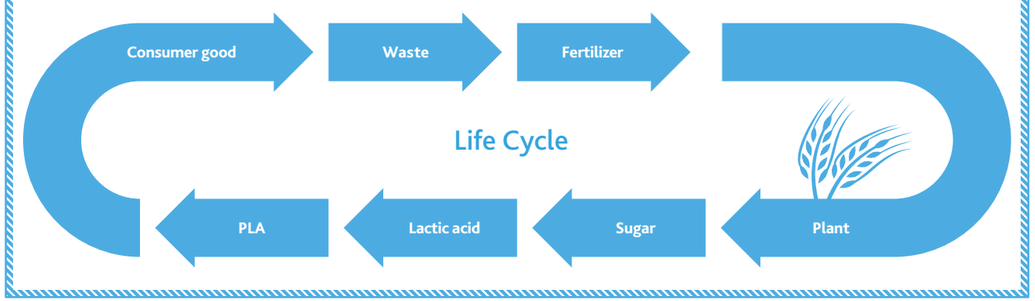
### Bio-plastics

Climate change and the depletion of natural resources caused by the uncontrolled consumption of fossil fuels cast serious risks for both the whole planet as well as the sustainability of plastic manufacturing. In search for solutions, SK chemicals has decided to promote biomass-based plastic manufacturing as the next-generation impetus for the Company's growth in the future.

Polylactic acid reduces greenhouse gas emissions, and helps to achieve continuous resource recycling as it is biologically dissolved. Because of its great mechanical and thermoplastic properties, it is a star among similar bio-plastics and an effective alternative to petrochemical-derived plastics. The material's limited durability and manufacturability, however, confine its application to the manufacturing of products with relatively short life cycles, such as disposable packing materials and biologically dissolvable plastic bags.

In order to overcome these shortcomings, SK chemicals has been researching technology that will help improve the durability and manufacturability of PLA. SK chemicals' PLA, perfected with its technology, is rapidly increasing the scope of its applications to include functional films, high-end packing sheets, household parts, household decor objects, cosmetic containers, and school supplies and stationeries. SK chemicals continues to diversify its portfolio of products, while also reducing their prices with innovative technology.

**PLA Life cycle**








### Biodiesel

Biodiesel is a methyl ester composite obtained by reacting natural animal or botanical fat with methanol. This eco-friendlier option can be used in cars without modifying the existing diesel engines. The fuel has been marketed in Europe, the United States, and Southeast Asia, since the late 1990s. Starting with the trial distribution project in 2002, SK chemicals now supplies diesel containing 2 percent biodiesel (BD2).

77 percent of biodiesel dissolves in its natural state in just 28 days. It thus provides a great fuel for ships, which can be discharged into the surrounding waters and yet does not cause any pollution. The carbon dioxide that biodiesel emits is absorbed again by oil plants. An article published in a well-known chemistry journal in June 2010 argues that each ton of biodiesel reduces carbon dioxide emissions by 2.2 tons throughout the entire plant life cycle from the plant's growth to its consumption as a fuel.

SK chemicals has also developed an original manufacturing process that uses palm fatty acid distillates, a by-product of palm oil manufacturing, as an ingredient for the biodiesel, Eco Prime®. This new diesel has been in circulation on the Korean market since 2008. Thanks to the reliable supplies of the raw material from ST Green Energy Ltd., a Singapore-based subsidiary of SK chemicals, the Company has been able to maintain Eco Prime®'s competitive price and made it the No. 1 biodiesel brand in Korea. The Company is now considering a plan to penetrate the palm plantation industry in the future.

## Energy Storage Materials

The growing demand for new and renewable energy, as well as smart grid technology, will translate into the dramatic growth of the energy storage material and system industry. In response to this trend, SK chemicals is now actively researching, developing, and commercializing the organic light-emitting diode (OLED) technology and lithium ion batteries.

The OLED is what makes the next-generation flat-screen display technology possible, using organic composites that emit light on their own. The OLED works almost 1,000 times faster than the liquid crystal display (LCD) technology, consumes much less energy, and produces much brighter lights. It is now mainly applied to small electronics.

Lithium ion batteries (LIBs) are rechargeable second batteries. Lighter and more energy-efficient than the nickel-hydrogen battery, LIBs are applied to laptop computers, mobile phones, and other such mobile electronic devices, as well as hybrid or electric vehicles.

**Qs and As: SK chemicals' PLA**

Q. How does PLA differ from other polymers?

A. PLA derives from an origin fundamentally different from the petrochemicals of other polymers. PLA is obtained by fermenting, with microbes, sugars from corns, sugarcanes, and other such plants. The polymer turns into a fertilizer in its disposal phase, and becomes reabsorbed by plants for their growth.

Q. What distinguishes SK chemicals' PLA from other PLAs?

A. SK chemicals' PLA, unlike other PLAs, is based on sugars derived from non-genetically modified organisms (GMO), more specifically, plant sources. The fact that the ingredients for SK chemicals' PLA come from non-GMO and nongrain plant sources, makes it a much safer choice in the interest of food security. SK chemicals' advanced polymer processing technology preserves PLA's superior flexibility and durability even when its content of biomass is increased to 100 percent.

**150℃**

This is the ignition point of biodiesel, which is higher than that of ordinary diesel (64℃), making biodiesel a safer choice.

**77%**

77 percent of biodiesel is dissolves in its natural state in just 28 days. Biodiesel thus reduces pollution.

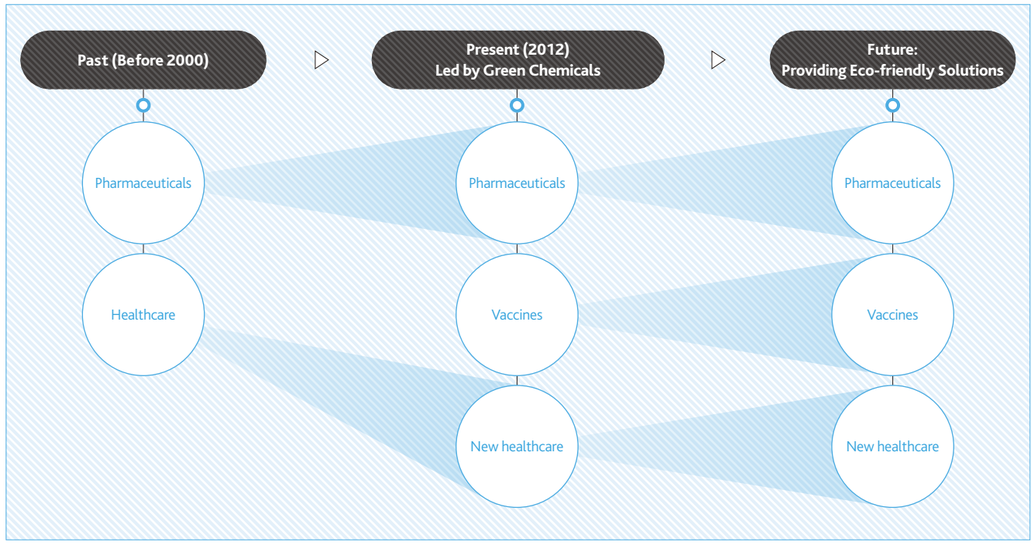
## Business Domain
# Life Science



Seeking to become a global provider of total healthcare solutions, the Life Science Business Division at SK chemicals concentrates its R&D capabilities and resources on the three core areas of business: namely, pharmaceuticals, vaccines, and new healthcare solutions. Since developing Korea's first original synthetic drug in 1999, SK chemicals has gone on to add two more, becoming the Korean pharmaceutical company with the greatest number of original drug formulae. The Company entered the vaccine market in 2006, and has since became the leading vaccine provider in Korea. It is now diversifying its portfolio to include biomedicines and new healthcare solutions.

SK chemicals produces Trast®, Ginexin®, and other such popular and effective treatments whose efficacy and safety have been widely recognized. Based on its success in Korea, the Company is also rapidly expanding the markets for its pharmaceutical treatments abroad. The Company is now building a cell-culture vaccine plant, to be completed in 2013, while also preparing for the clinical trials of the cell-culture influenza vaccine it was the first in Korea to develop. In addition to increasing the product portfolio to include bio vaccines, the Company is also researching and investing new healthcare solutions, including the technology and devices needed to analyze genetic information, blood fingerprints, and so on.

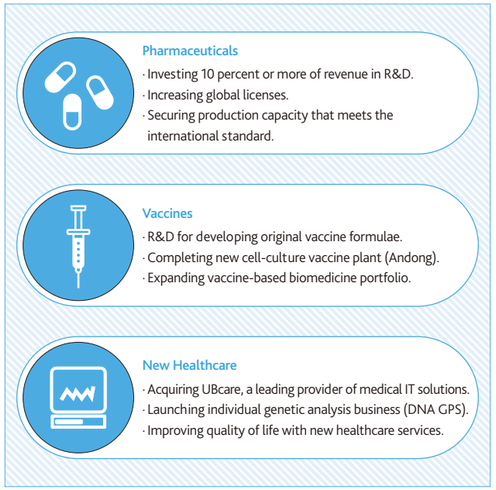
### Evolution of SK chemicals' Life Science Businesses








### Tactics for the Three Core Areas of Business




### Pharmaceuticals

#### Synthetic Drugs

SK chemicals opened a new chapter in the history of the Korean pharmaceutical industry in 1999, when it registered and launched platinum-built SUNPLA®, Korea's and the world's first third-generation cancer treatment of its kind. In 2007, the Company went on to launch Mvix®, the most effective erectile dysfunction treatment in Korea. In 2011, the Company also succeeded in developing the world's first orally dissolvable film-type (ODF) erectile dysfunction treatment, Mvix®-S. With its advanced research workforce and continued investments in R&D, the Company now boasts of the most advanced state of pharmaceutical technology in Korea, and continues to develop new and better drugs for a variety of diseases, including fibrous tumors, prostates, endometriosis, diabetes, and so on.

#### Natural Drugs

Natural drugs refer to the pharmaceutical composites derived from medicinal herbs and standardized for manufacturing and mass consumption. Since developing Korea's first-ever natural drug formula, Joins®, in 2002, SK chemicals continues to widen the horizon of this burgeoning industry. Joins® makes possible the fundamental treatment of arthritis with its mechanism of inhibiting cartilage destruction. Not only is it the best-selling treatment of its kind in Korea, but it is also rapidly expanding its markets abroad.

Ginexin®, an agent that promoted blood circulation has been leading the Korean market since 1991, has now made its way even to the Middle East, advertising the advanced state of Korea's pharmaceutical technology. SK chemicals also launched Renexin® in 2010, which is an enhanced Ginexin® formula with the improved function of expanding blood vessels. Ginexin® came in fourth among Korean pharmaceutical products on the Brand Stock Top Index (BSTI) survey in February 2013, scoring 791.39 points out of 1,000.

SK chemicals continues to conduct clinical trials of natural formulae for treating some of the most intractable diseases that synthetic drugs have failed to treat so far, including dementia and asthma. SK chemicals intends to develop natural drugs with minimal risks of side effects.

#### Drug Delivery System Technology

Drug delivery system (DDS) technology refers to a way of minimizing the side effects of existing drugs, while maximizing their efficacy and effectiveness at the same time. Trast®, a beloved patch-type treatment for arthritic pain in the knees in Korea, is the world's first patch-type arthritis treatment incorporating SK chemicals' advanced DDS technology. Each patch comes with a penetration enhancer that increases the effective delivery of the active ingredients from the patch into the skin, as well as a releasing rate control mechanism that helps to even the rate at which the active ingredients are discharged. Trast® came in third on the recent Brand Stock Top Index (BSTI) survey ranking the brand values of Korean pharmaceutical products, earning 807.22 points out of 1,000 in total. SK chemicals thus became the only pharmaceutical company in Korea that has managed to include two of its products in the top five on the pharmaceutical brand survey. Omed®, an innovative gastric ulcer treatment, has been the first Korean complete drug formula exported to the European Union since 1999.

In 2008, SK chemicals also succeeded in launching a new synthetic treatment for cancer on overseas markets, improved with the Company's advanced DDS technology. In 2012, the Company also gained approval from the Federal Institute for Drugs and Medical Devices in Germany (BfArM) for distributing, across Europe, a patch-type dementia treatment and a digestive ulcer treatment, both of which incorporate innovative DDSs that stabilize their operations and enhance their efficacy.

## Vaccines

SK chemicals is developing market infrastructure and reinforcing its R&D efforts and resources to develop new vaccines and biomedicines. Medicine in the past used to focus almost exclusively on eliminating diseases, without much regard for the physical pain, complications, and side effects that resulted from it in consequence. Outgrowing this paradigm on medicine, SK chemicals decided to develop and distribute vaccines that are the easiest and most economical way of preventing diseases. In partnership with multinational pharmaceutical giants, SK chemicals has developed and launched 11 basic vaccines that are indispensable to public health. These include the mandatory vaccines for hepatitis B, chickenpox, diphtheria, tetanus, and pertussis (DTP), polio, measles, mumps, and rubella (MMR), tetanus and diphtheria (Td), and so forth, as well as the basic vaccines against meningitis and influenza.

The ceaseless R&D efforts culminated in the clinical trials of the major vaccines SK chemicals developed in 2012. The next-generation, cell-culture influenza vaccine, in particular, became the first of its kind to obtain the Korean Ministry of Food and Drug Safety's clinical approval. The Company is accordingly building a new vaccine plant, which will be Korea's largest of its kind and capable of producing 140 million doses of vaccines a year when it is completed in 2013. SK chemicals continues to promote the advancement of the Korean medical industry, and is becoming an international leader of vaccine development and distribution.

In 2008, the Company acquired In2Gen, a leading biotechnology venture enterprise. This acquisition has helped the Company to expand its biotechnology portfolio to include genetic research, protein engineering, and so on. In 2009, SK chemicals became the first in Korea to license out its original genetic-reengineering treatment for hemophilia. The first phase of this drug's clinical trials has been successfully completed. The drug is now undergoing third-phase clinical trials, readying to become a new star on the international biomedicine scene.

## New Healthcare

Convergence among diverse areas of science and technology, such as nanotechnology (NT), biotechnology (BT), and information technology (IT), will only become more prominent in the future. In preparing for the future, SK chemicals acquired UBcare, a leading provider of medical IT solutions at the time, thereby preparing the basis for the Company's U-healthcare projects. In 2012, the Company also signed an agreement of partnership with DNA Link, a provider of genetic analyses and diagnoses, thus launching a research project on the commercialization of genetic analysis ("DNA GPS"). The Company is now developing infrastructure that will allow people to access medical institutions and services with greater ease.

Genetic analysis services include analyzing individuals' genetic information, predicting diseases that are genetically likely to occur, identifying genetic factors relevant to the dissolution of drugs, and information on other physical characteristics. When completed, these services will help us predict the likelihood of the 22 major types of diseases that affect Koreans, and also prevent them by making the necessary environmental improvements. DNA Link currently possesses genetic information on more than 40,000 Koreans, and continues to gather more information and data to make its analyses more accurate.

SK chemicals has also transferred the blood fingerprint analysis technology from the National Cancer Center to improve the Company's resources for diagnostic services. These and other new healthcare solutions will make the prevention of diseases easier, lead to the development of more advanced medical infrastructure, and thereby, improve the quality of life for all humankind.

• U-Healthcare: standing for "ubiquitous healthcare," these services combining information technology and medical care will enable people to predict, prevent, diagnose, treat, and follow up with their diseases anywhere at any time in the world.

**3**
The number of synthetic and natural drugs SK chemicals has developed, becoming the most advanced pharmaceutical company in Korea.

**47%**
The market share of Ginexin®, which has been leading the market for agents promoting blood circulation for over two decades since its launching in 1991.

**1999**
The year in which SK chemicals began to export Omed®, a safe gastric ulcer treatment, to the EU.

**2013**
The year in which the new cell-culture vaccine plant will be completed.





## Product Lineup

### For the musculoskeletal system

**Trast®**
Piroxicam patches/
For arthritis, peritonitis, and muscle pain/
Effect lasts for up to 48 hours

**Joins® (tab.)**
Available in tablets/
For arthritis and rheumatoid arthritis/
First-ever natural drug in Korea

### For the circulatory system

**Ginexin®-F (tab.)**
Gingko biloba extract/
Improves blood circulation

**Renexin®**
Cilostazol and gingko biloba extracts/
Treats myocardial infarctions

**Cosca® (tab.)**
Losartan tablets/
Treats hypertension

### For the digestive system

**Levopride® (tab.)**
Improves the movements of the gastrointestinal tract

**Omed® (tab.)**
Treats ulcers of the stomach and the duodenum

### Others

**Mvix®-S**
Mirodenafil ODF/
Treats erectile dysfunction/
Developed and produced in Korea

### Blood Products

**SK Albumin (5, 20, and 25%)**
Made of human serums

**Liv-Gamma®**
Globulin for the human immune system

**Antithrombin III**
Made of human antithrombin

**Futhan**
Futhan for injection/
Anticoagulation agent

### Healthcare solutions

**DNA GPS**
Individual genetic information analysis service

**CPAP**
Sleep diagnosis device

### Vaccines

**Influenza vaccine**
Against influenza

**Rotatec**
Against rotavirus infection

**Gardasil**
Against HPV infection

**Prodiax 23**
Against pneumococcus

**Td**
Against tetanus and diphtheria

**First Hib**
Against hib infection

Business Domain

# Product Liability



SK chemicals recognizes that its products intimately affect the environment as well as health. In recognition of the responsibilities and liabilities it bears for its products, SK chemicals ensures thoroughgoing monitoring of the R&D processes, and attentively listens to customers' complaints. In order to ensure effective and safe clinical trials, the Company works with numerous leading research and testing agencies worldwide. The Company is also developing internal and external systems that accord greater safety to the human test subjects and that conform to animal testing ethics. The Company is also working hard to minimize the amounts of by-products and waste it generates and ensures the safe disposal of unused or obsolete drugs. The Company has established a systematic customer complaint handling process, and it strictly adheres to principles protecting the confidentiality of customers' information.

## Clinical Ethics

### Clinical Trials

Clinical trials are by far the most important processes in which the safety and efficacy of pharmaceutical substances are tested and verified. SK chemicals is one of the most active companies in Korea when it comes to clinical trials. In close partnerships with such leading testing agencies as Seoul National University Hospital, Seoul Asan Medical Center, and Samsung Medical Center, the Company performs thorough clinical tests of candidate substances. Its partnerships with contract research organizations (CROs) abroad also allow the clinical trials of its products to take place in North America and Europe. From 2009 to March 2013, the Company registered 1,312 human test subjects for 13 clinical trials, six of which are now done. Since the introduction of the Investigational New Drug (IND) Application System in Korea, the Company has registered 52 clinical trials so far. Visit http://ezdrug.kfda.go.kr to view these clinical trials in greater detail.

Having successfully developed and launched three original pharmaceutical formulae, including synthetic and natural drugs, SK chemicals has been conducting clinical trials on natural composites for treating dementia, asthma, and the irritable bowel syndrome since 2006. These natural drugs are expected to work more efficaciously compared to their synthetic counterparts. Later in 2012, the Company also succeeded in developing Korea's first cell-culture vaccines against influenza, herpes zoster, and pneumococcus infections and obtaining the Ministry of Food and Drug Safety's approval to proceed with clinical trials.

The Company is also undertaking clinical trials of diverse new candidates for pharmaceutical products abroad. SID710, an improvement upon the patch-type dementia treatment Exelon, is now undergoing a biological equivalence clinical trial in Europe. It obtained the European Union's approval for distribution in January 2013. The clinical trials on SID820, a new candidate for gastric ulcer treatment, were successfully concluded in the United States and Europe in 2011.

- IND system: a procedure in which a pharmaceutical producer compiles and submits preclinical trial data and clinical trial plans for approval to proceed with clinical trials.

### Ethical Clinical Trials

In all clinical trials it conducts, SK chemicals complies with the international law ICH-GCP (Good Clinical Practices) and the Ministry of Food and Drug Safety in order to ensure human test subjects' safety. In addition to giving the clinical trial workforce, the most competent and qualified in Korea, regular training updates. SK chemicals has also updated its standard operating procedures (SOPs), improving the quality of clinical trials and the safety of human test subjects. The Company has also established a rigorous pharmacovigilance system that traces the effect and safety of market-launched drugs. These and other measures are employed to eliminate risks and provide better safety information for medical practitioners and general consumers at large.

SK chemicals also ensures ethical animal testing. The Company regularly educates researchers on the need to minimize the use and pain of animals. Complying with the requirements of the Ministry of Food and Drug Safety and the National Veterinary Research and Quarantine Service, SK chemicals' Life Science Research Center has organized an Institutional Animal Care and Use Committee (IACUC), comprised of five specialists. The Committee meets twice a year for discussions and researcher education. It receives and reviews animal test applications, ensuring that such tests be conducted in the most scientific and ethical manner possible. Once a year the Committee also files to the Ministry of Food and Drug Safety and the National Veterinary Research and Quarantine Service online reports on the animal tests conducted at SK chemicals.





## Drug-Related Environmental Responsibilities

### Minimizing the Environmental Impact of Drug Development

Before a drug is launched on the market for the general public's consumption, it undergoes almost innumerable tests, many of which generate by-products and waste. SK chemicals recognizes the responsibility it has for minimizing the amounts of by-products and waste generated by pharmaceutical trials and for their safe disposal.

From the very first days of testing, the Company requires its researchers to follow a standard design of experiment (DOE) format to design, plan, and optimize testing while minimizing the period of time it takes. This helps to minimize the amounts of chemicals used and of by-products or waste generated. The by-products and waste are recycled whenever possible, or processed by the Company's own wastewater treatment facility and are rid of legally prohibited substances before they are discharged or otherwise disposed of in a legal manner. Recyclable organic solvents are gathered in separate containers for reuse and recycling. Toxic chemicals are thoroughly recollected and discarded only on designated spots.

### Managing the Environmental Impact and Risks of Unused Drugs

In an effort to minimize the environmental impact of drugs during their disposal as much as possible, SK chemicals entrusts the disposal of these drugs with a government-approved or certified disposal agency. Unused or obsolete stocks of drugs, collected and stored at a designated location, are picked up and transported by the disposal agency to the site of disposal. The representatives of both SK chemicals and the disposal agency check the quantities of these drugs before they are completely incinerated. The atmospheric pollutants and emissions from incineration are also managed according to the government instruction. The ashes from incineration are collected and buried when certain amounts gather. In 2012, SK chemicals safely disposed of 46.5 tons of unused and obsolete drugs with Korea Environmental Development Corporation.

## Customer Satisfaction

### Customer Complaint Handling and Resolving Process

SK chemicals runs the Customer Service Center as part of the Life Science Business Division, which is the division that produces consumer materials. The Customer Service Center thus receives and handles customers' complaints. In addition to this center, the Company has also opened up a section on its website where customers can register their complaints and questions, which are first answered by the Customer Service Center before they are relayed to other departments where necessary. To handle these complaints more efficiently and satisfactorily, customers are asked to pick into which category their complaints fall (i.e., product defects, packaging defects, side effects, or "others" that include objections over pricing and other policies, requests for exchange or refund of products past their best-before dates, etc.). Complaints received by the Customer Service Center are then relayed to other departments for resolution.

Handling and Resolving Customers' Complaints

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| No. of complaints handled | 604 | 405 | 437 |
| Resolution rate (%) | 100 | 100 | 100 |

### Protecting Customer Privacy and Confidentiality

In order to protect customers' rights against the unauthorized collection, disclosure, or abuse of the personal information they provide for the Company, SK chemicals strictly enforces the principles regarding the collection of personal information.. These six principles not only protect customers' information against unauthorized disclosure, but also provide the basis for making decisions that may involve the use of such information. These principles are: minimal collection, safe storage, purpose-defined use, thorough external protection, disposal upon the achievement of the original purpose, and process control.

SK chemicals asks customers providing personal information to sign forms that ask for their consent on the collection and use of their information. Exceptions to this rule include information demanded by legal or contractual requirements. Customers are informed of the purposes for which sensitive and/or ID information is collected, the items of information required, and the period for which such information is to be used, and are then asked to give their consent in addition to the consent they have given to the handling of other types of personal information. In 2012, SK chemicals received no reports of complaints from customers or clients regarding its handling of sensitive or personal information.

- Sensitive information: information on individuals' ideological backgrounds, current or former membership in labor unions or parties, political views, health conditions, sexual life, genetic information, and criminal records.
- ID information: resident registration numbers, passport numbers, driving license numbers, foreigner registration numbers.

# Green Products

The eco-friendliness of SK chemicals' green chemical products are based on four principles. These include: minimizing the use of resources; minimizing the amounts of waste; reducing dependency on petrochemicals; and avoiding the use of hazardous substances. SK chemicals also researches and develops natural drugs that are more efficacious than synthetic counterparts, with fewer side effects. "Green Products" refer to these products with improved performance and eco-friendly materials or manufacturing processes. The Company intends to increase their share of its overall revenue in the coming years.

Companies like SK chemicals best contribute to social and environmental sustainability by producing better and eco-friendlier products. Products exert lasting influence on users and the environment throughout their life cycles. SK chemicals intends to provide a comprehensive range of green chemical and healthcare solutions that promote the sustainability of the environment, society, and the Company.

## Green Chemical Business Division

### -2.2 tons

**Biodiesel**

Biodiesel is an alternative fuel derived from plant sources. Every ton of biodiesel reduces carbon dioxide emissions by 2.2 tons in comparison to every ton of ordinary diesel. Having begun to produce its biodiesel, Eco Prime®, no longer from edible oil, but from the by-products of refining palm oil, SK chemicals now promotes environmental sustainability not only with the consumption of Eco Prime®, but also with its production.

### 0%

**BPA-Free, Gel-type Toner Resin**

SK chemicals' gel-type toner resins that are used with laser printers and photocopiers do not contain bisphenol-A (BPA), which is known to disrupt the endocrine system.

### 30%+

**Polytrimethylene Terephthalate (PPT)**

A green fiber that is made of 30 percent or more biomass, PTT has all the advantages of polyester, nylon, and spandex. This highly flexible, form-retaining material boasts of its soft texture, vivid colors, and form stability. It is rapidly emerging as a next-generation material, as it can be freely mixed with a wide variety of other textiles.

### 100%

**Polylactic acid (PLA)**

PLA is a bio-plastic that is made with sugars from plants. Made of plant ingredients, PLA reduces greenhouse gas emissions. It is also 100 percent bio-dissolvable and returns to nature after its use. SK chemicals' SK PLA, in particular, is made with non-genetically modified plant sources, and boasts of its greater durability and productivity than other PLAs.

### 50%+

**Bio Toner Resins**

Free of BPA and made of biomass for more than 50 percent.

### 110℃

**Bio-Copolyester**

ECOZEN®, a plastic material made of biomass, provides an effective alternative to petrochemical plastics and significantly reduces greenhouse gas emissions. Transparent, highly durable, withstanding heat up to 110℃, and free of harmful substances like BPA, ECOZEN® has a wide range of applications, including for microwaveable containers, baby bottles and toys, exterior building materials, electronics, and so forth.





## Life Science Business Division

### 98%

**Eco Green Boiler (EGB)**

The EGB generates steam from scrap wood to provide heat and energy necessary for SK chemicals' manufacturing activities. It generates 98 percent less greenhouse gas emissions than the soft coal boiler. SK chemicals continues to increase the use of the EGB at its plants to increase productivity and minimize greenhouse gas emissions at the same time.

• The greenhouse gas emission reducing effect of the EGB was measured according to *The Greenhouse Gas and Energy Target Management Guide*, updated in 2012.

### 15%+

**Propandiol (PDO)**

Made with corn extracts, PDO forms the ingredient for PTT and has replaced 15 percent of SK chemicals' previous chemical ingredients and processes, thereby helping save energy and reduce greenhouse gas emissions.

### 1,000x+

**Organic Light-Emitting Diode (OLED)**

The OLED works almost 1,000 times faster than the liquid crystal display (LCD) technology, consumes less energy, and produces brighter lights. It is now mainly applied to small electronics, including laptop computers and mobile phones.

### 0%

**Polyphenylene Sulfide (PPS)**

Highly heat-retardant, anti-corrosive, and smoke-proof, PPS is a super-engineering plastic for which demand is growing, especially in electronics and automobile manufacturing. SK chemicals has distinguished itself from competitors with the successful development of ECOTRAN®, its own brand of PPS. ECOTRAN® reduces the amounts of by-products generated because it uses no toxic solvent. Nor does it require water to rinse off solvents. The material is also free of chlorine, which causes electronic parts to break down and poses harm to the human body and ecosystems.

### 140 million doses

**Vaccines (NBP606–608; NBP613–615)**

SK chemicals has succeeded in developing a new cell-culture influenza vaccine that is free of the shortcomings of the fertilized egg-based vaccine that has been used worldwide for the last five decades. The Company is now building Korea's largest cell-culture vaccine plant, capable of producing 140 million doses once it is completed. The new vaccine can be easily manufactured in large quantities in short stretches of time, and can be administered even to people with egg allergies, and will thus help fight the epidemic better.

### 1st

**Natural drugs [Joins® (tab.); Ginexin®-F (tab.); HMP301–305]**

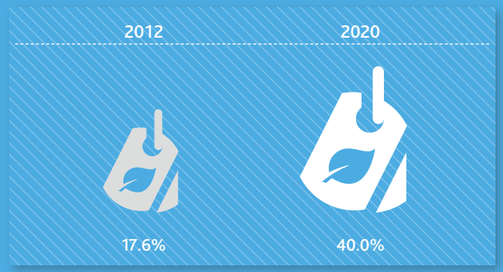
Joins®, the first natural drug formula to have been developed in Korea, marks SK chemicals the leader of the market. Ginexin®, the gingko-based natural drug, has also sustained SK chemicals' leading position since 1992.

### 2x+

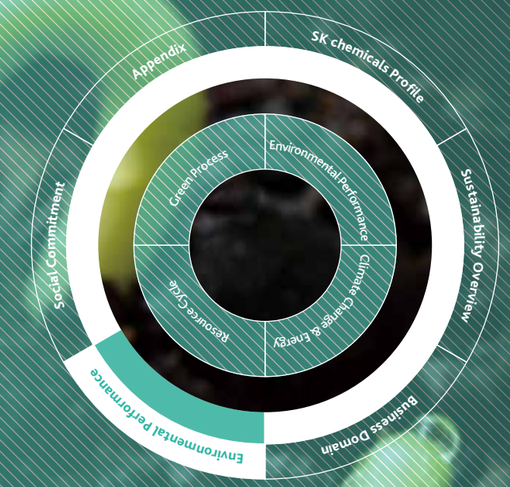
**Genetically Reengineered Proteins (NBP601, 604, 611)**

NBP601, SK chemicals' own genetically reengineered treatment for Type-A hemophilia, is 10 times more productive and twice safer in the human body than existing treatments. It was also named one of the Ten New Technologies of Korea at the 2012 Korea Technology Awards.

**Total Share of Green Products in SK chemicals' Revenue**



# Environmental Performance




## How can we ensure carbon neutrality and efficient resource recycling?

Chemical manufacturing consumes large quantities of energy and hazardous chemical substances. Energy consumption generates carbon dioxide, and the use of hazardous chemicals generates other pollutants. SK chemicals seeks to minimize the involvement of energy and chemicals in its manufacturing activities, while also reducing the reliance on fossil fuels by improving resource recycling.

Our search goes beyond making partial improvements, and extends to shifting the overall paradigm of management. Seeking to establish a resource-recycling and carbon-neutral organization, we have increased the use of alternative energy at our plants. EcoLab, housing the Company headquarters and R&D center, has also decreased the amounts of energy and water it consumes in comparison to other similar buildings of its size. Pursuing clear goals and targets, SK chemicals will continue to work hard to usher in a sustainable future for all.

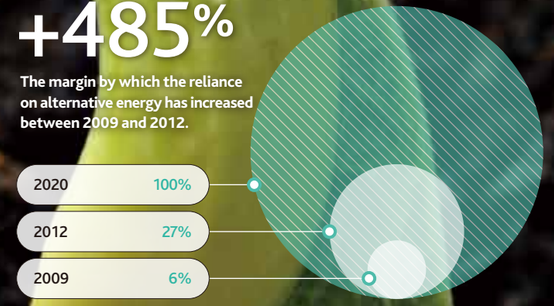




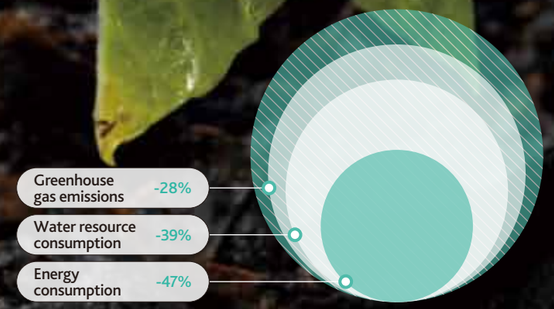
## Reliance on Alternative Energy

**+485%**

**The margin by which the reliance on alternative energy has increased between 2009 and 2012.**




## Decreasing Environmental Impact of EcoLab (as of 2012)



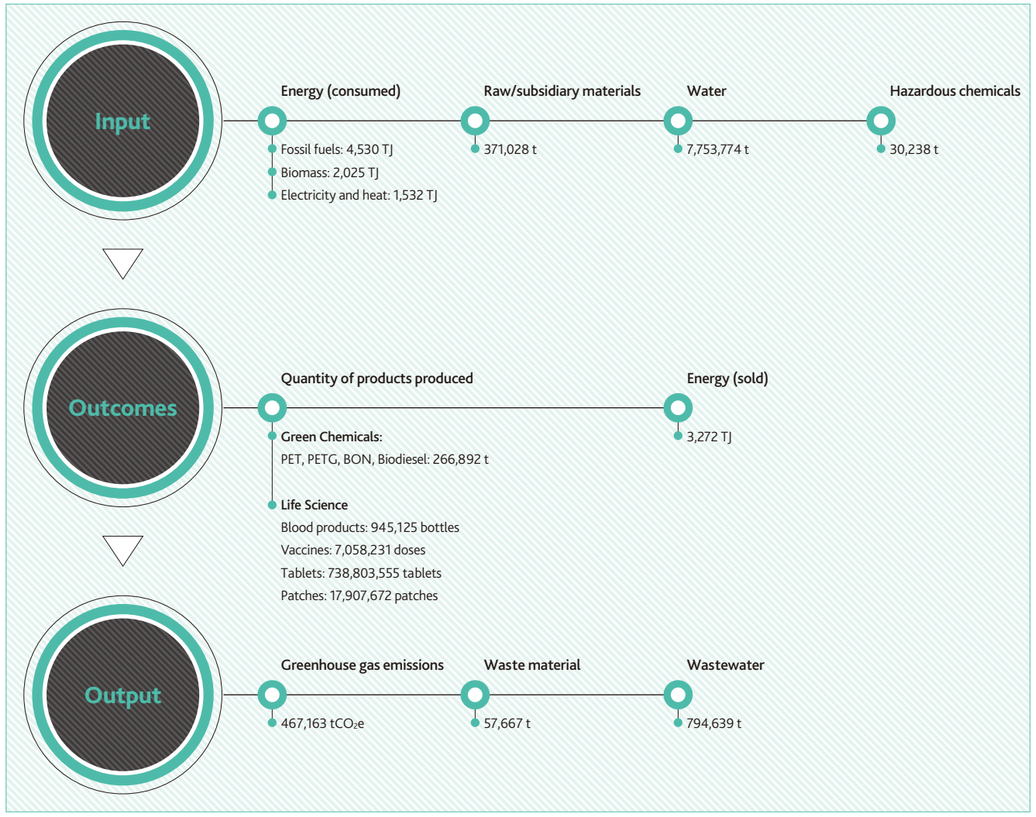
Environmental Performance

# Environmental Performance



In 2009, SK chemicals set out to achieve "green plants" that reduce carbon emissions and ensure resource recycling, and integrated into a Company-wide, coherent system the activities for improving the efficiency of resource and energy consumption, organized separately by respective plants until then. The carbon neutrality roadmap thus established envisions reducing greenhouse gases by replacing fossil fuels with nonfossil fuels, as well as enhancing the control over all input (resources) and output (products and by-products). In an effort to identify the progress of the plan and make the needed improvements, the Company compiles data on the total input, output, and outcomes each year. The input, output, and outcomes of 2012 are shown below.

## Environmental Flow








Environmental Performance

# Climate Change & Energy



SK chemicals, as a chemical manufacturer, consumes large quantities of energy. The Company, however, is also a supplier of energy, providing steam for the five plants making up the SK chemicals Ulsan Complex. This explains the relatively large proportions of energy the Company consumes and greenhouse gases it emits to its revenue and output. The way SK chemicals generates steam decisively affects the energy consumption structures of the companies making up the SK chemicals Ulsan Complex. In recognition of the great responsibility it bears, SK chemicals works hard to replace increasing amounts of nonrenewable fossil fuels it uses with renewable fuels.

## Establishing the Carbon Neutrality Roadmap

In 2009, SK chemicals established its Carbon Neutrality Roadmap, announcing its plan to replace fossil fuel-based boiler systems with alternative ones that do not use fossil fuels. The carbon neutrality rate that began at 20 percent in 2010 steadily grew to 27 percent in 2012, while the use of alternative energy also grew by 5 percent from 2011 to 2012. SK chemicals intends to increase the amounts of renewable energy used each year to run the Ulsan plant, which is responsible for manufacturing 90 percent of the Company's products (in terms of weight), with alternative energy only by 2020.

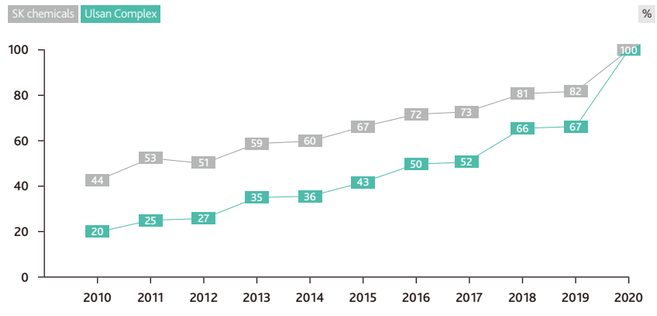
The types of alternative energy that SK chemicals uses include the Eco Green Boiler System running on wood waste; the recycled biogases from the sewage and wastewater treatment facilities; and the recycled by-products and waste heat from manufacturing processes.

### Managing the Carbon Neutrality Roadmap

To facilitate the implementation of its Carbon Neutrality Roadmap, SK chemicals also developed an action-oriented management plan that controls the carbon neutralization ratios of the SK chemicals Ulsan Complex and SK chemicals separately. The plan first promotes reduction in the amounts of energy SK chemicals itself consumes, as well as an increase in the amounts of alternative energy it uses. In the next phase, the plan purports to promote similar eco-friendlier energy consumption patterns across the entire Complex. The plan also allows the Company to decide and adjust yearly targets for the Carbon Neutrality Roadmap each year in the light of the previous year's performance and circumstances.

In 2013, SK chemicals began to invest in expanding facilities for using both wood wastes and coals to run its boiler systems, with a plan to expand the Eco Green Boiler system and discover more sources

**Target Carbon Neutrality Rates by Year**




Carbon neutrality rate = Amount of greenhouse gas emissions from biomass / Total amount of greenhouse gas emissions

- Carbon neutrality: a state in which an economic activity produces zero carbon in effect. Carbon emissions can be neutralized or completely eliminated either by not using fossil fuels at all, or by offsetting the amount of carbon emissions generated with the carbon-saving effect of forests and other such green spaces and features. SK chemicals uses nonfossil fuels to achieve carbon neutrality.
- SK chemicals Ulsan Complex: comprised of five companies receiving steam and electricity from SK chemicals, i.e., SK chemicals, Huvis, SK Petrochemical, SK CYTEC, and Eastman Fiber Korea Limited (EFKL).

of biogas by 2015. The Company's output will naturally increase as it seeks sustainable growth. In order to offset the increasing amounts of greenhouse gas emissions expected from increasing output, SK chemicals will also increase the amounts of renewable energy it uses, and extend its effects to the five companies making up the SK chemicals Ulsan Complex.

The Company also encourages employees to participate in efforts for saving energy on a daily basis. The Company has installed bicycle racks and user ID systems to encourage more and more employees to commute to and from work by walking or bicycling. The Company also plans to replace most of the vehicles belonging to the Company headquarters and R&D center with hybrid cars by 2014.

## Energy Consumption

TJ

| | | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| **Amounts consumed (A)** | Coals | 3,888 | 4,017 | 3,924 |
| | B-A | - | - | 6 |
| | B-C | 749 | 413 | 200 |
| | LNG | 85 | 149 | 386 |
| | LPG | 1 | 1 | 2 |
| | Diesel | 11 | 20 | 8 |
| | Gasoline | 3 | 3 | 4 |
| | Wood wastes | 917 | 1,310 | 1,341 |
| | Biodiesel | 113 | 162 | 74 |
| | Refined oil | 126 | 54 | 46 |
| | Biogas | 242 | 403 | 564 |
| | Electricity (purchased) | 1,327 | 1,375 | 1,503 |
| | Solar energy | - | 0.1 | 0.1 |
| | Heat (purchased) | 6 | 18 | 28 |
| | Ground heat | - | 0.0 | 0.1 |
| | Subtotal | 7,468 | 7,925 | 8,086 |
| **Amounts sold (B)** | Steam | 4,685 | 4,699 | 3,271 |
| **Total energy consumption (A–B)** | | **2,783** | **3,226** | 4,815 |

- The amounts of energy consumed, indicated for the years 2010 and 2011, were confirmed as of March 2011. The amounts of energy consumed, indicated for the year 2012, were measured according to *The Guide on Greenhouse Gas and Energy Management*, updated in November 2012.
- The amounts of energy consumed (A), electricity purchased, and heat purchased all form indirect energy.

## Indirect Greenhouse Gas Emissions

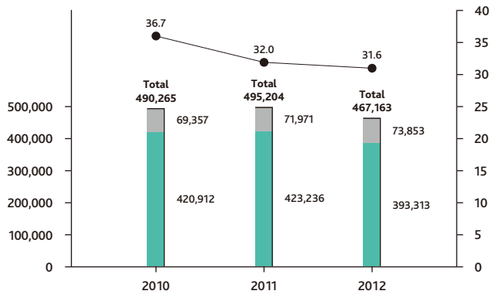
$tCO_2e$

| Scope 2 | 2010 | 2011 | 2012 |
|---|---|---|---|
| **Electricity** | 69,055 | 71,491 | 73,005 |
| **Heat** | 302 | 480 | 848 |
| **Total** | **69,357** | **71,971** | 73,853 |

## Greenhouse Gas Emissions

Scope 1 | Scope 2 | Basic unit

Scopes 1 and 2: $tCO_2e$, Monetary value: $tCO_2e$/ 100 million won




- The amounts of greenhouse gases emitted and energy consumed were rounded up to integers. Thus, the sum of these figures may differ from the total value reported.
- A change in the method for calculating greenhouse gas emissions from the wood waste boiler system at the Ulsan plant in 2011 accounts for the differences between the figures reported here and the figures reported in last year's sustainability report.

### Recycling Biogas

Recycling biogas helps reduce the use of fossil fuels and also handle methane from processing animal waste.

In 2012, SK chemicals used the methane (150 $Nm^3$/hr) obtained from its recently expanded anaerobic wastewater treatment facility, as fuel to run the boiler system at Ulsan for producing biodiesel. This not only helps to replace 720,713 $Nm^3$ of liquefied natural gas (LNG), but also reduces the amount of greenhouse gas emissions by 1,618 tons a year. The methane obtained from the sewage treatment facility in Ulsan is also now used to run the bunker C oil boiler. SK chemicals registered its biogas system as a Korea Certified Emission Reduction (KCER) project, getting recognition for slighting greenhouse gas emissions by over 20,000 tons between 2007 and 2011.

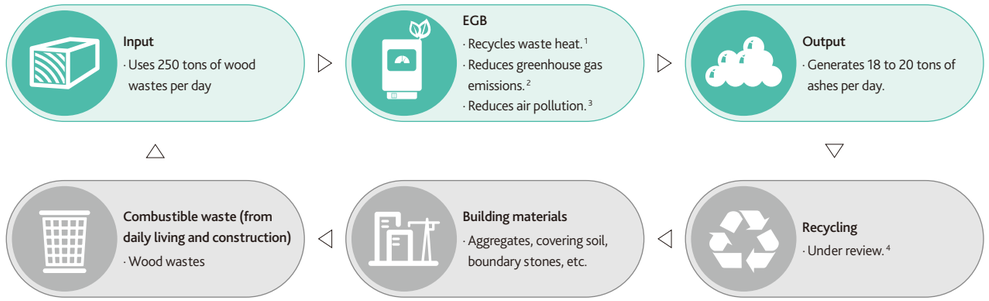
### Improving Facilities and Process Efficiency

SK chemicals has reduced the amount of steam required for its distillation process from 6.0 kg/$cm^2$ to 3.0 kg/$cm^2$. This, in addition,





**EGB Process Flow and Effect**




1. 40 t of steam/hr. 2. Replacing 55,000 t of fossil fuels/year. 3. Less than 0.1 ng of dioxin (which is the level that requires the installation of preventive facilities for processing waste).
4. Incineration test, ash analysis, and recycling test (strength).

has also given the Company 30 percent more reserve power. Improving the steam line has decreased steam leakage, thereby improving the efficiency of the steam process. Waste heat from chemical reactions is also recycled to save steam energy. Thus, pipes have been installed to collect waste heat.

In 2003, the Company stopped operating its bunker C oil boiler. This helped to save heat by 27 percent and costs by 4 billion won (as of 2003) each year.

### Eco Green Boiler

SK chemicals operates, at the Ulsan plant, the Eco Green Boiler (EGB), which runs on combustions of wood wastes to generate steam. This boiler system helps to reduce the annual amounts of air pollutants and greenhouse gas emissions by 440 tons and 55,000 tons, respectively. By replacing the soft coal boiler with the EGB and the diesel, traditionally used to resume operations after a halt with refined biomass-based oil, SK chemicals uses 259 tons less diesel and emits 682 tons less greenhouse gases each year. The Company plans to recycle ashes from these combustions into building materials, and process waste material into wood wastes to fuel the EGB as part of its efforts to achieve comprehensive resource recycling.

## Greenhouse Gas Emission Control System

In order to ensure a thorough control of greenhouse gas emissions from its plants, SK chemicals has completed the development of a greenhouse gas inventory system on the latest information technology, thus providing for efficient energy management in line with the Framework Act on Low-carbon Green Growth. The system has been in place at the Ulsan plant since 2009, and was extended to the plants at Cheongju, Ansan, and Osan, which together produce the products of the Life Science Business Division.

In response to the carbon emission rights trade that is to come into effect in 2015, SK chemicals has also established the emission rights trade trial project plan, seeking to develop an effective response strategy by accumulating relevant experience over the next three years. The year 2012 marks the first year of the trial project, leading SK chemicals to participate in a trial project over emission rights trade in industries and power generation that was organized by the Ministry of Knowledge Economy. The Company has developed a more detailed strategy and enhanced the practical capabilities of the involved personnel based on an analysis of the trade activities and the production costs thus generated.

## Environmental Performance
# Resource Cycle



SK chemicals works hard to establish a system of comprehensive resource recycling in order to make its plants eco-friendlier. Resource recycling refers to recycling and reusing resources throughout the production and life cycle of a given product. Recycling resources throughout products' life cycles is crucial to ensure a better use of available natural resources and minimize impact on the natural environment. To this end, SK chemicals reduces the amounts of raw materials it uses for production, and improves its facilities and processes to minimize the amounts of raw materials being wasted. Waste raw materials, in turn, are recycled or reused, while final waste, wastewater, and by-products, are discarded in a legal and safe manner. No reports have been made in 2012 concerning the Company's violation of any law on environmental protection.

## Managing Raw and Subsidiary Materials

The raw and subsidiary materials involved in manufacturing the products of the Green Chemical Business Division include terephthalic acid (TPA) dimethyltryptamine (DMT), ethylene glycol (EG), cyclohexanedimethanol (CHDM), and catalysts of many kinds. Manufacturing the products of the Life Science Business Division also involves the use of amorphous celluloses, albumin fractions (E), and various chemicals. SK chemicals strives to improve the efficiency of using these raw and subsidiary materials by ensuring a thorough control of their delivery, inventories, storage, and release out of the warehouse. Making efficient use of these limited resources is vital to saving natural resources and minimizing impact on the environment.

The automobile material division of the Ulsan plant uses recycled materials from affiliates of SK chemicals to produce SKY-VIVA®, an eco-friendly soundproofing material used in automobiles and building. SKY-VIVA® (www.skyviva.com), made with recycled materials from SK chemicals, Huvis, and SKC, generates approximately 30 billion won in revenue each year. SK chemicals continues to look for and develop similar profit sources based on recycling waste materials. In 2012, SK chemicals used 371,028 tons of raw and subsidiary materials in total.

**Usage of Raw and Subsidiary Materials** (ton)

| | |
|---|---|
| 2012 | 371,028 |
| 2011 | 435,697 |
| 2010 | 371,961 |

**Usage of Recycled Materials** (ton, at Ulsan)

| | |
|---|---|
| 2012 | 2,245 |
| 2011 | 1,311 |
| 2010 | 1,000 |

• The measurements of the amounts of recycled materials used began in 2011. The figure reported for 2010 is an estimate based on the contracted amounts of materials.

**30 billion won**
The yearly revenue from SKY-VIVA®, a soundproofing material made with recycled ingredients.

**-14.8%**
The margin by which the use of raw and subsidiary materials has decreased between 2011 and 2012.

**+71.2%**
The margin by which the use of recycled materials has increased between 2011 and 2012.

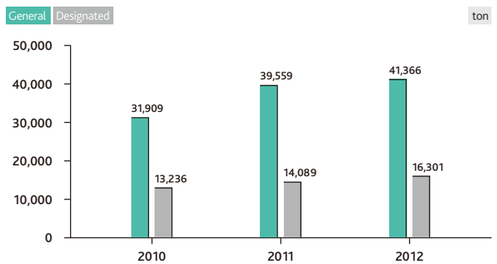




## Managing Waste Material

SK chemicals disposes of all wastes generated at its plants in a legal and hygienic manner according to the Wastes Control Act, seeking fundamentally to eradicate any possibility of secondary contamination. The Company, in observing the Basel Convention that restricts the international transportation of hazardous waste materials, also strictly forbids the transfer of waste materials abroad. In 2012, the Company completed its preparation to recycle the entire amount of the fly ashes from incineration, while also reducing the amount of wastewater sludge generated by installing a filter press in the Water Quality Control Office. The Company intends to increase the proportion of waste materials recycled further by recycling bottoms from incinerators.

**Amounts of Wastes Generated** (General, Designated; ton)




• Wastes from the Company headquarters were not included.

**Different Methods for Handling Wastes** (ton, %)

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Recycling | 27,785 | 31,826 | 34,448 |
| Discharge into seas | 9,923 | 10,096 | 8,765 |
| Burying underground | 5,643 | 11,371 | 11,389 |
| Incineration | 1,739 | 307 | 517 |
| Recycling ratio | 61.5 | 59.4 | 60.9 |

## Controlling Hazardous Chemicals

The Ulsan plant uses a wide range of hazardous chemicals to manufacture products. Methyl alcohol, sodium hydroxide, acetic acid ethyl, toluene, chloroform, xylene, and other such chemicals are used either as ingredients for products or for other activities, such as product testing and pH balance adjustment.

SK chemicals implements a policy for managing and controlling the use of these hazardous chemicals. It also uses the Safety, Health, Environment, and Quality (SHEQ) system to manage the relevant information. Completed in 2005, the SHEQ system allows for the integrated management of disasters, environmental impact, and training and education on safety, health, environment, and quality. There are officers at each department to manage and control hazardous chemicals according to the Company's rules on storage and handling. There are also multiple hazardous chemical managers ensuring thorough control, inspecting the related facilities and equipment once a week, and instructing and supervising the personnel on site. The Company has makes efforts to prevent environmental destruction and ensure researchers' safety. Testing agents are disposed of immediately, while wastewater is processed and recycled through the R&D Center's own wastewater treatment facility.

In 2012, SK chemicals used slightly more (30,238 tons) hazardous chemicals than it did the previous year, mainly due to the greater use of methyl alcohol in increasing the output. In 2012, there were no reports of accidents related to hazardous chemicals at any of the plants or offices.

**Usage of Hazardous Chemicals** (ton)

| | |
|---|---|
| 2012 | 30,238 |
| 2011 | 27,279 |
| 2010 | 15,027 |

• The figures include only the amounts of hazardous chemicals used at the Ulsan plant.

**60.9%**
The waste recycling ratio.

**SHEQ System**
Introduced in 2005 to integrate the information on safety, health, environment, and quality.

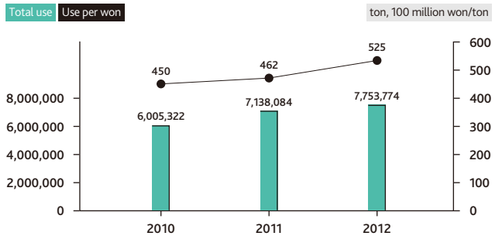
**0**
The number of accidents involving the leakage of hazardous chemicals.

## Using Water and Managing Wastewater

SK chemicals draws the water it needs for its operations from local water supply systems. SK chemicals' plants exert little impact on the sources of water in their respective regions. The Ulsan plant and the Company headquarters use groundwater. The Company headquarters also makes use of rainwater. Wastewater from the plants is processed at either the plants' own wastewater treatment facilities or the local wastewater treatment facilities.

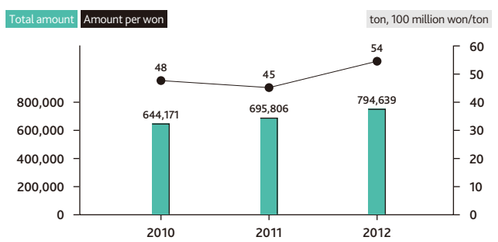
EcoLab, which houses the SK chemicals' headquarters and R&D center, gathers rainwater and groundwater in a reservoir tank capable of carrying 48.9 tons of liquid and uses them for watering plants and other general purposes. The system helps the building save water resources by 39% in comparison to other similar buildings, while also reducing risks of floods.

### Usage of Water




- The figures include the amounts of groundwater used as well.

### Amounts of Wastewater Generated




- The amounts of wastewater from EcoLab include the amounts of recycled water as well.
- Wastewater at the Ulsan plant is processed at the wastewater treatment facility on the plant's site before being discharged into the East Sea. Wastewater at the Ansan and Osan plants is sent to the local wastewater treatment facilities. Wastewater at the Cheongju plant is sent to the sewage disposal plant within the industrial cluster where the plant is located. Wastewater at EcoLab is sent to the Pangyo Water Quality and Health Center.

## Controlling Air Pollutants

Using automatic detectors, SK chemicals always keeps track of the air pollutants its plants emit. Its tele-monitoring system (TMS) also keeps watch over these facilities around the clock. The Company has also installed antipollution facilities and replaced conventional fuels with alternative ones.

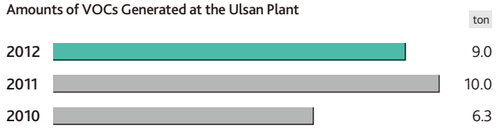
- See the "Summary of Achievements" in the Appendix section for the types and concentrations of air pollutants that each plant emits.

### Volatile Organic Compounds (VOCs)

None of the plants or offices of SK chemicals are subjected to the special regulation on the monitoring and control of volatile organic compounds (VOCs). Yet the plant at Osan gathers and recycles some of the VOCs from its manufacturing activities. The Ulsan plant established the Five-Year Plan for the Management of VOCs in 2012, and included it in its *Report on the Voluntary Implementation of Environment Conventions on the Reduction of Air Pollutants*. Of the VOCs defined by the Ministry of Environment in July 2012, the Ulsan plant generates methanol, chloroform, toluene, normal hexane, and xylene.

**Amounts of VOCs Generated at the Ulsan Plant**

ton




- The figure for the year 2012 is the target amount and does not reflect an accurate measurement. The accurate amount will be included in the next year's report.

### Ozone Layer-Depleting Substances

SK chemicals uses R-123, R-12, and R-22 as coolants for its air conditioning and refrigerating systems. The fire extinguisher fillers also include halon 1301 and halon 1211. These substances contribute to the depletion of the ozone layer. Small amounts of these substances are naturally discharged into the air. SK chemicals employs no manufacturing process that directly uses or generates ozone layer-depleting substances, and has no independent plan to reduce the amounts of these substances that are naturally leaked in tiny quantities. Nevertheless, the Company, according to its greenhouse gas inventory system that was introduced in 2009, keeps records of the amounts of ozone layer-depleting substances, such as HCFC and CFC, used or leaked at each of its plants.

- All the plants together generate approximately 1,500 $tCO_2e$ in total.





## Soil Contamination Control

SK chemicals has reinforced its monitoring system designed to prevent the contamination of soil around its plants. The plant at Osan has shut down the boiler fuel storage system in an effort to eradicate risks of future soil contamination. The plant has also replaced bunker C oil with liquefied natural gas. A survey of the chemical facilities at the Cheongju plant by the Korea Occupational Safety and Health Agency also revealed that the plant was free from any possibility of soil contamination. The Ulsan plant also passed the soil contamination test by the Korea Testing Laboratory.

## Investments in Environmental Facilities

In an effort to maximize the efficiency of investments in environmental protection efforts and improve environmental performance, SK chemicals divides its environmental facilities into multiple categories by purpose, including: preventing air pollution; controlling water quality; controlling odors (and VOCs); controlling noises and oscillations; managing wastes; preventing soil contamination; controlling toxic chemicals; forming green spaces; and developing environmental technologies. The Company systematically manages investments using these categories. It invested 6.87 billion won in these facilities in 2012, and plans to invest another 6.5 billion won in 2013.

### Investments in Environmental Facilities, 2012

million won

| Category | Description | Effects | Amount |
|---|---|---|---|
| **Preventing air pollution** | Improving facilities and replacing wearable parts. | Ensuring proper management of preventive facilities and control of pollutants. | 912.7 |
| **Controlling water quality** | Installing and expanding facilities. | Improving efficiency, enhancing processing capacities, and reducing sludge. | 4,111.7 |
| **Controlling odors (VOCs)** | Purchasing, replacing, and installing meters. | N/A | 110.0 |
| **Controlling noises and oscillations** | Installing new facilities and repairing/replacing old ones. | Preventing dust that fly off. | 584.0 |
| **Managing wastes** | Installing facilities. | Reducing wastes. | 910.0 |
| **Preventing soil contamination** | N/A | N/A | N/A |
| **Controlling toxic substances** | N/A | N/A | N/A |
| **Forming green spaces** | N/A | Improving local environments. | 242.0 |
| **Developing environmental technologies** | N/A | N/A | N/A |
| **Total** | **N/A** | **N/A** | **6,870.4** |

- The table reflects the state of conditions at the Ulsan plant. Investments in the plants at Osan, Ansan, and Cheongju were mostly confined to small-cost items, such as purchasing processing agents and replacing wearable parts, and thus, were not included.

## Controlling Noises and Odors

SK chemicals has established and implemented its own noise and odor control standard at its plants. It also employs services of specialized agencies to share the relevant information with local communities. The Osan plant installed new facilities for the prevention of noises and odors in response to the complaints local residents raised regarding the noises and odors the plant's freezer containers and research units generated. The plant surveyed whether the level of noise around the plant's boundary exceeded the legal maximum, and installed a noise meter, a soundproof room, and an active carbon tower (capable of processing 80 $Am^3$/minute) as a result.

# Green Process

Companies cannot survive by pursuing profits only at every turn. Today's society demands serious considerations of human welfare and environmental sustainability in all corporate decisions. SK chemicals recognizes the growing social emphasis on the need for sustainable management, and strives to achieve the ideal of sustainability in all its products, operations, and even organizational culture.

Our name for the strategy for ensuring sustainability in products, operations, and culture is "Green Products, Green Process, and Green Culture." "Green process" refers to ensuring greater eco-friendliness in the ways and manners in which SK chemicals conducts its activities and projects. Seeking to achieve "green plants," SK chemicals follows its Carbon Neutrality Roadmap. The Company has also built an innovative office building that exerts radically less environmental impact than other office buildings of similar sizes.

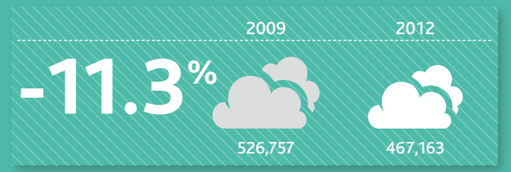
## Carbon Neutrality

Carbon neutrality refers to the state in which an economic activity generates zero carbon emissions. There are two ways to achieve this: namely, either fundamentally eliminating the use of all fossil fuels internally, or offsetting, externally, the amounts of carbon emissions already generated with carbon-absorbing, oxygen-producing forests, green spaces, and so on. Seeking to achieve perfect carbon neutrality by 2020, SK chemicals has opted for the former method and is now replacing fossil fuels at its plants with alternative sources of energy.

The plants at Ulsan and elsewhere make use of the biogas, wood wastes, and biomass that arise as by-products of manufacturing and waste-processing activities. EcoLab, housing the Company headquarters and R&D center, also increasingly generates electricity from solar and geothermal energy systems. The Ulsan plant, which produces over 90 percent of all SK chemicals' products and delivers steam to the companies making up the SK chemicals Ulsan Complex, plans to increase its carbon neutrality rate to 67 percent by 2015, and to 100 percent by 2020, eliminating all carbon emissions from the SK chemicals Ulsan Complex. As of 2012, the carbon neutrality level of the SK chemicals Ulsan Complex hovered around 27 percent. The use of alternative energy, measured in terms of calories (TJ), increased by 485 percent from 2009 and 5 percent from 2011. Greenhouse gas emissions are also on a steady decline.,

### Increasing Use of Alternative Energy, 2009 – 2012(TJ)


### Decreasing Greenhouse Gas Emissions, 2009 – 2012($tCO_2e$)





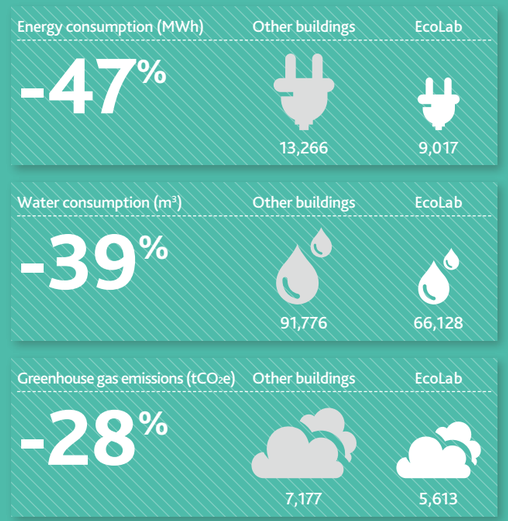



## EcoLab

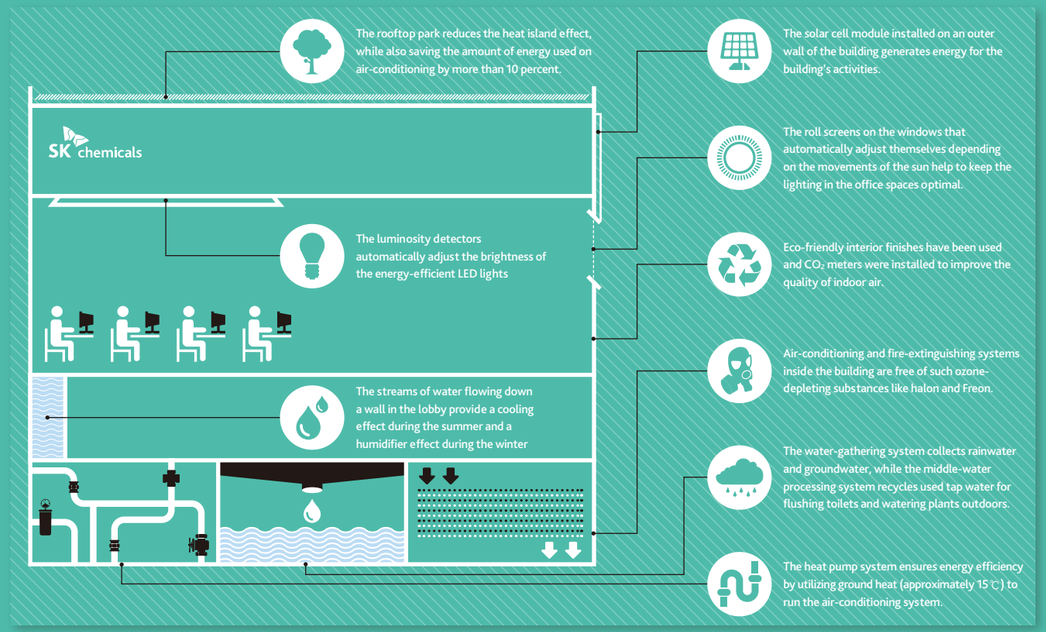
EcoLab is the new office building in Pangyo completed in on November 2010. It became the first office building in Korea to receive the Energy Efficiency Certificate Level 1 from KEMCO, in addition to receiving the highest score on the Korea Green Building Council' GBCC survey. EcoLab also became Korea's first office building to win the highest level of recognition on the LEED evaluation by the USGBC. It even went on to win the Grand Prize at the Korea Architecture Award. EcoLab tours, organized to improve the public's understanding of eco-friendly architecture, have so far attracted over 2,500 visitors from Korea and abroad.

EcoLab was designed to significantly cut down energy and water consumption and greenhouse gas emissions in comparison to other office buildings of similar sizes. SK chemicals monitors the building's performance throughout the year, and confirmed that the building cut down water consumption by 39 percent, greenhouse gas emissions by 28 percent, and energy consumption by 47 percent in 2012. The building generates part of the energy it needs from its own solar and geothermal energy systems, generating 7.54 MWh and 34.29 Gcal from these sources, respectively, in 2012.

### EcoLab and Other Buildings: Environmental Impact




### Eco-friendly Systems of EcoLab



# Social Commitment


## How can we realize growth and prosperity for all in today's competitive society, while sharing our gains with the society at large?

SK chemicals seeks to achieve both economic gains and mutual growth with all stakeholders involved. We can define "mutual growth" as ensuring survival and success for all concerned by helping one another. Our principles of action are based on this vision, which is, in turn, reflected in all our strategies and policies.

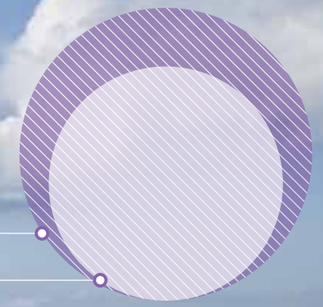
It is through the process of searching for, and implementing the ways to help one another that the Company and all stakeholders build trust in one another. The scope of mutual growth naturally extends down the supply chain, and involves sharing the Company's gains with the whole Local Communities at large. Mutual growth reaches its peak when the society becomes healthy, suppliers and business partners gain greater financial autonomy, and employees and Board members enhance their capabilities.





### Number of jobs created

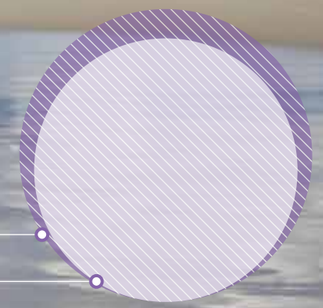
+42%



| | |
|---|---|
| 2012 | 249 |
| 2010 | 175 |

### SK Mutual Growth Cooperation Fund (million won)

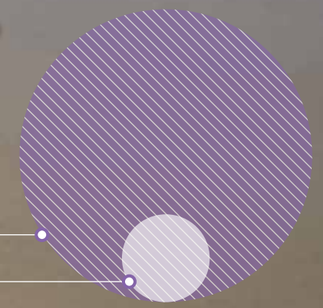
+13%



| | |
|---|---|
| 2012 | 7,100 |
| 2010 | 6,300 |

### Investment in social commitments (million won)

+650%



| | |
|---|---|
| 2012 | 1,500 |
| 2010 | 200 |

# Social Commitment
# Members



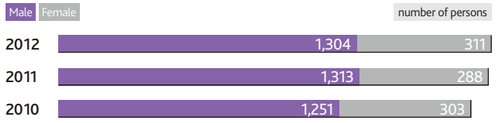
Seeking to invite and encourage "warm professionals," SK chemicals works hard to develop an exciting and passionate organizational culture that makes it a genuinely enjoyable workplace for all. To this end, the Company ensures that no discrimination would get in the way of recruitment and employment, while also providing all-round education and training for those hired to help them enhance their capabilities. The Company also motivates employees with fair evaluations and rewards, and seeks to improve the welfare and quality of life for all by providing equal benefits without distinguishing between full-time and contract-based employees. SK chemicals is especially proud of having spent four decades without any labor-management disputes. The Company understands and fully supports labor activities, and ensures rapport with continued and effective communication. The Company also provides systematic training and education necessary for health and safety.

## Organization Makeup

Diversity is a key factor for the success of an organization. SK chemicals employs systematic and scientific methods of selection at each stage of the recruitment process, ensuring that no candidate is discriminated against on the basis of sex, religion, ethnicity, and so on.

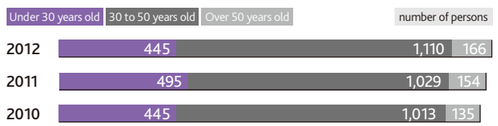
The most pressing diversity-related issue is the need to encourage the development of women workers. In order to eliminate the glass ceiling that many qualified and talented women experience, especially in male-oriented corporate hierarchies, SK chemicals observes all Korean laws on the employment equality of men and women, and supports work-family balance. In addition, SK chemicals also provides employees, whether mothers or fathers, to take leaves for maternity and child care, In 2012, 19 women benefitted from this policy, while no male beneficiary was reported.

### Number of Employees and Gender Ratio



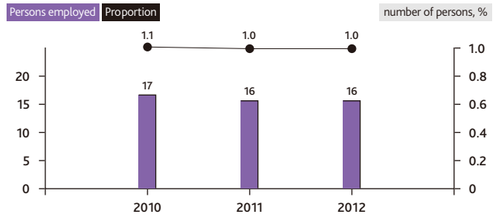

### Types of Employment


### Employee Makeup by Age

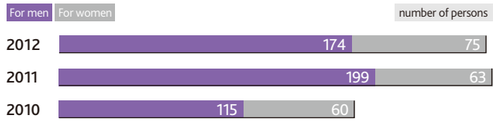



### Male-Female Ratio on the Board


### Employment of People with Disabilities



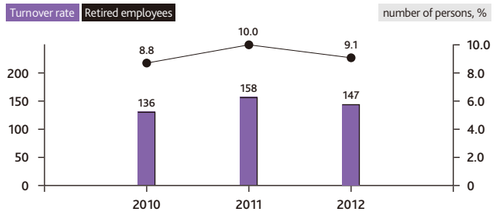

### Number of Jobs Created








### Number of Retired Employees and Turnover Rate




### Male-Female Ratio by Location

number of persons, as of Dec. 31, 2012

| | EcoLab | Ulsan | Cheongju | Ansan | Osan | Andong | Total |
|---|---|---|---|---|---|---|---|
| Male | 769 | 373 | 61 | 40 | 73 | 41 | 1,357 |
| Female | 211 | 25 | 36 | 33 | 37 | 22 | 364 |

### Employment Types by Location

number of persons, as of Dec. 31, 2012

| | EcoLab | Ulsan | Cheongju | Ansan | Osan | Andong | Total |
|---|---|---|---|---|---|---|---|
| Male | 962 | 387 | 80 | 62 | 91 | 33 | 1,615 |
| Female | 18 | 11 | 17 | 11 | 19 | 30 | 106 |

## Attracting and Retaining Talents

### SK chemicals' Ideal Employee

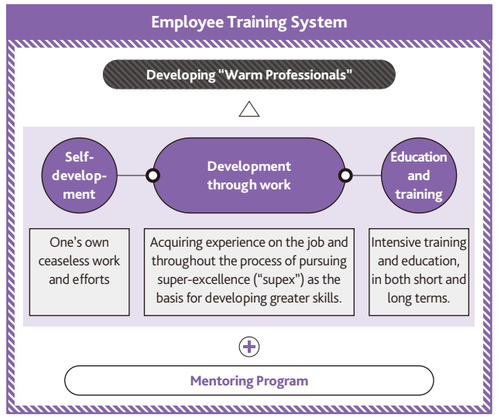
SK chemicals actively seeks and encourages "warm professionals." The warmth in this ideal refers to such noble traits as a sense of attachment to one's community and sincere respect for all its members. Professionalism refers to having a good command of one's work, following through one's plans, meeting one's goals with joy, and actively sharing one's knowledge with others. Such a warm professional shares the Company's mission to promote the health of humankind and protect the environment.

To attract and motivate such warm professionals, SK chemicals fosters enjoyable workplaces. An "enjoyable workplace" is where members enjoy a good work-life balance, and pursue both success and happiness by fully realizing their capabilities.

### Talent Recruiting Strategy

In order to attract and hire people with diverse talents, SK chemicals keeps a talent-sourcing portfolio. The portfolio helps the Company to meet and assess candidates with diverse talents that think outside the box. The Company also uses refined and multilevel selection tools to verify the potentials of candidates as specifically as possible. The Company also continually updates and trains essay review and interview specialists. In addition to advancing the recruitment and hiring process, SK chemicals provides various internship opportunities, allowing job candidates to explore a greater range of work and to discover their aptitudes and potentials. These internships also give the Company opportunities to observe job candidates and their performance better, thereby enabling the Company to attract and hire as many "right people" as possible. The Company's hiring policy also gives preferences to the locals in the communities in which the Company's plants and offices are located.

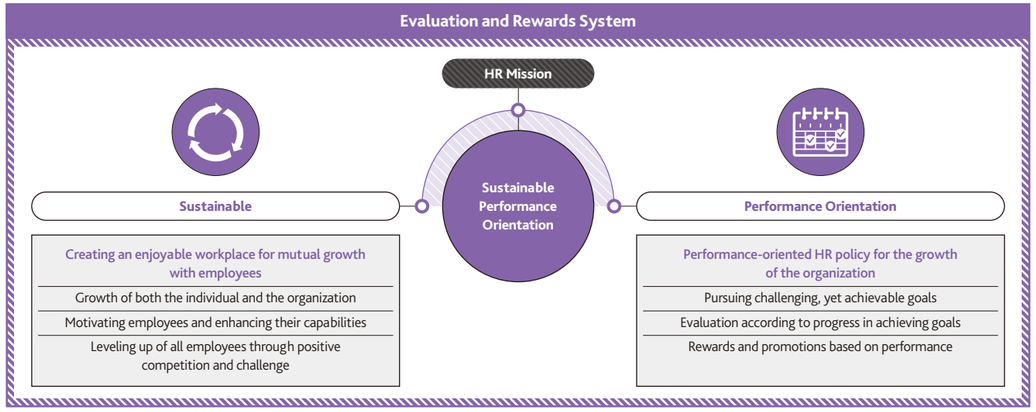
### Employee Training System




• SUPEX ("Super Excellent"): "SUPEX" is the state which SK chemicals wants its employees to attain. It is impossible to reach this level by relying merely on conventional thinking or activities. SUPEX employees are masters at thinking outside the box, making diverse new attempts, and handling their jobs with a perfectionist's dedication.

### Employee Training Program

Finding its competitiveness in the people making it up, SK chemicals has always been improving the capabilities of all its employees and Board members since its inception. The Company's commitment to human resources development allowed it to continue investing in employee training and education even during the restructuring process and economic recessions. SK chemicals provides equal education and training programs for all employees, regardless of their employment types. The Company also operates its curriculum so that at least 10 percent of all its employees receive training and education at any given time.




• Fostering employees' sense of attachment to the organization and motivating them to become voluntary high-achievers.

Career development at SK chemicals begins when a new employee first enters the Company. Depending on the job description, an employee is given one to four months of introductory training. During this period, new employees learn not only job-related skills, but also the skills of communication and exchange with other employees, leadership and cooperation, and the importance of trust. Employees also benefit from diverse opportunities for volunteering and self-reflection. The perfection of the "warm professional" ideal begins with diverse short- and long-term programs centered on on-the-job training (OJT). Mentors are senior employees with exemplary records who guide and help younger and less experienced employees to maximize their training. Training programs are largely divided between specialized courses and general (common) courses, and include a wide range of subjects, including languages, job skills, global capability development, and courses supporting academic degrees. Employees chosen as beneficiaries of long-term education can study full time at graduate and professional schools in Korea or abroad, receiving full salaries and expenses from the Company during their education period so that they can focus solely on their studies.

**Training Hours and Investment**

number of hours, 100 million won

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Avg. no. of training hours per employee | 157 | 192 | 185 |
| Investment | 38 | 36 | 34 |

## Fair Evaluation and Rewards

### Fair Evaluation

The performance evaluation and reward systems at SK chemicals aim to motivate employees into setting up challenge goals for themselves with a vision of "sustainable performance-orientation," and motivating employees with appropriate rewards and opportunities to develop their capacities. The first and foremost step to achieving the vision of "sustainable performance-orientation" is developing a rational, fair evaluation system. SK chemicals has thus established the Performance Evaluation & Coaching System (PECS), which provides a comprehensive performance management tool that helps to enhance the performance of both individuals and the whole organization.

The evaluation process consists of (1) setting up goals and targets, (2) midterm evaluation, and (3) final evaluation. Throughout all these stages, the evaluators and the evaluated remain in ongoing communications to ensure fair and objective evaluation results. Such an evaluation process takes into account both the potential and actual performance of each employee. These scores and rankings are used to determine whether or not to promote the employee, to raise his/her salary, or to qualify him/her for training opportunities at the Company's expenses. The evaluation system at SK chemicals thus includes various tools and tips that ensure the most objective and fairest results possible, including the calibration session and evaluation test held at the end of each stage. Once the final results are decided, each evaluated employee is brought into a closed meeting with his/her coach, who then explains the employee's strengths and weaknesses and coaches him/her on developing a sustainable plan for improving his/her capacities. Through continued training of evaluators, SK chemicals also keeps them up-to-date, improves their capacities for evaluation, and involves other employees into part of the evaluation process to spread a better understanding of the process throughout the Company.

### Fair Rewards

New employees at SK chemicals receive equal wages regardless of gender. As employees advance in seniority and experience, they become subjected to a rational, yet strictly differentiated scheme, providing greater goals and rewards for more productive employees, and health stimuli and motivations for less productive employees to enhance their potential and capacities. The Company strives to keep its reward system competitive, depending on how well it fares on the market. These rewards include not only financial or monetary forms (e.g. increases in wages, bonuses, etc.), but also non-monetary forms (e.g. pride, a sense of fulfillment, recognition from others, a clarified vision, etc.) that enable employees to enjoy their work better and naturally pursue the Company's vision of sustainable performance-orientation. The Company also provides legally mandatory insurances, refresh breaks, support for personal congratulations or condolences, health examinations, and the like for all employees regardless of their employment types.

## Work and Life Balance

SK chemicals helps employees maintain a proper balance between work and life, enjoying a healthy and happy family life. The diverse programs and corporate culture innovation activities geared to this end improve the employees' quality of life by giving them chances to recharge and develop themselves, which, in turn, helps to improve their productivity and the competitiveness of the Company.

### Support for Leisure and Family Life

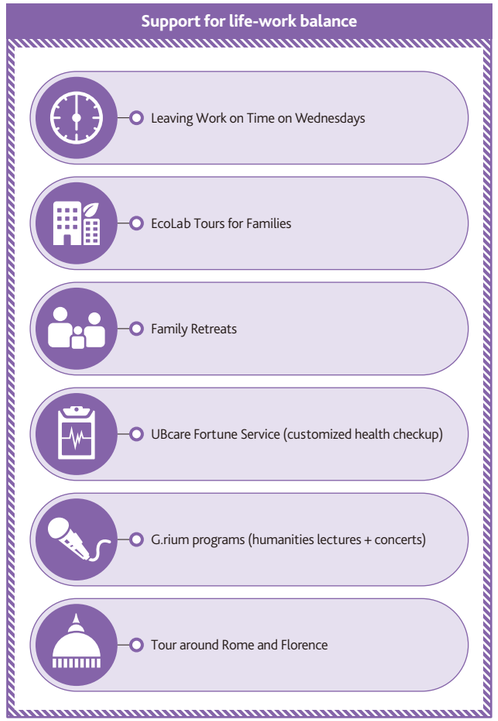
Each Wednesday is the day on which all employees leave right on time so that they can invest more time and efforts into their family lives and self-development. Employees' children are also invited on tours around EcoLab on holidays. The family retreat program invites not only employees, but also their family members into natural surroundings, helping them rest and recharge amid the beauty of nature.

### UBcare Fortune Service

This systematic health management program, aiming at both prevention and healing, delivers customized healthcare support for all employees. The program subjects employees to a comprehensive health evaluation, based on their medical checkup results and behavioral self-diagnoses, helping them therefore maintain their health-related habits and conditions at their best. SK chemicals also organizes health education classes and special events for employees at all its plants and offices.

### G.rium

SK chemicals is proud to present its G.rium ("Green Auditorium") Hall, a jewel of EcoLab in Pangyo that seats 209 people for special humanities lectures and classical music concerts. The humanities lectures, inviting renowned scholars and lecturers twice a month, provide in-depth discussions on a variety of subjects, including literature, history, philosophy, and the arts. The monthly classical concerts also invite not



**Labor-Management History**

**Feb. 2006**
KEF Labor-Management Cooperation Awards, Grand Prize.

**Sep. 2006**
Forbes Quality Assurance Awards for Labor-Management Reconciliation, Grand Prize.

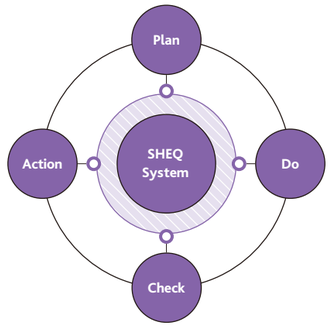
**2007 – 2012**
Labor-Management Peace Declaration.

**Apr. 2009**
One Heart, One Will Declaration

**Oct. 2009**
Labor union relegates authority over wages and collective bargaining to the Company.

**Apr. 2012**
Chairman Kim Chang-geun of the Association for the Pursuit of SUPEX Forbes Best CEO Award – Communication Management

**Safety and Health Management System**




| Plan | Do | Check | Action |
|---|---|---|---|
| Management policies | Campaigns | Medical examinations | Corrective measures |
| Strategies and goals | Training and education | Internal/external reviews | Executives' review |
| Programs | Implementation | Work environment check | Safety & Health Committee |
| | Health management | Frequent/periodical checks | Risk evaluation |
| | Workplace safety and health management | | |

only employees, but also their families. 72 humanities lectures and 41 classical music concerts were held until 2012.

As part of the Company's efforts to create a genuinely enjoyable workplace, audience members with good participation records in the humanities lectures are also given a chance to go on a grand tour around Italy with Professor Kim Sang-geun of Theology at Yonsei University. The Italian Arete Tour organized in 2012 took members of SK chemicals on a tour around the vestiges of the Renaissance and the masterpieces of the era's geniuses, encouraging them to find implications applicable to the culture of SK chemicals.

## Labor-Management Cooperation

Since its inception in 1969, SK chemicals has had no instance of violent labor-management struggle in its four decades of history thanks to the strong rapport and mutual trust between the management and labor. The SK chemicals Labor Union plays a central role in the Company's continued and stable growth. Good rapport with the labor union helped the Company overcome the difficulties of structural readjustment in 1996, the separation of the textile division and its re-creation as a new company, Huvis, in 2000, and other decisions seeking to advance the Company's business portfolio and structure. The Company has now established a performance-oriented framework for labor-management cooperation.

Thanks to these and other efforts, SK chemicals won the Grand Prize at the Korea Labor-Management Relations Awards, hosted by the Korea Employers' Federation, in February 2006, as well as the Grand Prize at the Forbes Quality Assurance Awards for Labor-Management Reconciliation in September 2009. Since 2007, the Company has been renewing the Labor-Management Peace Declaration every year. In April 2009, it also announced the One Heart, One Will Declaration, stating that all the employees and the management of the Company will stand united to ensure the Company's continued growth despite the worldwide financial crisis. In October 2009, the labor union also decided to relegate the entire authority to the Company on deciding wages and collective bargaining activities. In April 2012, Chairman Kim Chang-geun of the Association for the Pursuit of SUPEX won the Best CEO Award in the communication management category at the 2012 CEO Awards. SK chemicals continues to engage the labor union in sustained and honest communications, not only through formal channels such as the Labor-Management Council, but also through retreats, trekking trips, roundtables, practical meetings, online bulletin boards, e-mail newsletters, and the like.

Labor union activities are protected under numerous legislations, including the Labor Union and Labor Relations Adjustment Act, the Act on Promoting Workers' Participation and Cooperation, and so forth. SK chemicals added further guarantees by specifying and stating the rights of the labor union and employees in "Title 1: General Provisions" and "Title 2: Labor Union Activities" in the Collective Bargaining Agreement. The Company notifies the labor union of any major change that may affect employment prospects at least three months in advance. 33.4 percent of employees were eligible for collective bargaining as of the end of 2012.





## Employee Safety and Health

### Safety and Health System

SK chemicals enforces a safety and health system for employees throughout its organization. The Ulsan plant, in particular, has received a publicly recognized certificate, OHSAS 18001, for its safety and health management system. The company identifies, examines, and improves risk factors all year round, and ensures employees' safety and health at each plant by mandating that it performs top patrol rounds (twice a month) and OK patrol rounds on a regular basis. The company also submits itself to inspection conducted by the Korea Occupational Safety and Health Agency every year in order to ensure the effectiveness and transparency of its safety and health system.

### Safety and Health Committee

The company also thinks it absolutely crucial to let employees, the direct stakeholders of the Company's safety and health management, to participate in the system themselves through the Safety and Health Committee. SK chemicals therefore uses the committee to promote employees' safety and health in a more effective manner, while providing annual medical examinations to promote employees' safety and health. Comprised of four employee representatives and four user representatives, the committee serves to ensure and improve employees' safety and health at the workplace. The committee meets to review and decide on important matters pertaining to occupational safety and health every quarter.

### Safety and Health Education

SK chemicals provides diverse programs and courses on the subject, differing from plant to plant and from office to office to reflect their needs better. The Ulsan plant gathers its employees for general safety and health training each month, in addition to providing internal courses intended to enhance supervisors' and managers' job-related capacities and leadership skills, as well as four external PSM courses, provided online by the Korea Occupational Safety Association. The plant also trains new and transferred employees in matters of safety, fire extinguishing, and managing hazardous substances. In addition to organizing health education for each department eight times a year, the plant also invites members of the Ulsan Fire Headquarters to provide updates related to environment and safety three times a year. The Company also conducted risk analysis and education on its visits to business partners.

SK chemicals' health and safety training also extends to new visitors from business partners and contractors. Complete safety of each plant or office requires that all visitors comply with the Company's rules and policy on safety and health. This training for visitors from business partners takes place daily. In 2012, the Company also adopted the Safety and Health Cooperation Program, a trial project of the Ministry of Labor, and held an inauguration ceremony attended by the Director of the Ministry of Labor's Branch in Ulsan and the representatives of 66 business partners. The Company went on to win an award from the Korea Occupational Safety and Health Corporation after giving a presentation on occupational health practices, and earned Grade A on a survey conducted by the Ministry of Labor in 2012, thus being exempted from the inspection requirement in 2013.

SK chemicals also actively promotes healthier lifestyles among employees, encouraging them to quit smoking and drinking, and to go on healthier diets with less sodium. The weight clinic received 68 applicants in 2012, 45 of whom succeeded in achieving their desired weights. There were no reports of occupational hazards or related diseases in 2012. The Company inspects the working environments each year and orders immediate improvements where necessary. Furthermore, the Company also compiles statistics on working environments in order to identify and prevent various foreseeable types of accidents.

**Number of Accidents at SK chemicals**

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Minor accidents | 1 | 1 | 2 |
| Major accidents | 1 | - | - |
| Number of work days lost | 7,505 | 300 | 217 |

### Emergency System

Each plant of SK chemicals provides a fire-fighting organization and procedure in order to enable occupants to flee fire-related emergency situations as quickly and effectively as possible. These plants also operate emergency contact networks in order to minimize environmental impact and damages to lives and properties that may occur as a result of emergency situations.

## Social Commitment
# Business Partners

58 Members | 64 Business Partners | 65 Local Communities | 68 Green Culture

The fundamental aim of SK chemicals is to deliver happiness to all stakeholders. It is this vision and conviction that continues to shape SK chemicals' efforts in ensuring mutual benefits and growth with its business partners. In 2012, SK chemicals signed an agreement with its business partners on enhancing fair trade and mutual growth. The Mutual Growth Agreement will help establish a self-enforcing fair-trade order encompassing subcontractors, suppliers of raw materials and intermediate goods, and providers of manpower in their relations with SK chemicals, with the aim of solidifying the ground and structure for mutual growth between small businesses and large companies. In addition, SK chemicals provides diverse forms of support and benefits for business partners, including financial assistance, adjustments of payment conditions, and training and education for business partners' employees.

### Enhancing Business Partners' Competitiveness

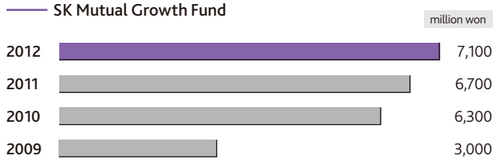
Acknowledging that the competitiveness of business partners bears directly on that of SK chemicals, the Company has regarded training support for those businesses as a central part of its mutual growth strategy. SK chemicals thus operates the SK Mutual Growth Academy, and organized CEO seminars for 68 companies, and held two Management Development Program (MDP) courses, each lasting for eight weeks on end, inviting members of seven companies in 2012. The CEO seminars seek to enhance the leadership skills and capacities of business partner leaders, updating them on the latest in business administration, economy, organizational change and management, and domestic and international market conditions. The MDP aims to enhance job-related capacities and skills of specialists, targeting experts on planning, finance, marketing, personnel, management, and so forth.

In 2012, SK chemicals also invited members of business partners to concerts and events at the G.rium Hall at EcoLab in Pangyo, promoting interactions and exchange.

### Supporting Business Partners' Stability

SK chemicals maintains the SK Mutual Growth Fund, which is used to provide loans and financial resources that business partners can take out at favorable interest rates. The SK Mutual Growth Fund provided loans to business partners amounting to 7.1 billion won in total as of the end of 2012. The Company diversified the forms and modes of financial assistance it provides in 2012. SK chemicals is also reviewing the plan for linking business partners to other financial institutes for loans and financing. It is also considering making direct loans to some businesses. In addition, the Company began in 2012 to pay subcontractors all in cash within 10 days of issuing bills so as to improve the cash flows of small business partners.

**SK Mutual Growth Fund**




**7.1 billion won**
The total amount of financial assistance that the SK Mutual Growth Fund provided for its business partners in 2012

**100%**
The rate at which subcontractors of SK chemicals are paid in cash

**72**
The number of SK chemicals' business partners that received training and education in 2012.



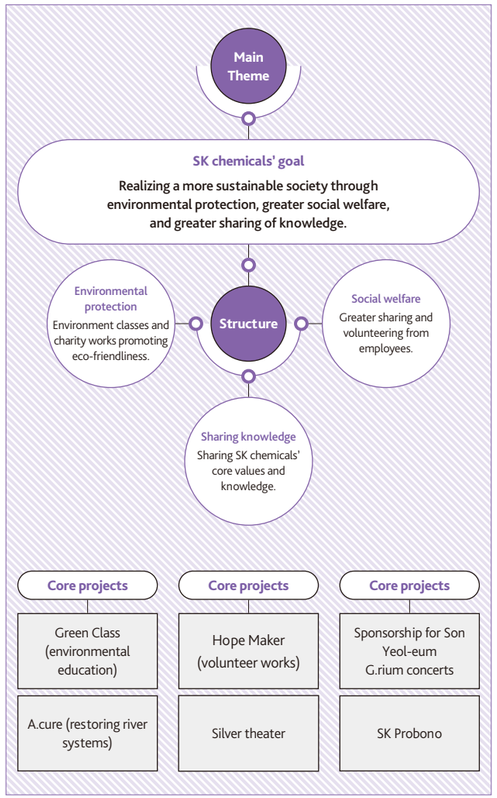


## Social Commitment
# Local Communities

58 Members | 64 Business Partners | 65 Local Communities | 68 Green Culture

All members of SK chemicals share great interests in solving some of the most pressing social issues, including environmental protection and bridging the growing gap between the rich and the poor. At SK chemicals, we prioritize what causes and issues are to receive our help and attention in discussions with local communities, and carry out our initiatives with willingness and enthusiasm. In 2012, SK chemicals spent 1.5 billion won on making a change, which is 6.5 times greater than the 200 million won spent in 2012 and is also almost 50 percent greater than the amount of money spent in 2011. The number of employees volunteering for various activities has also significantly increased. SK chemicals completed its corporate social responsibility (CSR) system in 2012, selecting environmental protection, social welfare, and knowledge sharing as the three core areas of its attention and support.

### Social Contribution System




### Environmental Protection

**A.cure: Protecting and Restoring Local Rivers**

Protecting and restoring local river systems forms a major part of SK chemicals' drive for environmental protection. Employees regularly volunteer to clean up the environments surrounding the Unjung River near EcoLab, as well as the Mipyeong River in Cheongju, and the Cheoyong Park, the Ganjeol Cape, and the Solmaru Path in Ulsan. In turn, employees also receive extra Green Points, which form one of the key performance indicators used to assess their work and career.

• A.cure: Combining "aqua" with "cure," the name expresses SK chemicals' determination to preserve water resources.

**Green Class: Learning about the Importance of Environmental Protection**

In an effort to advertise the importance of environmental protection, SK chemicals' employees regularly visit local elementary schools and provide Green Classes for students. These fun and interactive classes involve active use of audiovisual and other learning materials to help students enjoy learning about nature. Late in 2012, employees visited four elementary schools in Seongnam and Bundang to provide Green Classes for a total of 240 students enrolled in eight classes. The Company plans to increase the number of schools and classes eligible for the program in the future.

### Social Welfare

**Hope Maker**

"Hope Maker" is the name of a representative CSR program of SK chemicals, through which employees become supporters, mentors,

and friends of local children and youth who need attention and aid, in the forms of financial assistance as well as continued visits and friendship. Almost 1,100 employees are participating in the program today, supporting 128 children and youth enrolled at 14 orphanages and youth welfare centers near the Company plants and offices. The program will extend its benefits to over 150 students in 2013. Each team of employees is given at least one child or teenager to support and mentor. SK chemicals supports the dreams and hopes of not only the Korean youth, but also the youth abroad. Employees regularly donate to Compassion, an international child aid organization, to support over 300 children in poor countries.

The Company also keeps funds matching the amounts of donations from employees to provide emergency medical relief where needed. In addition, the Company runs a wide range of interactive social service programs in partnership with local social and charity organizations. SK chemicals is currently in the process of measuring the economic impact of Hope Maker and other activities that support local societies, and will include the results in future reports.

**Silver Theater**

Since 2009, SK chemicals has been funding and supporting the Silver Theater, a social enterprise accredited by the Ministry of Labor, providing 480 million won in total (or 120 million a year) for the theater's operation and additional support for its various events. Korea's first theater for seniors, the Silver Theater attracted 200,000 viewers in 2012, and 530,000 viewers so far, becoming a leading venue for culture and entertainment for the elderly. SK chemicals plans to diversify the programs and events organized at this venue in the future.

**Happiness Wells**

SK chemicals digs wells in Kenya to bring clean water closer to home for people who are always thirsty. In 2012, the Company allotted 28 million won to dig three wells in the Kenyan towns of Tarasa, Wachuoda, and Selieh. The wells thus provide over 7,300 tons of drinkable water for over 4,000 people, thereby significantly improving the locals' health and quality of life. The Company intends to dig more wells in Kenya in the future.

**1.5 billion won**

The amount of money invested in social contributions in 2012, 6.5 times greater than the 200 million won of 2010 and 50% greater than the 1 billion won of 2011

**7,300 tons**

The total amount of drinkable water that the SK chemicals Happiness Wells will give Kenyans

**530,000**

The cumulative total number of viewers who have visited the Silver Theater so far





## Sharing Knowledge

**Supporting Talents**

SK chemicals makes great efforts to equally share the benefits of culture and the arts to all. The Company plans to open its classical music concerts, held 41 times in 2012 for employees and their families, to the Local Communities so that the disadvantaged youth can also enjoy them. The Company also intends to provide continued support for young people with artistic talents. The first recipient was the young pianist Son Yeol-eum, who received 90 million won in 2012 for her training. The Company also provided another 20 million won for her piano quartet concert at the G.rium Hall.

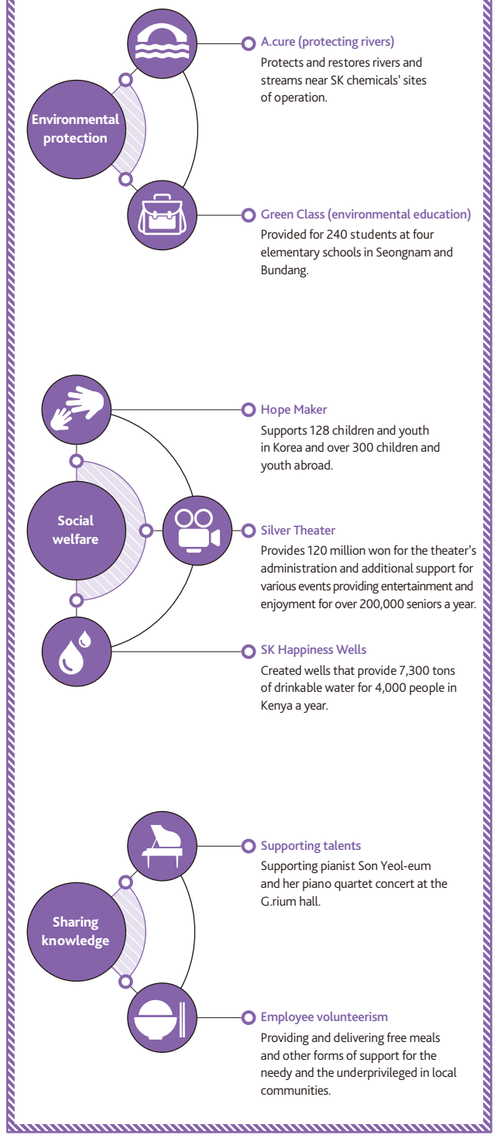
**Volunteer Works**

SK chemicals' employees volunteer for various and ongoing activities, mainly engaging in the local communities in which they work. Each plant or office organizes volunteer groups to help with distributing free meals at local charity organizations or delivering meals to the needy. Team-by-team workshops also involve cleaning up the surroundings and other efforts for environmental protection.

SK chemicals is also an active participant in CSR campaigns organized by the whole SK Group. Employees volunteered in making and sharing winter *kimchi*, organized by the SK Group, in 2012, delivering 2,000 sauced and pickled heads of cabbages to a charity organization in Seongnam. The Group-wide bazaar held to raise funds for free meals for poor children also saw large quantities of goods donated by employees as well as by the company. SK Probono is a program that shares the SK Group's expertise on marketing, human resource development, accounting, and legal affairs with smaller companies.

• SK Probono: employees with expertise or professional backgrounds volunteer to share their experience and knowledge with social enterprises and organizations.

**Social Commitments in 2012**



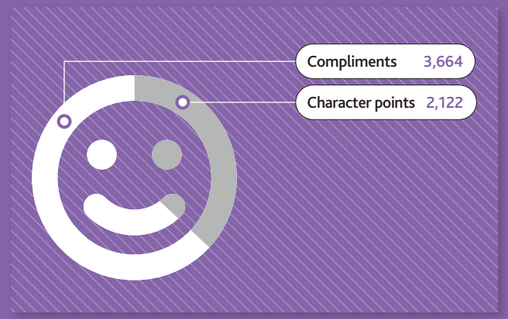
# Green Culture

"Green Culture" is the slogan and the vision that organizes SK chemicals' efforts for sharing its commitment to social and environmental sustainability with stakeholders. The concept of green culture is not confined to activities and campaigns for increasing eco-friendliness. Rather, it is a high-minded and broad vision of a sustainable society that benefits the Company, employees, and the whole society all at once. A representative of SK chemicals' green culture efforts is the point mileage systems. The Green Point Systemrewards employees for their eco-friendly behavior. The Character Point System rewards employees for complimenting one another. SK chemicals uses these points to motivate all members to participate in the Company-wide efforts to create a more eco-friendly and encouraging organization. The Green Points thus accumulated are then converted into actual money and resources for the Company's CSR programs.

## Character Point System

Introduced in March 2012, the Character Point System promotes certain virtues and qualities in employees that are characteristic of "warm professionals." The system motivates employees to develop a habit of complimenting or encouraging one another, which is necessary to make the workplace genuinely enjoyable. The Company produces a list of behavior and actions deserving of compliments based on the SKMS, and distributes copies to the Board members and managers. The points are accrued to people who compliment others and whose compliments are accepted. Employees may also thank and praise their superiors and win the Character Points in turn, so that encouragement and compliments are shared not only top-down, but also bottom-up. Recipients of compliments are immediately notified by online notices of the exact comments they have received. Over 5,800 compliments were received in just nine months from March 2012, which indicates that there are, on average, 30 or so compliments shared across the Company.

### Accumulated Character Points




### Average Number of Comments Received a Day





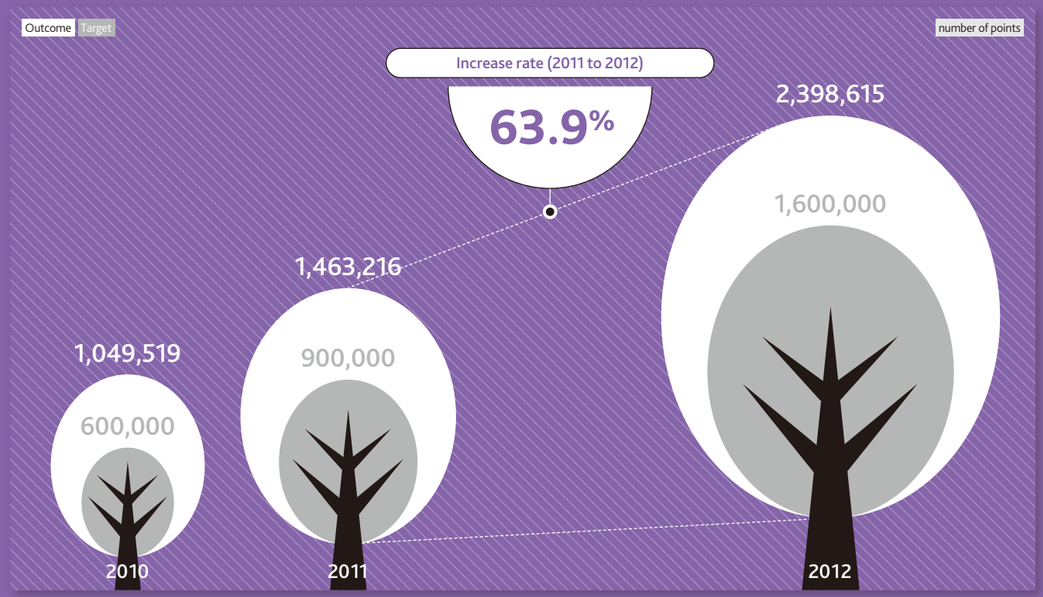

## Green Point System

SK chemicals has been implementing the Green Point System since 2010 to encourage employees to become more environment-conscious and establish environmental management as its core pillar. The system converts employees' various environmental achievements—including saving energy and purchasing eco-friendly goods—into green points. The accumulated points carry monetary values, which the Company matches to support environmental and social causes.

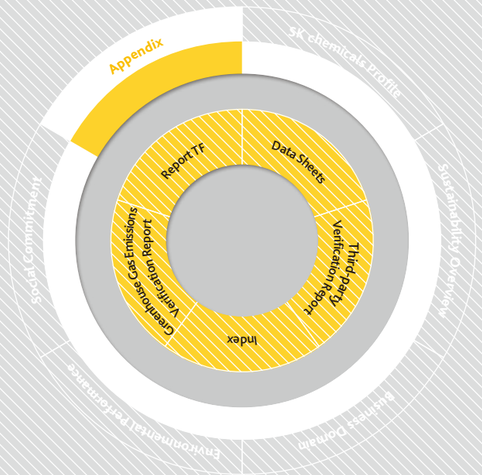
Employees can easily multiply their Green Points by taking part in environmental protection activities, by purchasing eco-friendly goods, by visiting environment-themed exhibits and classes with families, by attending the quarterly screenings of movies and documentaries on climate change and environmental responsibilities of companies, and by suggesting new solutions for environmental management. Thanks to the active participation and enthusiasm of employees, SK chemicals reached its target of 1.6 million Green Points in July 2012 much ahead of the schedule, and ended up collecting 2,398,615 points in total by the end of the year. Employees' Green Points now serve as a key performance indicator of the Company's performance, and will be used as key performance indicators for individual assessment beginning in 2013.

### How to Multiply Green Points


### Green Points: Target and Outcome



# Appendix








## Key Indicators of Sustainable Management

### Economic Performance

| Output | Division | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| PET | Green Chemical Business | tons | 147,796 | 150,402 | **79,164** |
| PETG | Green Chemical Business | tons | 52,547 | 59,368 | **80,156** |
| BON | Green Chemical Business | tons | 8,021 | 8,473 | **7,506** |
| Biodiesel | Green Chemical Business | tons | 85,425 | 115,210 | **100,066** |
| Blood products | Life Science Business | bottles | 667,391 | 888,529 | **945,125** |
| Vaccines | Life Science Business | doses | 6,684,722 | 4,837,267 | **7,058,231** |
| Tablets | Life Science Business | tablets | 676,599,508 | 625,005,351 | **738,803,555** |
| Patches | Life Science Business | patches | 12,207,357 | 14,992,312 | **17,907,672** |

### Social Performance

| Check-up | Scope | Unit | Eligible | Examined | Unexamined |
|---|---|---|---|---|---|
| General | Company-wide | Persons | 1,354 | 1,344 | 10 |
| Basic | EcoLab and Ulsan plant | Persons | 319 | 319 | - |
| Special | Company-wide | Persons | 428 | 428 | - |

| Local contributions | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| Cost of social contributions | Company-wide | 100 milion won | 2 | 10 | **15** |
| Employees volunteering | Company-wide | Persons | 1,650 | 1,650 | **1,710** |
| Avg. no. of hours of volunteering per employee | Company-wide | Hours | 2.5 | 2.0 | **2.0** |

# Key Indicators of Sustainable Management

## Environmental Performance

| Materials | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Raw and subsidiary materials consumed** | Ulsan plant | tons | 371,367 | 433,038 | **370,189** |
| | Ansan plant | tons | 155 | 84 | **121** |
| | Osan plant | tons | 279 | 293 | **380** |
| | Cheongju plant | tons | 160 | 2,282 | **338** |

| Water and wastewater | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **Water used** | Ansan plant | tons | 10,960 | 11,155 | **12,013** |
| | Osan plant | tons | 28,894 | 29,091 | **34,783** |
| | Ulsan plant | tons | 5,927,740 | 6,995,230 | **7,580,928** |
| | Cheongju plant | tons | 26,886 | 46,304 | **59,922** |
| | EcoLab | tons | 10,842 | 56,304 | **66,128** |
| **Self-developed groundwater** | Ansan plant | tons | - | - | **-** |
| | Osan plant | tons | 47,920 | 65,861 | **60,010** |
| | Ulsan plant | tons | - | - | **-** |
| | Cheongju plant | tons | - | - | **-** |
| | EcoLab | tons | 425 | 867 | **2,181** |
| **Recycled water** | Ansan plant | tons | - | - | **-** |
| | Osan plant | tons | - | - | **-** |
| | Ulsan plant | tons | 4,832,689 | 4,658,395 | **4,167,642** |
| | Cheongju plant | tons | - | - | **-** |
| | EcoLab | tons | - | - | **-** |
| **Wastewater•** | Ansan plant | tons | 2,880 | 2,790 | **2,930** |
| | Osan plant | tons | 51,810 | 52,097 | **49,680** |
| | Ulsan plant | tons | 569,400 | 590,570 | **673,010** |
| | Cheongju plant | tons | 16,378 | 27,734 | **31,831** |
| | EcoLab | tons | 3,703 | 22,615 | **37,188** |

• Final locations of discharge: Ansan Municipal Sewage Treatment Facility (for the Ansan plant); Osan Sewage Treatment Facility (for the Osan plant); the East Sea (for the Ulsan plant); Industrial Cluster Wastewater Treatment Facility (for the Cheongju Plant); Pangyo Water Quality and Health Center (for EcoLab). (The figures indicated here combine both the amount of wastewater processed and the amount of recycled water.)





# Key Indicators of Sustainable Management

| Wastes | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|
| **General wastes** | Ansan plant | tons | 64 | 95 | **124** |
| | Osan plant | tons | 738 | 916 | **1,028** |
| | Ulsan plant | tons | 31,033 | 38,449 | **40,164** |
| | Cheongju plant | tons | 74 | 99 | **50** |
| **Designated wastes** | Ansan plant | tons | 6 | 6 | **8** |
| | Osan plant | tons | 12 | 21 | **40** |
| | Ulsan plant | tons | 13,212 | 14,062 | **16,251** |
| | Cheongju plant | tons | 6.0 | 0.5 | **2.0** |
| **Incinerated wastes** | Ansan plant | tons | 50 | 81 | **120** |
| | Osan plant | tons | 673 | 127 | **115** |
| | Ulsan plant | tons | 982 | 72 | **230** |
| | Cheongju plant | tons | 34 | 27 | **52** |
| **Buried wastes** | Ansan plant | tons | 1 | - | **-** |
| | Osan plant | tons | 18 | 762 | **22** |
| | Ulsan plant | tons | 5,624 | 10,578 | **11,282** |
| | Cheongju plant | tons | - | 31 | **85** |
| **Recycled wastes** | Ansan plant | tons | 19 | 20 | **12** |
| | Osan plant | tons | 59 | 48 | **51** |
| | Ulsan plant | tons | 27,661 | 31,717 | **34,336** |
| | Cheongju plant | tons | 46 | 41 | **49** |
| **Sea-discharged wastes** | Ansan plant | tons | - | - | **-** |
| | Osan plant | tons | - | - | **-** |
| | Ulsan plant | tons | 9,923 | 10,096 | **8,765** |
| | Cheongju plant | tons | - | - | **-** |
| **Recycled goods** | Ansan plant | % | - | - | **-** |
| | Osan plant | % | - | - | **-** |
| | Ulsan plant | % | 62 | 59 | **61** |
| | Cheongju plant | % | - | - | **-** |

# Key Indicators of Sustainable Management

| Air pollution | Legal Max. | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| **Dust concentration at discharge** | 50 | Ansan plant | mg/Sm³ | 11 | 10 | **12** |
| | 100 | Osan plant | mg/Sm³ | 10 | 7 | **-** |
| | 100 | Ulsan plant | mg/Sm³ | 7 | 5 | **4** |
| | 50 | Cheongju plant | mg/Sm³ | 8 | 9 | **8** |
| **Sulfur oxide (SOx)** | 180 | Ansan plant | ppm | 17 | 17 | **17** |
| **concentration at discharge** | 180 | Osan plant | ppm | 2 | - | **-** |
| | 200 | Ulsan plant | ppm | 73 | 50 | **64** |
| | | Cheongju plant | ppm | - | - | **-** |
| **Nitrogen oxide (NOx)** | 200 | Ansan plant | ppm | 166 | 169 | **167** |
| **concentration at discharge** | 200 | Osan plant | ppm | 30 | - | **-** |
| | 180 | Ulsan plant | ppm | 98 | 79 | **48** |
| | | Cheongju plant | ppm | - | - | **-** |
| **Water pollutant (BOD)** | 120 | Ansan plant | ppm | 10 | 21 | **25** |
| **concentration at discharge** | 120 | Osan plant | ppm | 10 | 5 | **10** |
| | 10 | Ulsan plant | ppm | 4 | 4 | **5** |
| | 250 | Cheongju plant | ppm | 180 | 132 | **17** |
| **Water pollutant (COD)** | 130 | Ansan plant | ppm | 11 | 30 | **21** |
| **concentration at discharge** | 130 | Osan plant | ppm | 10 | 10 | **15** |
| | 40 | Ulsan plant | ppm | 28 | 20 | **20** |
| | 250 | Cheongju plant | ppm | 205 | 114 | **23** |
| **Water pollutant (SS)** | 120 | Ansan plant | ppm | 17 | 21 | **35** |
| **concentration at discharge** | 120 | Osan plant | ppm | 6 | 9 | **15** |
| | 10 | Ulsan plant | ppm | 6 | 4 | **4** |
| | 50 | Cheongju plant | ppm | 41 | 135 | **24** |





# Key Indicators of Sustainable Management

| Energy | Source / fuel | Scope | Unit | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|
| **Energy consumed** | Coals | Company-wide | tons | 156,158 | 161,338 | **152,086** |
| | B-A | Company-wide | kliter | 130 | 136 | **159** |
| | B-C | Company-wide | kliter | 14,001 | 10,423 | **4,809** |
| | Wood wastes | Company-wide | tons | 58,760 | 84,003 | **85,954** |
| | Gasoline | Company-wide | kliter | 98 | 103 | **110** |
| | Diesel | Company-wide | kliter | 304 | 566 | **212** |
| | Biodiesel | Company-wide | tons | 4,229 | 5,999 | **2,742** |
| | Refined oil | Company-wide | tons | 523 | 1,958 | **1,678** |
| | LNG | Company-wide | 1,000m³ | 2,130 | 3,721 | **8,851** |
| | LPG | Company-wide | tons | 19 | 20 | **39** |
| | Biogas (methane) | Company-wide | 1,000m³ | 4,553 | 8,433 | **11,188** |
| | Electricity | Company-wide | MW | 148,106 | 153,331 | **156,579** |
| | Heat | Company-wide | Gcal | 1,511 | 18,434 | **28,359** |
| **Energy supplied** | Electricity* | Ulsan plant | TJ | 1,970 | 1,951 | **2,218** |
| | Heat | Ulsan plant | TJ | 4,686 | 4,700 | **3,272** |
| **Employee transportation** | Gasoline | Company-wide | kliter | 63.13 | 102.73 | **109.83** |
| | | Company-wide | GJ | 2,114.92 | 3,441.35 | **3,580.36** |
| | | Company-wide | $tCO_2e$ | 137.33 | 230.26 | **240.02** |
| | Diesel | Company-wide | kliter | 90.66 | 40.95 | **30.11** |
| | | Company-wide | GJ | 3,435.98 | 1,551.97 | **1,135.07** |
| | | Company-wide | $tCO_2e$ | 238.61 | 109.29 | **80.07** |
| **Alternative energy generated** | Solar energy | EcoLab | MWh | - | 8.26 | **7.54** |
| | Ground heat | EcoLab | Gcal | - | 11.16 | **34.29** |

• "9.6TJ/GWh" is the amount of electricity consumed that is applied to the year 2012 due to the change of the method for calculation.

# Financial Performance (Abridged)

## Financial Statements

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| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Assets | | | |
| Current assets | 535,216,041,567 | 631,159,236,354 | **642,506,626,344** |
| 1) Quick assets | 343,417,307,580 | 406,186,961,732 | **402,651,480,639** |
| 2) Inventories | 191,798,733,987 | 224,972,274,622 | **239,855,145,705** |
| Fixed assets | 1,276,447,881,372 | 1,402,592,304,383 | **1,551,759,080,995** |
| 1) Investment assets | 782,933,144,411 | 819,268,208,854 | **810,507,232,785** |
| 2) Tangible assets | 454,272,210,809 | 547,945,079,731 | **690,136,182,542** |
| 3) Intangible assets | 32,532,901,342 | 27,850,538,457 | **41,845,834,327** |
| 4) Other fixed assets | 6,709,624,810 | 7,528,477,341 | **9,269,831,341** |
| Total assets | 1,811,663,922,939 | 2,033,751,540,737 | **2,194,265,707,339** |
| Liabilities | | | |
| Current liabilities | 707,999,275,486 | 480,244,409,216 | **476,538,657,736** |
| Fixed liabilities | 195,561,400,334 | 631,381,127,130 | **769,469,070,324** |
| Total liabilities | 903,560,675,820 | 1,111,625,536,346 | **1,246,007,728,060** |
| Capital | | | |
| Capital | 118,300,860,000 | 118,300,860,000 | **118,300,860,000** |
| Capital surplus | 145,530,430,546 | 145,530,430,546 | **145,530,430,546** |
| Capital adjustment | (98,068,499,377) | (98,068,499,377) | **(98,068,499,377)** |
| Other accum. comp. income | 957,329,746 | 1,632,274,167 | **1,369,992,555** |
| Earned surplus | 741,383,126,204 | 754,730,939,055 | **781,125,195,555** |
| Total capital | 908,103,247,119 | 922,126,004,391 | **948,257,979,279** |
| Total liabilities and capital | 1,811,663,922,939 | 2,033,751,540,737 | **2,194,265,707,339** |

## Income and Loss Statement

won

| | 2010 | 2011 | 2012 |
|---|---|---|---|
| Sales | 1,334,514,621,732 | 1,546,107,694,525 | **1,476,191,492,605** |
| Cost of sales | 1,037,383,909,381 | 1,245,669,454,486 | **1,188,949,912,636** |
| Gross income | 297,130,712,351 | 300,438,240,039 | **287,241,579,969** |
| Selling and admin. expenses | 228,216,839,151 | 235,789,777,579 | **238,851,298,084** |
| Operating profit | 68,913,873,200 | 64,648,462,460 | **48,390,281,885** |
| Non-operating profit | 38,003,657,048 | 34,691,310,985 | **42,359,047,793** |
| Non-operating expenses | 69,212,034,181 | 67,511,524,754 | **60,408,580,714** |
| Net income b/f income tax | 37,705,496,067 | 31,828,248,691 | **30,340,748,964** |
| Income tax expenses | (2,215,068,415) | 992,431,188 | **(8,983,813,070)** |
| Net term profit | 39,920,564,482 | 30,835,817,503 | **39,324,562,034** |

• All the financial data have been amassed according to the K-IFRS.





# Affiliations

## SK chemicals

**Affiliated Organizations**

Korea Employer Federation; Federation of Korean Industries; Korea Economic Research Institute; Korea International Trade Association; Korea Fair Competition Federation; Korea Industrial Technology Association; Korea Management Association; Seongnam Chamber of Commerce; Korea Industrial Safety Association (Seongnam Chapter); Korea Industrial Technology Association (CTOs Club); Korea Fire Safety Association; Gyeonggi Province Conference of Environmental Engineers; Korea Industrial Safety Association; Environmental Managers Association; Korea Chemicals Management Association (Yeongnam Chapter); Korea Environmental Preservation Association; Korea Environmental Engineers Federation; Korea Responsible Care Council; United Nations Global Compact.

## Green Chemical Business Division

**Affiliated Organizations**

Polymer Society of Korea; Korean Institute of Chemical Engineers; Korea Specialty Chemical Industry Association; Korea Society for Composite Materials; Society of Plastic Engineers (Korean Chapter); Korea Industrial Safety Association (Ulsan Chapter); Yeocheon Industrial Cluster Safety Association; Korea Radioisotope Association.

## Life Science Business Division

**Affiliated Organizations**

Korea Drug Research Association; Korean Nurse Association (Gyeonggi Nurse Association); Korean Association of Occupational Health Nurses; Korean Medical Library Association; Korea Pharmaceutical Manufacturers' Association; Korea Biomedicine Industry Association; Korea Pharmaceutical Traders Association; Korean Society for Clinical Development; Korea Pharmaceutical Reporting Cooperative; Korea Pharmaceutical; Korea Academy of Social and Managed Pharmacy; Ministry of Labor Emergency Planning Council; Korea Pharmaceutical Wholesalers Association; Management Corporation for Cheongju Industrial Complex; Red Cross Korea; Ansan Chamber of Commerce; Osan Chamber of Commerce; Korean Pharmaceutical Association; Developing Country Vaccine Manufacturers' Network; Korea Electric Engineers Association; Korea Energy Engineers Association.

# Awards and Recognitions

| Date | Award / Recognition | Date | Award / Recognition |
|---|---|---|---|
| **Feb.** | No. 1 chemical manufacturer on the *2012 Green Rankings* survey. | **Oct.** | Included in the DJSI KOREA for three consecutive years. |
| **May** | Trial project on emission rights trade. | | Named CDP Leader of Raw Materials. |
| | Forbes CEO Award (Grand Prize for Chairman Kim Chang-geun) | | No. 1 chemical and pharmaceutical manufacturer on the *Joong-ang Ilbo's Green Rankings* survey for two consecutive years. |
| **Jun.** | *2011 Sustainability Report* published. | | |
| | | **Nov.** | Grade A on KoBEX's Fact-finding on Sustainable Management. |
| | | **Dec.** | Ecoweb launched. |

# Third-party Verification Report

LRQA Business Assurance

**Assurance Statement**
**related to SK chemicals Sustainability Report 2012,**
**for the calendar year ending 31st December 2012**

## Terms of Engagement

This Assurance Statement has been prepared for SK chemicals. Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by SK chemicals to assure its Sustainability Report 2012 for the calendar year ending 31st December 2012 ("the Report"). The Report relates to the sustainability performance data and information for SK chemicals' activities only in Korea for which it has operational control over.

## Management Responsibility

SK chemicals' management was responsible for preparing the Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with SK chemicals.
Ultimately, the Report has been approved by, and remains the responsibility of SK chemicals.

## LRQA's Approach

Our verification has been conducted against the Global Reporting Initiative Sustainability Reporting Guidelines (GRI G3.1).

The objectives of the assurance engagement were to:

- Confirm that the Report meets the requirements of GRI G3.1's application level A
- Validate SK chemicals' self-declaration for GRI G3.1's application level A+
- Evaluate the reliability and accuracy of specified sustainability data and information.

To form our conclusions the assurance was undertaken as a sampling exercise and covered the following activities:

- Reviewing SK chemicals' stakeholder engagement process, material issues and related information
- Benchmarking SK chemicals' material issues against our own independent analysis of stakeholder issues and reviewing other sustainability reports written by SK chemicals' peers in comparable industries
- Understanding how SK chemicals' determine, respond and report on their material issues
- Interviewing senior management to understand SK chemicals' reporting processes and use of sustainability performance data within their business decision-making processes
- Interviewing key personnel to understand SK chemicals' processes for setting performance indicators and for monitoring progress made during the reporting period
- Verifying SK chemicals' data and information management systems and reviewing supporting evidence made available by SK chemicals at their head office at 310 Pangyo-ro, Bunang-gu, Seongnam-si, Gyeonggi-do, Korea in accordance with our contract for the verification of data and information disclosed in the Report
  Note 1: Economic performance data was taken direct from the audited financial accounts
  Note 2: No source data was sampled for its accuracy and completeness.
- Checking that the GRI G3.1 index allows stakeholders to access sustainability performance indicators.





# Third-party Verification Report

## Level of Assurance & Materiality

The opinion expressed in this Assurance Statement has been formed on the basis of a limited level of assurance and at the materiality of 'the professional judgement of the Verifier'.

## LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that SK chemicals' Report does not meet GRI G3.1's application level A.
It is also our opinion that SK chemicals has not excluded any material issues nor that their reporting processes does not provide reliable sustainability performance data and information.

## LRQA's Recommendations

SK chemicals should consider:

- Introducing a systematic approach for customer satisfaction. This approach should include how to:
  - measure customer satisfaction
  - disclose the results from surveys
  - set targets to maintain and improve customer satisfaction.
- Disclosing complete human rights performance data and information. Future reports should disclose details for human rights review and/or impact assessment for suppliers and business partners.
- Establishing formal mechanisms for setting sustainability performance targets to ensure that SK chemicals' key performance indicators include social and environmental metrics as part of their routine operational controls.
- Establishing and implementing an effective system for data and information management, including an internal verification process.

Lead Verifier **Hack-Ryang Kim**
Dated: 30th April 2013

On behalf of Lloyd's Register Quality Assurance
17th Floor, Sinsong Building, 67 Yeouinaru-ro, Yeongdeungpo-gu, Seoul, Korea



LRQA Reference: SEO 6016767

# GRI (G3.1) Index

● Reported fully ◐ Reported partially ○ Not reported ⊘ Not Applicable

| G3.1 | | Profile | Report Status | Pages |
|---|---|---|---|---|
| **Profile** | | | | |
| **Strategy & Analysis** | 1.1 | Statement from the most senior decision-maker of the organization. | ● | 2-3 |
| | 1.2 | Description of key impacts, risks, and opportunities. | ● | 6, 32, 42, 43, 58 |
| **Organizational Profile** | 2.1 | Name of the organization. | ● | about this report |
| | 2.2 | Primary brands, products, and/or services. | ● | 6, 33-35, 39 |
| | 2.3 | Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures. | ● | 7 |
| | 2.4 | Location of organization's headquarters. | ● | 7 |
| | 2.5 | Number of countries where the organization operates, and names of countries with either major operations or that are specifically relevant to the sustainability issues covered in the report. | ● | 7 |
| | 2.6 | Nature of ownership and legal form. | ● | 11 |
| | 2.7 | Markets served (including geographic breakdown, sectors served, and types of customers/beneficiaries). | ● | 7 |
| | 2.8 | Scale of the reporting organization. | ● | 5, 7, 58 |
| | 2.9 | Significant changes during the reporting period regarding size, structure, or ownership.* | ● | - |
| | 2.10 | Awards received in the reporting period. | ● | 76 |
| **Report Parameters** | 3.1 | Reporting period (e.g., fiscal/calendar year) for information provided. | ● | about this report |
| | 3.2 | Date of most recent previous report (if any). | ● | about this report |
| | 3.3 | Reporting cycle (annual, biennial, etc.) | ● | about this report |
| | 3.4 | Contact point for questions regarding the report or its contents. | ● | about this report |
| | 3.5 | Process for defining report content. | ● | 14, 15 |
| | 3.6 | Boundary of the report (e.g., countries, divisions, subsidiaries, leased facilities, joint ventures, suppliers). See GRI Boundary Protocol for further guidance. | ● | about this report |
| | 3.7 | State any specific limitations on the scope or boundary of the report (see completeness principle for explanation of scope). | ● | about this report |
| | 3.8 | Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period and/or between organizations. | ● | about this report |
| | 3.9 | Data measurement techniques and the bases of calculations, including assumptions and techniques underlying estimations applied to the compilation of the Indicators and other information in the report. | ● | about this report |
| | 3.10 | Explain any decisions not to apply, or to substantially diverge from, the GRI Indicator Protocols. Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement (e.g.,mergers/acquisitions, change of base years/periods, nature of business, measurement methods). | ● | about this report |
| | 3.11 | Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report. | ● | about this report |
| | 3.12 | Table identifying the location of the Standard Disclosures in the report. | ● | 80-82 |
| | 3.13 | Policy and current practice with regard to seeking external assurance for the report. | ● | about this report |
| **Governance, Commitments, and Engagement** | 4.1 | Governance structure of the organization, including committees under the highest governance body responsible for specific tasks, such as setting strategy or organizational oversight. | ● | 11, 22, 20, 27 |
| | 4.2 | Indicate whether the Chair of the highest governance body is also an executive officer. | ● | 11 |
| | 4.3 | For organizations that have a unitary board structure, state the number and gender of members of the highest governance body that are independent and/or non-executive members. | ● | 11 |
| | 4.4 | Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body. | ● | 11, 62 |
| | 4.5 | Linkage between compensation for members of the highest governance body, senior managers, and executives (including departure arrangements), and the organization's performance (including social and environmental performance). | ● | 11 |
| | 4.6 | Processes in place for the highest governance body to ensure conflicts of interest are avoided. | ● | 11 |
| | 4.7 | Process for determining the composition, qualifications, and expertise of the members of the highest governance body and its committees, including any consideration of gender and other indicators of diversity. | ● | 11 |
| | 4.8 | Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance and the status of their implementation. | ● | 4-5, 21-23 |
| | 4.9 | Procedures of the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance, including relevant risks and opportunities, and adherence or compliance with internationally agreed standards, codes of conduct, and principles. | ● | 11 |
| | 4.10 | Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance. | ● | 11 |
| | 4.11 | Explanation of whether and how the precautionary approach or principle is addressed by the organization. | ● | 41, 46 |
| | 4.12 | Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses. | ● | 76 |
| | 4.13 | Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization: * Has positions in governance bodies; * Participates in projects or committees; * Provides substantive funding beyond routine membership dues; or * Views membership as strategic. | ● | 76 |
| | 4.14 | List of stakeholder groups engaged by the organization. | ● | 13 |
| | 4.15 | Basis for identification and selection of stakeholders with whom to engage. | ● | 13 |
| | 4.16 | Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group. | ● | 14-15 |
| | 4.17 | Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting. | ● | 14-15 |

• No major change has occurred during the report period.





# GRI (G3.1) Index

● Reported fully ◐ Reported partially ○ Not reported ⊘ Not Applicable

| G3.1 | | Profile | Report Status | Pages |
|---|---|---|---|---|
| **Economic** | | | | 5, 7, 57 |
| **Economic (EC)** | EC1 | Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments. | ● | 5, 13 |
| | EC2 | Financial implications and other risks and opportunities for the organization's activities due to climate change. | ● | 32-35, 47-49 |
| | EC3 | Coverage of the organization's defined benefit plan obligations. | ● | 12-13 |
| | EC4 | Significant financial assistance received from government. | ● | 12-13 |
| | EC5 | Range of ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation. | ● | 61 |
| | EC6 | Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation. | ● | 28, 64 |
| | EC7 | Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation. | ● | 59 |
| | EC8 | Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement. | ● | 65-67 |
| | EC9 | Understanding and describing significant indirect economic impacts, including the extent of impacts. | ● | 66 |
| **Environmental** | | | | 25-29, 32-39, 46, 48-49, 50-52, 72-74 |
| **Materials** | EN1 | Materials used by weight or volume. | ● | 50 |
| | EN2 | Percentage of materials used that are recycled input materials. | ● | 50 |
| **Energy** | EN3 | Direct energy consumption by primary energy source. | ● | 48 |
| | EN4 | Indirect energy consumption by primary source. | ● | 48 |
| | EN5 | Energy saved due to conservation and efficiency improvements. | ● | 48-49, 54-55 |
| | EN6 | Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives. | ● | 48-49 |
| | EN7 | Initiatives to reduce indirect energy consumption and reductions achieved. | ● | 48-49, 54-55 |
| **Water** | EN8 | Total water withdrawal by source. | ● | 52 |
| | EN9 | Water sources significantly affected by withdrawal of water. | ● | 52 |
| | EN10 | Percentage and total volume of water recycled and reused. | ● | 72 |
| **Biodiversity** | EN11 | Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. | ⊘ | N/A |
| | EN12 | Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas. | ⊘ | N/A |
| | EN13 | Habitats protected or restored. | ⊘ | N/A |
| | EN14 | Strategies, current actions, and future plans for managing impacts on biodiversity. | ⊘ | N/A |
| | EN15 | Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. | ⊘ | N/A |
| **Emissions, effluents and waste** | EN16 | Total direct and indirect greenhouse gas emissions by weight. | ● | 48 |
| | EN17 | Other relevant indirect greenhouse gas emissions by weight. | ● | 48 |
| | EN18 | Initiatives to reduce greenhouse gas emissions and reductions achieved. | ● | 26 |
| | EN19 | Emissions of ozone-depleting substances by weight. | ● | 52 |
| | EN20 | NOx, SOx, and other significant air emissions by type and weight. | ● | 52, 74 |
| | EN21 | Total water discharge by quality and destination. | ● | 52, 72 |
| | EN22 | Total weight of waste by type and disposal method. | ● | 51, 73 |
| | EN23 | Total number and volume of significant spills. | ● | 51 |
| | EN24 | Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally. | ● | 51 |
| | EN25 | Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff. | ● | 52 |
| **Products and services** | EN26 | Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation. | ● | 33-35 |
| | EN27 | Percentage of products sold and their packaging materials that are reclaimed by category. | ⊘ | N/A |
| **Compliance** | EN28 | Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. | ● | 50 |
| **Transport** | EN29 | Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce. | ● | 29, 74 |
| **Overall** | EN30 | Total environmental protection expenditures and investments by type. | ● | 53 |

# GRI (G3.1) Index

● Reported fully ◐ Reported partially ○ Not reported ⊘ Not Applicable

| G3.1 | | Profile | Report Status | Pages |
|---|---|---|---|---|
| **Social Labor Practices and Decent Work** | | | | 58-60, 62 |
| **Employment** | LA1 | Total workforce by employment type, employment contract, and region, broken down by gender. | ● | 58-59 |
| | LA2 | Total number and rate of new employee hires and employee turnover by age group, gender, and region. | ● | 59 |
| | LA3 | Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations. | ● | 61 |
| **Labor/ management relations** | LA4 | Percentage of employees covered by collective bargaining agreements. | ● | 62 |
| | LA5 | Minimum notice period(s) regarding significant operational changes, including whether it is specified in collective agreements. | ● | 62 |
| **Occupational health and safety** | LA6 | Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs. | ● | 63 |
| | LA7 | Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender. | ● | 63 |
| | LA8 | Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases. | ● | 61, 63 |
| | LA9 | Health and safety topics covered in formal agreements with trade unions. | ● | 62 |
| **Training and education** | LA10 | Average hours of training per year per employee by gender, and by employee category. | ● | 60 |
| | LA11 | Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. | ● | 59-60 |
| | LA12 | Percentage of employees receiving regular performance and career development reviews, by gender. | ● | 60-61 |
| **Diversity and equal opportunity** | LA13 | Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity. | ● | 58 |
| | LA14 | Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation. | ● | 61 |
| | LA15 | Return to work and retention rates after parental leave, by gender. | ● | 58 |
| **Human Rights** | | | | 21, 62 |
| **Investment and procurement practices** | HR1 | Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening. | ● | 21 |
| | HR2 | Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken. | ● | 21 |
| | HR3 | Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained. | ● | 21 |
| **Non-discrimination** | HR4 | Total number of incidents of discrimination and corrective actions taken. | ● | 21 |
| **Freedom of association and collective bargaining** | HR5 | Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights. | ● | 62 |
| **Child labor** | HR6 | Operations and significant suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor. | ● | 21 |
| **Forced and compulsory labor** | HR7 | Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor. | ● | 21 |
| **Security practices** | HR8 | Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations. | ◐ | 21 |
| **Indigenous rights** | HR9 | Total number of incidents of violations involving rights of indigenous people and actions taken. | ⊘ | N/A |
| **Assessment** | HR10 | Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments. | ◐ | 21 |
| **Remediation** | HR11 | "Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms." | ● | 22 |





# GRI (G3.1) Index

● Reported fully ◐ Reported partially ○ Not reported ⊘ Not Applicable

| G3.1 | | Profile | Report Status | Pages |
|---|---|---|---|---|
| **Society** | | | | 22-23, 29, 49, 64-67 |
| **Local communities** | SO1 | Percentage of operations with implemented local community engagement, impact assessments, and development programs. | ● | 40, 64, 65-66 |
| **Corruption** | SO2 | Percentage and total number of business units analyzed for risks related to corruption. | ● | 22 |
| | SO3 | Percentage of employees trained in organization's anti-corruption policies and procedures. | ● | 23 |
| | SO4 | Actions taken in response to incidents of corruption. | ● | 23 |
| **Public policy** | SO5 | Public policy positions and participation in public policy development and lobbying. | ● | 23, 29, 49, 64 |
| | SO6 | Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country. | ● | 22 |
| **Anti-competitive behavior** | SO7 | Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes. | ● | 22 |
| **Compliance** | SO8 | Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations. | ● | 22 |
| **Local communities** | SO9 | Operations with significant potential or actual negative impacts on local communities. | ● | 40, 52, 63, 65-67 |
| | SO10 | Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities. | ● | 40, 52, 63, 65-67 |
| **Product Responsibility** | | | | 22, 29, 40-41 |
| **Customer health and safety** | PR1 | Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures. | ● | 29, 40 |
| | PR2 | Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes. | ● | 28 |
| **Product and service labelling** | PR3 | Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements. | ● | 28-29, 42-43 |
| | PR4 | Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes. | ● | 28 |
| | PR5 | Practices related to customer satisfaction, including results of surveys measuring customer satisfaction.* | ◐ | 37 |
| **Marketing communications** | PR6 | Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. | ● | 23 |
| | PR7 | Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes. | ● | 22 |
| **Customer privacy** | PR8 | Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. | ● | 41 |
| **Compliance** | PR9 | Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services. | ● | 22 |

• Conducted for only certain products by an independent evaluation agency.

# ISO 26000 Index

The following table has been created in order to help you better understand and conceptualize how the seven core subjects of the ISO 26000 (i.e. governance, human rights, labor practices, environment, fair operating practices, consumer issues, and community involvement and development) are related to the content of this report.

| Core Subjects | Issues | Pages |
|---|---|---|
| **Governance** | Decision-making processes and structures | 11, 18, 20, 22 |
| **Human rights** | Due diligence | 21, 22, 40 |
| | Human rights risk situations | 21 |
| | Avoidance of complicity | 21 |
| | Resolving grievances | 21 |
| | Discrimination and vulnerable groups | 21, 58, 65 |
| | Civil and political rights | 21 |
| | Economic, social and cultural rights | 21, 61 |
| | Fundamental principles and rights at work | 21, 59-61 |
| **Labor practices** | Employment and employment relationships | 21, 58 |
| | Conditions of work and social protection | 21, 59-61 |
| | Social dialogue | 21, 62 |
| | Health and safety at work | 21, 62 |
| | Human development and training in the workplace | 59-60 |
| **The environment** | Prevention of pollution | 25-28, 41, 51-53 |
| | Sustainable resource use | 25-28, 47-50 |
| | Climate change mitigation and adaptation | 25-28, 47-50, 54-55 |
| | Protection of the environment, biodiversity and restoration of natural habitats | 25-28, 41 |
| **Fair operating practices** | Anti-corruption | 22-23 |
| | Responsible political involvement | 22 |
| | Fair competition | 21 |
| | Promoting social responsibility in the value chain | 22 |
| | Respect for property rights | 65-67 |
| **Consumer issues** | Fair marketing, factual and unbiased information and fair contractual practices | 22-23 |
| | Protecting consumers' health and safety | 40-41 |
| | Sustainable consumption | 42-43 |
| | Consumer service, support, and complaint and dispute resolution | 41 |
| | Consumer data protection and privacy | 41 |
| | Access to essential services | 41 |
| | Education and awareness | 29, 82 |
| **Community involvement and development** | Community involvement | 65-67 |
| | Education and culture | 65-67 |
| | Employment creation and skills development | 58-59 |
| | Technology development and access | 65-67 |
| | Wealth and income creation | 5 |
| | Health | 65-67 |
| | Social investment | 65-67 |





# UN Global Compact (UNGC) Index

SK chemicals endorses the 10 principles of the UN Global Compact on human rights, labor, environment, and anti-corruption. This report also provides information on the efforts and practices of SK chemicals that seek to pursue and embody these 10 principles.

| Category | Principles | Pages |
|---|---|---|
| **Human Rights** | 1. Businesses should support and respect the protection of internationally proclaimed human rights; and | 21 |
| | 2. Make sure that they are not complicit in human rights abuses. | 21 |
| **Labour** | 3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; | 21, 62 |
| | 4. The elimination of all forms of forced and compulsory labor; | 21 |
| | 5. the effective abolition of child labor; and | 21 |
| | 6. The elimination of discrimination in respect of employment and occupation. | 21, 58-61 |
| **Environment** | 7. Businesses should support a precautionary approach to environmental challenges; | 25-28, 41, 46-53 |
| | 8. undertake initiatives to promote greater environmental responsibility; and | 26, 40-41, 47-49, 54-55 |
| | 9. Encourage the development and diffusion of environmentally friendly technologies. | 32-35, 42-43 |
| **Anti-Corruption** | 10. Businesses should work against corruption in all its forms, including extortion and bribery. | 40-41 |

# Greenhouse Gas Emissions Verification Report

No.: AS_PROC-447502-2013-CCS-KOR-EN

BUSINESS ASSURANCE

## DNV ASSURANCE STATEMENT

SK chemicals

**< Introduction >**

DNV Certification, Ltd. ("DNV") was commissioned by SK Chemicals to verify the SK Chemicals' Greenhouse Gas Inventory Report for the calendar year 2012 ("the report") based upon a reasonable level of assurance. SK Chemicals is responsible for the preparation of the GHG emissions and Energy consumption data on the basis set out within the guidelines on the operation of greenhouse gas and energy target management scheme (Notification No. 2012-211, Korean Ministry of Environment). Our responsibility in performing this work is to the management of SK Chemicals only and in accordance with terms of reference agreed with them. DNV expressly disclaims any liability or responsibility for any decisions, whether investment or otherwise, based upon this assurance statement.

**< Scope of Assurance >**

The GHG emissions and energy consumption data covered by our examination comprise Direct emissions (Scope 1 emissions), Energy indirect emissions (Scope 2 emissions) and Fuel, Electricity, Steam Energy consumption :

- Reporting period under verification : Calendar Year 2012
- Organizational boundary for reporting : SK Chemicals
  - 4 Plants : Ulsan, Ansan, Osan, Chungju
  - 1 R&D Center, 1 Office building.

**< Verification Approach >**

The verification has been conducted by DNV from 22nd February through 16th March 2013 and performed in accordance with the verification principles and tasks outlined in the guidelines on the operation of greenhouse gas and energy target management scheme (Notification No. 2012-211, Korean Ministry of Environment). We planned and performed our work so as to obtain all the information and explanations deemed necessary to provide us with sufficient evidence to provide a reasonable verification opinion concerning the completeness of the emission inventory as well as the reported emission figures in ton $CO_2$ equivalent. As part of the verification process:

- We have reviewed and verified the SK Chemicals' greenhouse gas report for the calendar year 2012
- We have reviewed the greenhouse gas emissions and energy consumption for the calendar year 2012
- We have reviewed and verified the process to generate, aggregate and report the emissions and energy data

**< Conclusions >**

As a result of the work described above, in our opinion nothing has come to our attention that would cause us to believe that the greenhouse emissions and energy consumption set out in SK Chemicals' report are not fairly stated. The greenhouse gas emissions and energy consumption of SK Chemicals for the year 2012 were confirmed as below;

Greenhouse Gas Emissions and Energy Consumption of SK Chemicals from Yr 2012

GHG Unit: ton-$CO_2$ equivalent
Energy Unit: Terajoule(TJ)

| Operational Boundary (Period) | Direct emissions (Scope 1) | Indirect emissions (Scope 2) | Total GHG emissions | Fuel Energy | Electricity Energy | Steam Energy | Total Energy |
|---|---|---|---|---|---|---|---|
| Year 2012 | 393,313 | 73,853 | 467,163 | 6,552 | 1,503 | 28 | 8,081 |

※ In order to report the GHG emissions as an integer, the rounded number on the statement might be different from the number on the system value

25th April 2013

Kyung-Bae Kwon
Lead Verifier

In-Kyoon Ahn
Country Manager
DNV Certification, Ltd.

This Assurance Statement is valid as of the date of the issuance (25th April 2013). Please note that this Assurance statement would be revised if any material discrepancy which may impact on the Greenhouse Gas Emissions and Energy consumption of SK Chemicals is subsequently brought to our attention.
In the event of ambiguity or contradiction in this statement between English version and Korean version, Korean shall be given precedent.





# Sustainability Report TF

### Supervision

- Office of Corporate Culture
  Bae Jae-ho
- SKMS Implementation Team
  Kim Dong-beom
- SKMS Implementation Team
  Nam Kyung-soo

### SK chemicals Profile

- **Company Overview**
- Corporate Relations Team
  Jeong Jun-ho

- **Financial Performance**
- Accounting Team
  Jo Gyeong-hun

- **Governance Structure**
- Legal Affairs Team
  Kim Jeong-min

### Sustainability Overview

- **Human Rights Management**
- HR Team
  Ryu Jin-su

- **Ethical Management**
- SKMS Implementation Team
  Lee Seong-wook

- **Fair Trade**
- Legal Affairs Team
  Han Gyeong-hee

### Business Domain

- **Green Chemicals**
- Bio-based Materials Team 1
  Lee Jong-eun
- Bio Energy Team
  Choi In-chang
- Specialty Polymers Development Team
  Lee Yong-gu
- Auto & Construction Materials Team
  Kim Jae-woo
- Green Chemicals Planning Team
  Ryu Hyeon-sang

- **Life Science**
- Life Science Strategy Planning Team
  Kim Seon-ho
- LS R&D Planning Team
  Jeong So-jin

- **Product Liability**
- Marketing Supporting Team
  Hwang Seon-gyo
- Drug Evaluation & Analysis Team
  Kim Taek-su
- Medical Information & Communication Team
  Lee Dong-wook
- Clinical Research Team
  Park Ho-geun

### Environmental Performance

- **Climate Change & Energy**
- Ulsan plant) Foreman's Office
  Kim Ik-hwan

- **Resource Cycle**
- Ansan plant) Management Team
  Kim Dae-cheol
- Osan plant) Management Team
  Jeong Jae-ha
- Ulsan plant) Safety and Environment Team
  Park Gyu-shik
- Ulsan plant) Safety and Environment Team
  Park Jong-ryeol
- Ulsan plant) Safety and Environment Team
  Lim Gi-seung
- Cheongju plant) Administration Team
  Park Seong-hun

### Social Commitment

- **Members**
- Business Supporting Team
  Kim Beom-gu
- HR Team
  Ryu Jin-su
- SKMS Implementation Team
  Kang Ji-hun

- **Business Partners**
- Purchasing Team
  Lee Jeong-won

- **Local Communities**
- Corporate Relations Team
  Kim Gwang-hun

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