

# SUSTAINABILITY REPORT

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Report Overview

**Purpose**

The main purpose of this sustainability report is to inform the stakeholders of the company’s economic, social and environmental performances with regard to the key issues of sustainability management. The company intends to share with the stakeholders the challenges and opportunities faced by the company, and report on the activities it carried out to meet the responsibilities of sustainable management, with the goal of surging ahead as an ever-evolving chemical business.

**Scope and Period**

We have published a biennial sustainability report since 2003. The seventh report since its initial publication, this report uses relevant data pertaining to events that took place mainly in 2012. For a time-series analysis, however, data on events that took place in 2010 and 2011, as well as data on key significant issues in 2013 were partly used. This report covers the activities and performance of our Head Office, the Daejeon R&D Center, and the Yeosu and Ulsan plants.

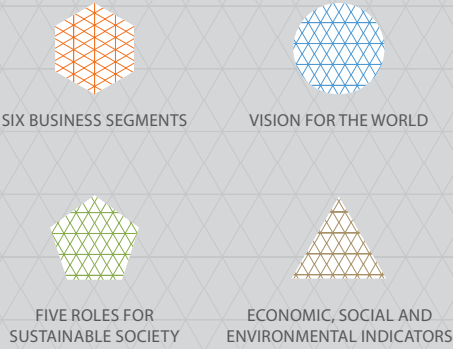
**Reporting Guideline**

The report has been prepared in accordance with the GRI (Global Reporting Initiative) G 3.1 Guidelines. This report comprehensively covers the information required by the 10 leading principles of the UNGC and ISO 26000 along with other prime indicators as applicable. The report on the company’s economic performance was prepared in accordance with the Korean International Financial Reporting Standards (K-IFRS). It was validated for its credibility and competence through an internal accounting management system in addition to rigorous audits by an in-house audit committee and independent auditor.

**Authentication**

This report has been submitted for third-party authentication by the Institute for Industrial Policy Studies (IPS) and drawn up in accordance with the A+ level requirement of the GRI G 3.1 Guidelines.

Design Motif – 4 Shapes

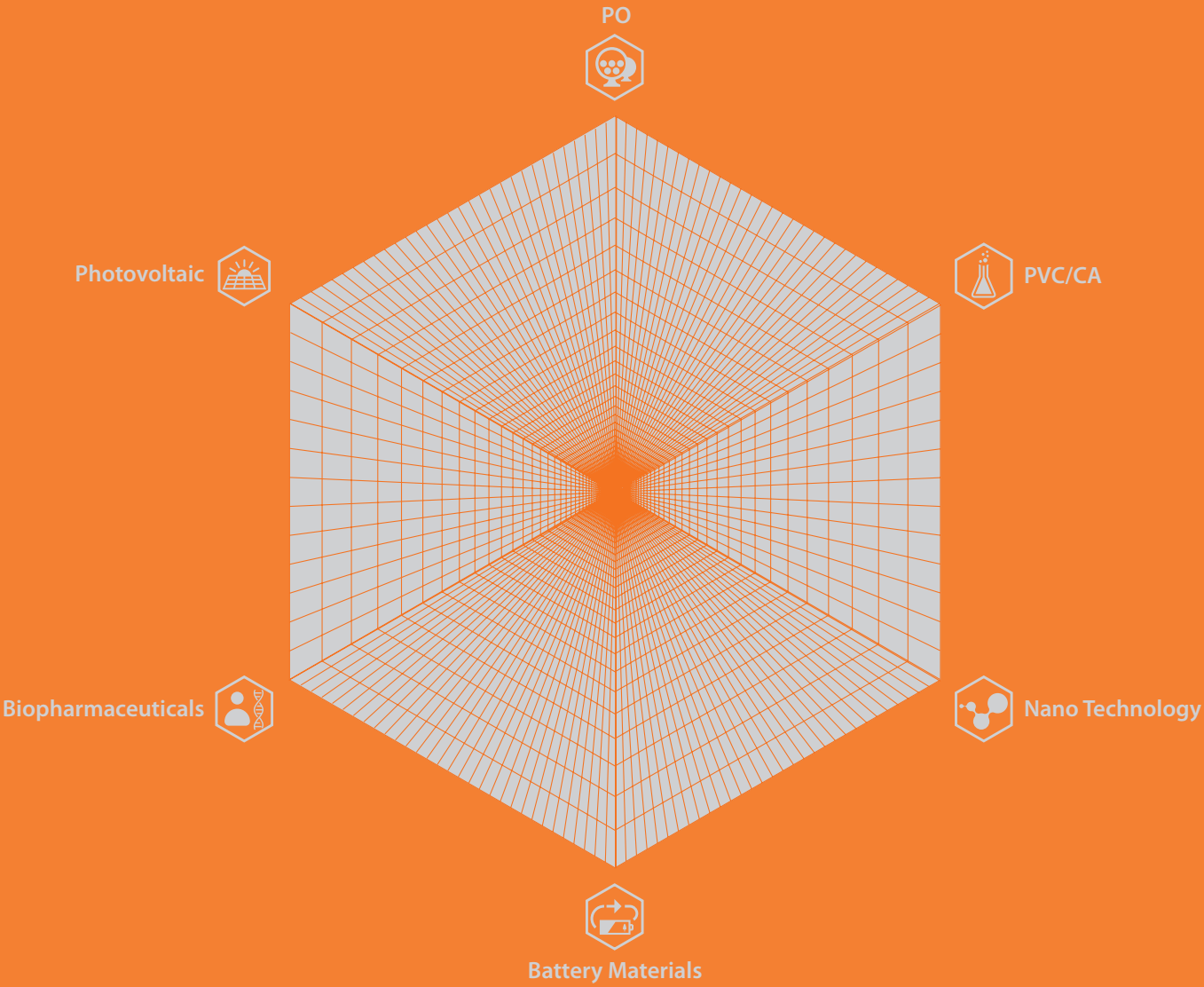




# COMPANY PROFILE

# 1

- > Message from the CEO
- > Company Overview
- > Corporate Governance
- > Risk Management
- > Business Activities



SIX BUSINESS SEGMENTS

Standing on the company’s proven competitiveness in the petrochemical business, we will focus our investment in renewable energy, biopharmaceutical products and cutting-edge materials, laying the groundwork for a sustainable future.

From household items to industrial supplies, the company’s extensive selection of diverse chemical products has been deeply ingrained in every aspect of our daily lives, while improving the quality of life in the process. Hanwha Chemical will focus its efforts on diversifying the company’s business portfolio and developing innovative technology by 2015, with the goal of surging ahead as a world-class chemical business.



# Message from the CEO

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The deepening uncertainty facing the industry only reminds us of the importance of our unwavering commitment to economic, social and environmental values in ensuring the sustainable development of society. We will strive to grow with the society while promoting the value of shared development.

Dear distinguished stakeholders of Hanwha Chemical,

The slumping global economy coupled with the sagging demand in China for petrochemical products has made the year 2012 a particularly challenging one for the industry. The deepening uncertainty facing the industry, however, only reminds us of the importance of our firm commitment to economic, social and environmental values in ensuring the sustainable development of our society. We are also striving to meet the growth target while fulfilling our responsibilities as a corporate citizen.

The company expanded its production capacity for EVA, a high value-added product for the company's petrochemical business, and pushed ahead with the construction of the production plant for EVA/LDPE and synthetic resins for electric wire in Saudi Arabia, which warrants excellent cost leadership. The series of these concerted efforts cemented the company's firm leadership in the market. The company is now working hard to sophisticate its business structure by expanding its investment in the cutting-edge environmentally friendly chemical business of the future including photovoltaic, battery materials, bio-similar and nano technology. In the photovoltaic business in particular, the company has jumped to become the world's third largest manufacturer as measured by the quantity of cell production with the acquisition of Q CELLS, and to the position of a global leader in the photovoltaic business. The company is also building production facilities for polysilicon, the base material for photovoltaic.

We are spending considerable time reflecting on the impact of our business operations on the earth's environment and the lives of our stakeholders, while also doing our best to address various social issues that command our attention. In an attempt to reduce its greenhouse gas emissions, the company took a series of strategic initiatives to address challenges and opportunities posed by the earth's climate change, by investing in environmentally friendly energy businesses including photovoltaic and battery materials. The company is also committing its efforts to prevent environmental contamination and ensuring the safety of consumers by enhancing the environment-friendliness of the petrochemical products we produce.

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We started a company-wide awareness campaign to promote the spirit of "moving further ahead together than running faster alone" by encouraging continued participation of employees in the social contribution program and fostering win-win programs for our suppliers. Another significant achievement for the company's long term competitiveness is its winning of the 100 Best Companies to Work for 2013 Korea Award in the manufacturing sector, which is the result of the company's combined effort in GWP activities including maternity protection at work for female employees and a campaign to create a fun workplace. Our vision continued with such constant efforts through the intentional understanding that honing and supporting its competitive leadership for the future and creating advantages for society is more important and valuable than being intimidated by the impending economic slump. Thanks to the unwavering support and trust from our stakeholders, we believe that the current challenges facing the company will transform into valuable assets that will help us realize a better future for the company.

We are planning to make a great leap forward in 2013 through our combined efforts that include profit maximization in the petrochemical business, expansion of our global market, and portfolio restructuring along new growth businesses. In addition, the company will welcome its responsibility as an active member of the Korea Business Council for Sustainable Development (KBCSD) and comply with the 10 principles of the United Nations Global Compact (UNGC) while promoting the value of win-win growth with the society.

As we continue to flourish, we ask for your continued attention and support towards our future sustainable management development.

Thank you.

Hanwha Chemical President & CEO  
Han-hong Bang



Company Overview

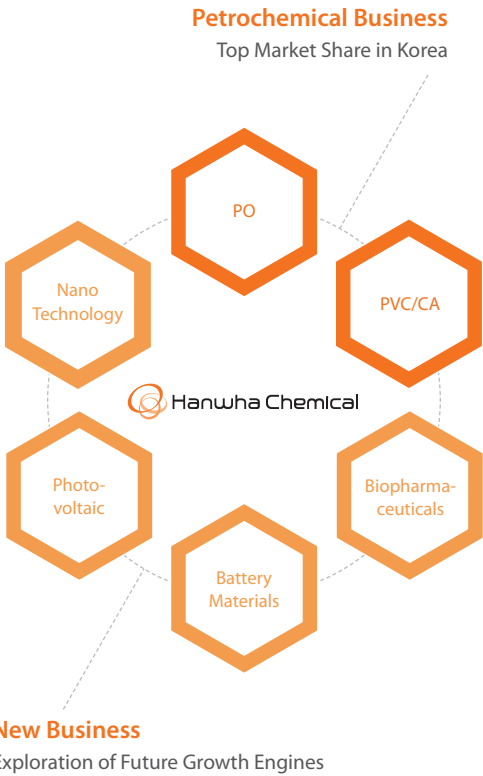
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Following its establishment in 1965, Hanwha Chemical became the first domestic company to produce PVC goods, and has continued to produce a wide range of basic petrochemical goods for industries such as LDPE, LLDPE, CA, and more. We are currently focusing on diversifying our business structure, strengthening the infrastructure for our overseas markets, and expanding our lineup of high value-added products, in addition to enhancing our competitiveness as a first-rate chemical company.

Company Name	Hanwha Chemical Corporation
Establishment	August 1965
No. of Employees	2,594
CEO	Ki-joon Hong/Han-hong Bang
Key Business Areas	Synthetic Resin (PE, PVC), Inorganic Chemicals (Caustic Soda, Chlorine), Photovoltaic, etc.
Head Office	Hanwha Building, 86 Cheonggyecheon-ro, Jung-gu, Seoul, Korea

Business Structure

Hanwha Chemical is involved in the following two key business sectors: 1) the production of basic petrochemical products and 2) the development of new businesses for the future.



Key Business Segment/Products



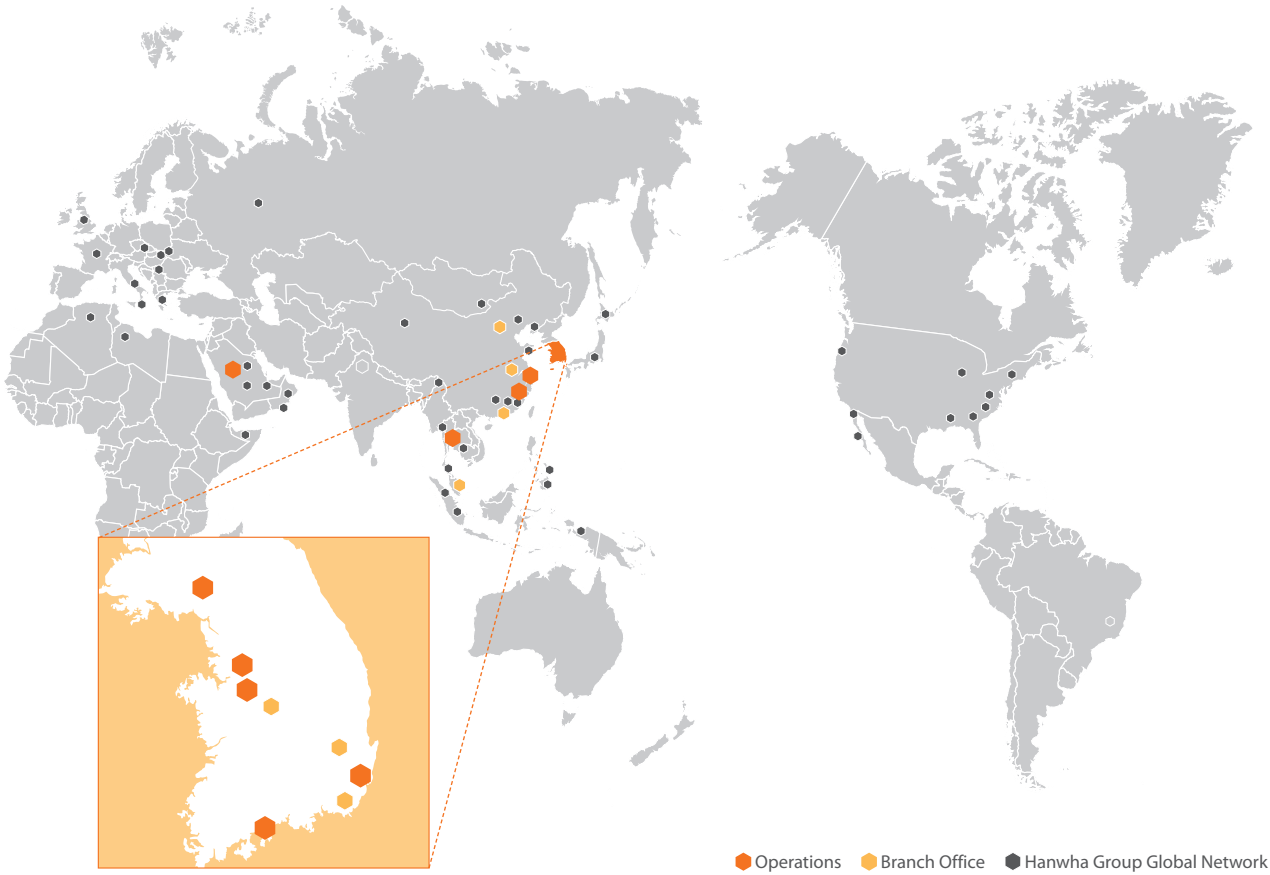
- LDPE
- EVA
- LLDPE
- HDPE
- W&C Compound



- PVC, PSR, Plasticizer
- OA, PA/MA
- Caustic Soda, Chlorine, EDC
- VCM, ECH, Hydrochloric Acid



- Photovoltaic
- Biopharmaceuticals
- Battery Materials
- Nano Technology



Domestic and Overseas Operations

Hanwha Chemical is extending its global reach as part of the Hanwha Group's worldwide network.

Domestic Operations

- Head Office:** Hanwha Building, 86 Cheonggyecheon-ro, Jung-gu, Seoul, Korea
- Daejeon R&D Center:** 76 Gajeong-ro, Yuseong-gu, Daejeon, Korea
- Yeosu Plant:** 117 Yeosu Sandan 3-ro, Yeosu, Korea
- Ulsan Plant 1:** 141 Sanggae-ro, Nam-gu, Ulsan, Korea
- Ulsan Plant 2:** 22 Saneop-ro 440-gil, Nam-gu, Ulsan, Korea
- Ulsan Plant 3:** 22 Yongyeon-ro 230-gil, Nam-gu, Ulsan, Korea
- Osong:** 147 Osong Sengmyung 5-ro, Osong-eup, Chungwon-gun, Chungcheong buk-do, Korea

Domestic Branch Offices

- Daegu Branch Office:** 8-2 Padogogae-ro 30-gil, Dalseo-gu, Daegu, Korea
- Seobu Branch Office:** 76 Gajeong-ro, Yuseong-gu, Daejeon, Korea
- Busan Branch Office:** 152 Jaseong-ro, Nam-gu, Busan, Korea

Overseas Operations

- Hanwha Chemical Shanghai:** 19th Floor, Dawning Centre East, No. 500 Hongbaoshi Road, Changing District, Shanghai 201103, China
- Hanwha Chemical Ningbo:** No.55 Huandao North Road, Daxie Development Zone, Ningbo, Zhejiang 315812, China
- Hanwha Chemical Thailand:** 377 Moo 17 Bangna-trad Rd, Bangsaothong, Bangsaothong Samutprakarn 10540, Thailand
- Hanwha Chemical Saudi Arabia:** P.O. Box 12021 Jubail Industrial City 31961, Kingdom of Saudi Arabia

Overseas Branch Offices

- Shanghai Branch Office:** Room 1903B, Dawning Centre East, No. 500 Hongbaoshi Road, Changing District, Shanghai 201103, China
- Beijing Branch Office:** Unit 817-819 & 830 8F, South Tower, Beijing Kerry Center 1 Guang Hua Road, Chaoyang District, Beijing 100020 P.R.C, China
- Guangzhou Branch Office:** Fortune Plaza, West Tower Suite 1905, 116-118 Tiyyudong Road, Guangzhou, China
- Newdelhi Branch Office:** Surya Kiran Building, Suite 806 #19, Kasturba Gandhi Marg, Newdelhi 110001, India
- Malaysia Branch Office:** Suite No. 22.04, Level 22, Menara Citybank, 165, Jalan Ampang, 50450 Kuala Lumpur, Malaysia

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## Corporate Governance

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Members of the Board of Directors, the Audit Committee, and the Internal Transactions Committee, who are seasoned experts armed with rich experience in the industry, perform rigorous assessment on the key management issues to enhance our financial structure and asset efficiency while ensuring transparent and fair decision-making processes as part of our efforts to protect shareholder interests.

### Board of Directors (BOD)

The Board of Directors consisted of four internal directors and five external (independent) directors as of the end of December 2012, with the latter being the majority. The Board provides strict and prudent advice on key business agendas, resolves various issues related to corporate management, and evaluates key issues including corporate policies and informs related decisions.

Title	Name	Position	Assignments
Internal Director	SY Kim	CEO	Mid-and long-term strategy
Internal Director	KJ Hong	CEO	Strategies concerning new business
Internal Director	HH Bang	CEO	General business management
Internal Director	YI Yoo	Director	Financial administration
External Director	IH Jung	Director	External Director (Audit Committee member)
External Director	JK Lee	Director	External Director (Audit Committee member)
External Director	DS Han	Director	External Director (Chairman of the Audit Committee)
External Director	SW Lee	Director	External Director
External Director	YH Kim	Director	External Director

\* Please refer to the business report in DART (e-disclosure: dart.fss.or.kr) for any changes in the BOD since the 39th general shareholders' meeting held in 2013.

### BOD – Compensation and Its Expertise

The ceiling for the directors' compensation determined at the 38th general shareholders' meeting held in 2011 was limited to KRW 11 billion in total. Accordingly, the total compensation paid to the registered directors in 2012 amounted to KRW 9.1 billion in total.

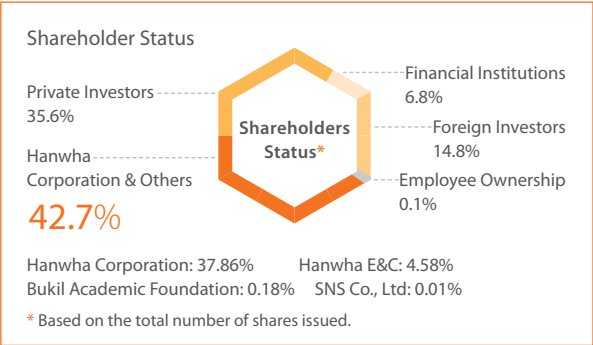
The BOD is composed of experts specializing in diverse areas encompassing law, business administration, chemical engineering and more. It focuses on professional decision-making and management/supervision-related functions. In addition to monthly meetings, it holds supplementary meetings when and if required to resolve pressing matters while at the same time practicing MBWA-based management by conducting due diligence on the company's business operations.

### BOD Resolutions and Decision Making Process

The BOD does its best to avoid conflicts of interest and to ensure fair deliberation of agenda items. It is obliged to meet the quorum requirement such as the presence of a majority of the directors in office and the consent of a majority of those present. It also puts forth concerted efforts to enhance the transparency and expertise of its duties through the operation of the External Director Candidate Recommendation Committee, the Audit Committee, and the Internal Transactions Committee. External stakeholders can exercise their voting right and make proposals on the issues related to corporate management in the general shareholders' meeting while the introduced proposals are delivered to the CEOs and directors in the related business positions so that they may be reflected in the decision-making process.

### Shareholders Status

The total number of shares issued by Hanwha Chemical is 141,407,248 as of the end of December 2012, with Hanwha Corporation being the largest shareholder with 37.86% ownership.



### Major Subsidiaries and Affiliates

As an affiliate of Hanwha Group, we own equity shares of 28 affiliates including Hanwha L&C (100%) and Dream Pharma (100%), and technology venture businesses such as Crystal Solar and XG Science. Our major subsidiaries, not including local corporations, are as follows:  
**Hanwha L&C:** Production of architectural interiors and exteriors, automotive parts, film sheets, etc. (Equity share: 100%).  
**Yeocheon NCC:** Production of petrochemical basic materials, including ethylene, through the thermal cracking of naphtha (Equity share: 50%).  
**Hanwha SolarOne:** Production of ingots, wafers, cells, and modules (Equity share: 49.6%).

## Risk Management

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We have prepared a company-wide emergency management system and manual to promptly and efficiently cope with economic, social and environmental elements that carry potential management risk. The company put extraordinary efforts on responding to adverse situations such as environmental disasters in the plants, accounting irregularities and foreign-exchange risks.

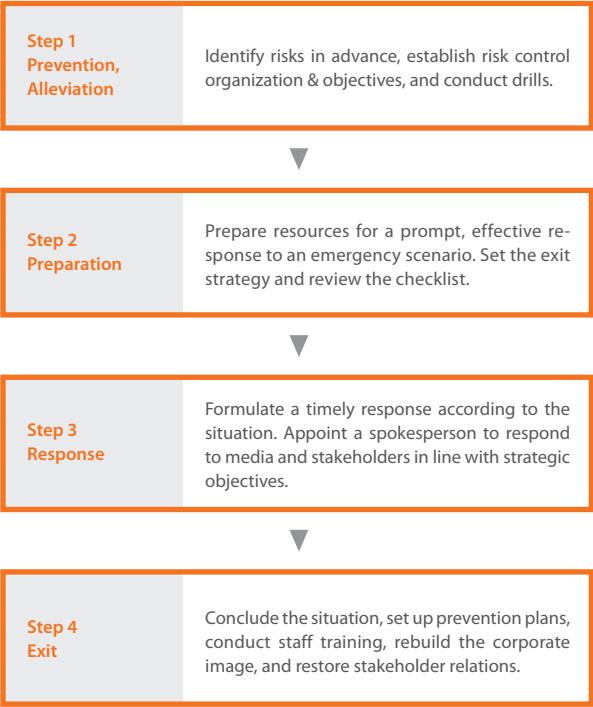
### Operation of the Risk Management Committee

We operate the Risk Management Committee to facilitate prompt decision-making and implement real-time measures in the event of a management crisis or natural disaster. We also operate the Emergency Committee to address emergency situations occurring in our workplaces. Employees can take appropriate measures by referring to the manual to respond to emergency situations.

The company's respective business division can respond to a crisis with an appropriate strategy by continuously following the supply of materials that may affect its business operation. In the meantime, an IR manager tracks the fluctuation of the company's share price to implement real-time measures in the event of any emergency.

### Risk Management System

We operate the Risk Management System to promptly identify the causes and aftereffects of critical situations, and thus minimize the losses caused by such crises through effective response.



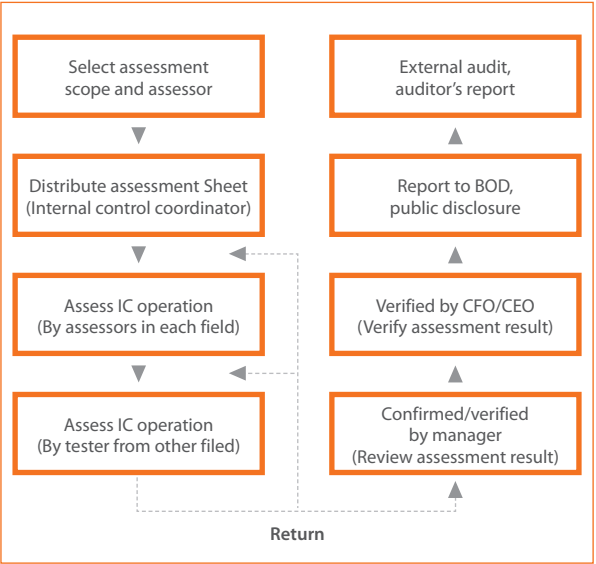
### Market Risk and Its Management

The company is exposed to various foreign-exchange risks; its financial assets and liabilities denominated in foreign currency is subject to market volatility and it is also exposed to the variability of loan interest rates. Following the detailed enforcement regulations on foreign currency management specified within the company's fund management guidelines, the company has prepared some powerful protective measures against foreign-exchange risks. It is also well prepared against interest rate variability by establishing a foreign-exchange risk management team and a foreign-exchange management system, and by imposing restrictions on foreign-exchange trade and hedging while offering education sessions to foreign-exchange risk managers.

### Internal Accounting Management System

We operate the Internal Accounting Management System in order to secure a clear-cut report system concerning externally announced financial information on the company and to ensure that all employees observe the relevant laws, regulations and internal policies when carrying out company-related activities. The company is operating the Internal Control System to ensure transparent and efficient control of its Accounting Management System.

### Internal Accounting Management Procedures



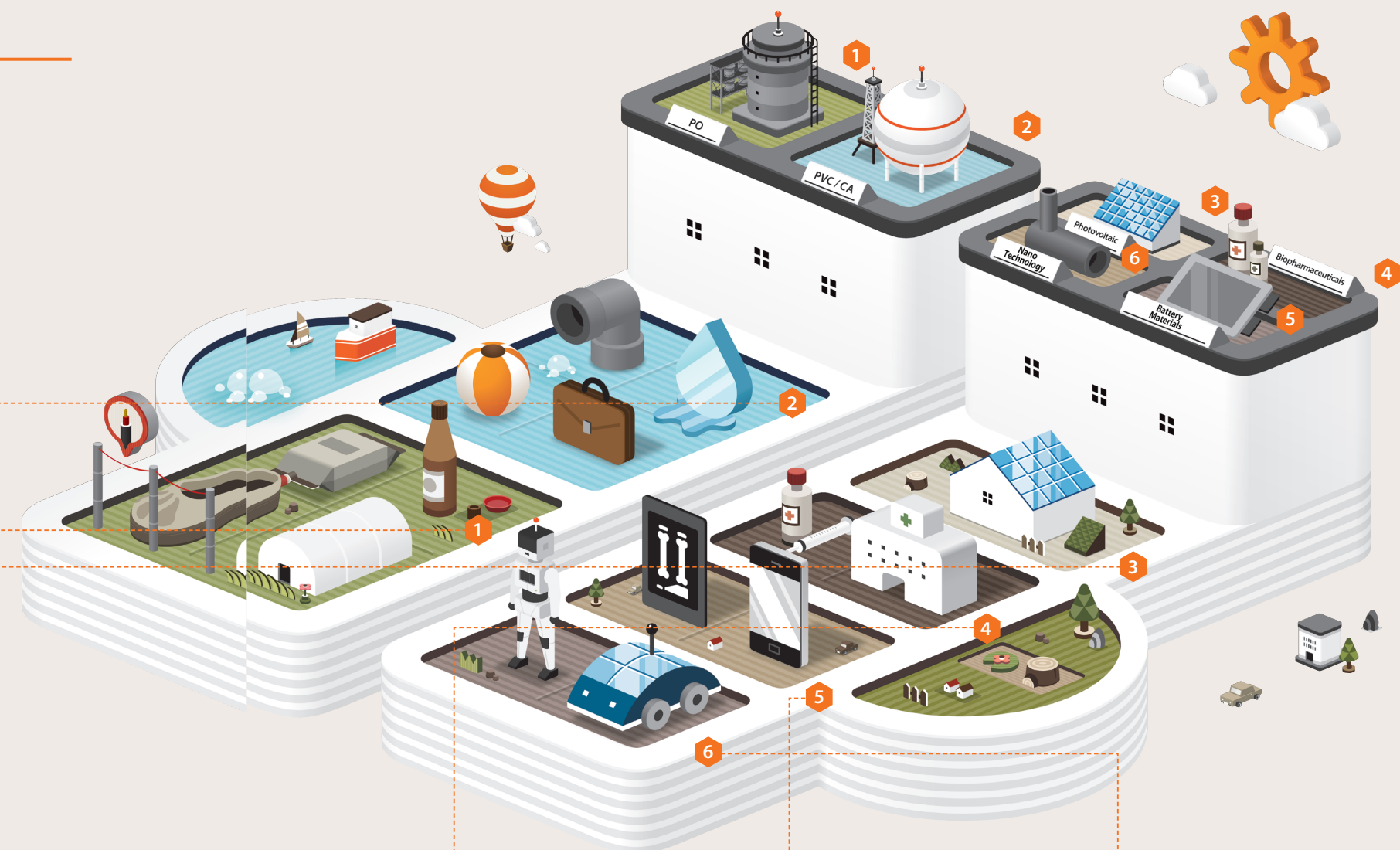


## Hanwha Chemical is Creating a Better Future!

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We have been leading the domestic petrochemical industry by introducing various general purpose plastics and inorganic chemical products to the petrochemicals market. Our commitment to creating a sustainable future through the petrochemical business, providing convenience for people's everyday lives, and fostering new businesses on the strength of our cutting-edge technology, will continue today, tomorrow, and into the distant future.

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High Value-Added Technologies  
for More Convenient Living

### Petrochemical Business

Environmentally Friendly Technology  
for a Sustainable Future

### New Business



#### 1. Polyolefin

PE (Polyethylene) is the most widely used material in the production of plastic products such as packing materials, container covers, and vinyl products. We continue to develop specialized, globally competitive and value added products such as EVA used in the soles of sneakers, photovoltaic cells, and more.



#### 2. PVC/CA

PVC (Polyvinyl Chloride) is widely used as a material in household items, toys and general goods. It is also used in the construction sector as pipes and window frames. Caustic soda and chlorine of CA (Chlor-Alkali) are also widely used in the sterilization of water and sewage, and are used as the basic raw materials for various industries.



#### 3. Photovoltaic

Photovoltaic energy is an environmentally friendly energy source that generates no noise or carbon emissions, and is regarded as the ideal future resource for replacing fossil fuels. Based on our technical capability and know-how in the petrochemical business, we are embarking upon the photovoltaic business for the next generation.



#### 4. Biopharmaceuticals

As people are living longer, the demand for biopharmaceuticals is increasing as they are friendlier for human bodies and contain fewer side effects. The company is developing reasonably priced biopharmaceuticals of outstanding quality.



#### 5. Battery Materials

The battery material for Lithium-ion batteries will be the foundation for energy storage system, electric vehicles, robotics, and sustainable energy of the future. We are developing safe, environmentally friendly cathode materials for Lithium-ion batteries of outstanding quality to lead the way in the global market.



#### 6. Nano Technology

Innovations in nano technology are creating a new domain by converging and improving existing materials in an unprecedented way. The company is developing products applied with CNT (Carbon Nano Tube), thereby improving the stability of automotive parts and electronic products as well as MRI contrast media using nanoparticles.



Polyolefin Business



PO (Polyolefin)

PE (Polyethylene) is a widely used material in the production of plastic for packing materials; it is also a popular material for high-tech industrial applications. Since 1973, when we succeeded in producing LDPE for the first time in Korea, we have contributed to the development of the country's plastic industry on the strength of differentiated quality and reliable supply capacity. We have also succeeded in manufacturing various specialized products based on the strength of our technical capabilities, including W&C compound, which is used as an insulation material for high and extra high voltage power cables, and EVA (Ethylene Vinyl Acetate), thus creating a new era for the Korean petrochemical industry.



Key Products & Properties

LDPE	Offers excellent processability, optical properties and high impact resistance as well as flexibility; mainly used in agricultural/industrial films, coating and extrusion-molding, injection-molding and blow-molding products.
LLDPE	Offers great strength, processability, and optical properties as well as high stress resistance; mainly used in industrial/food packaging and tarpaulin coating.
HDPE	Offers high-speed processability, high strength, and high puncture resistance; mainly used in communication cable insulation, shopping bags, and general goods packing bags.
EVA	Delivers superior transparency, flexibility and low temperature resistance; mainly used in shoes, agricultural/laminating films, and photovoltaic protective sheets.
W&C Compound	Offers excellent electrical and mechanical properties as well as great processability. It is mainly used in the insulation and jackets of electric and communication cables.

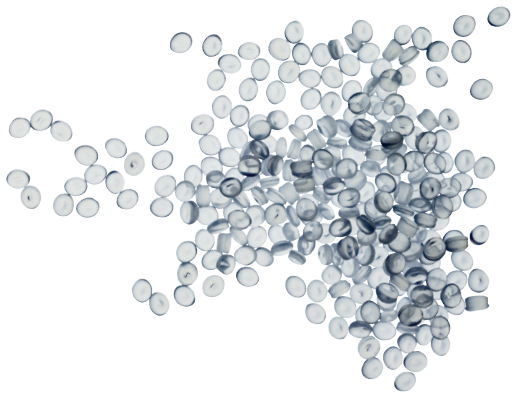
Business History

- 1973 Production of the country's first LDPE by Hanyang Chemical
- 1985 Production of the country's first EVA and composite resin for electrical wires to maximize profitability
- 1986 Production of the country's first LLDPE
- 2004 Insulation compound for power cables certified as a Korean World-Class Product
- 2009 EVA for thermal lamination film certified as a Korean World-Class Product
- 2011 EVA for photovoltaic cells certified as a Korean World-Class Product

Enhancement of Core Competence with High Value-added EVA Products

High-VA EVA is a high value-added product that only a few companies in the world have the necessary technology and sophisticated facilities for manufacturing. Since its successful production of high-VA EVA for the first time in Korea by using its in-house technology, the company has developed a variety of high-VA EVA products used for photovoltaic cells, hot melt and thermal lamination film, which was certified as a Korean World-Class Product in 2011. The company has firmly consolidated its position as a leading manufacturer of EVA in Asia. The company's expansion of EVA line in Ulsan added 40,000 ton per year to its total capacity in September 2012, further enhancing its competitiveness in supply capacity. With the scheduled launch of the IPC business that is jointly invested in by Sipchem of Saudi Arabia, the company is poised to surge ahead as the world's second largest producer of EVA.

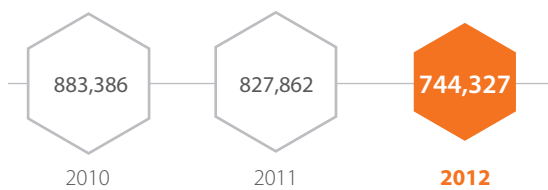
EVA Resin >



2012 Revenue  
(Unit: KRW 100 million)



Production Volume  
(Unit: MT)



Domestic Market Share

■ LDPE/EVA



- No.1 PE Production Capacity in Korea
- No.1 EVA Production Capacity in Korea



PVC/CA Business



PVC (Polyvinyl Chloride)

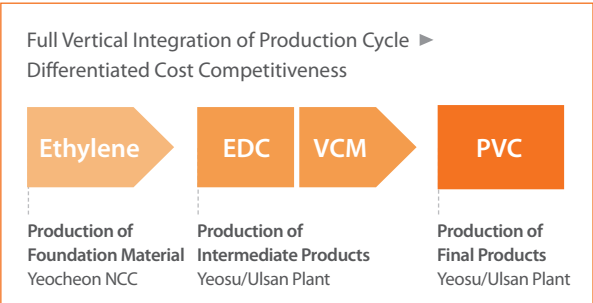
PVC is a commonly used plastic with applications ranging from containers, packaging films and toys to fibers. We have been an innovator in the PVC industry since we first began successfully producing PVC in Korea in 1966. Today, we have achieved a full vertical integration of its business structure ranging from the foundation to the provision of final products.

Key Products & Properties

PVC Resin	Used for pipes, sashes, hoses, cable insulation, soft/rigid sheets, etc.
Paste Resin (PSR)	Used for flooring, wall coverings, artificial leather, tarpaulins, carpet tiles and toys; base material for various processed products.
Plasticizer	Adjusts the plasticity of PVC, PSR processed goods; used in soft products and compounds.
Octanol	A colorless and odorless liquid used for plasticizers, solvents, and stabilizers. Butanol is also used for paints.
PA/MA	Used for plasticizers, paints, dyes, unsaturated polyester resin for automobiles, and fiber-reinforced plastics.

Competitiveness through Vertical Integration of PVC-CA Products

We were able to achieve unparalleled cost competitiveness through a full vertical integration of our chemical business ranging from the foundation to the provision of final products. We are now making a giant leap forward to rise as Asia's No.1 leader in the chemical business by continuously developing a new customer base, and expanding its array of high value-added products.



CA (Chlor-Alkali)

CA stands for Chlor-Alkali. Its key applications encompass diverse industries such as paper, fiber, detergent, metal, and electricity. Since consolidating our position as Korea's largest CA producer, we are committed to securing greater competitiveness with the aim of becoming the No. 1 global leader.

Key Products & Properties

Caustic Soda	Used for paper, fiber, detergents, metals, food, electricity industries, and primarily for water treatment against air/water contamination.
Chlorine	Used for EDC/VCM production, TDI, MDI, polycarbonate, agricultural chemicals, solvents, paper/pulp cleaning, and water disinfection.
EDC	A colorless liquid created by reacting chlorine and ethylene. Used for manufacturing VCM or various solvents.
VCM	A colorless gas, created by pyrolysis. Used mostly to make PVC.
HCl	Used for food additives, wastewater management, etc.

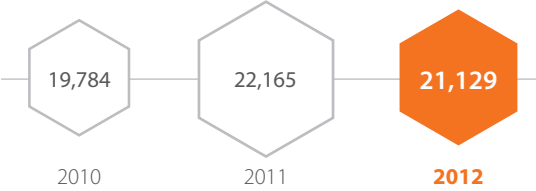
Business History

- 1966 Production of Korea's first PVC by Daehan Plastic Industry
- 1968 Founding of Korea Hwasung Industrial's PVC plant in Jinhae
- 1980 Founding of the CA plant in Yecheon; attainment of Korea's largest production capacity of EDC, VCM, and ECH
- 2009 Acquisition of Ulsan Plant 3 (DOP/MA/PA production)
- 2010 Expansion of the CA/OXY plant in Yeosu; became the world's third largest caustic soda exporter
- 2012 Expansion of the PVC plant in Yeosu

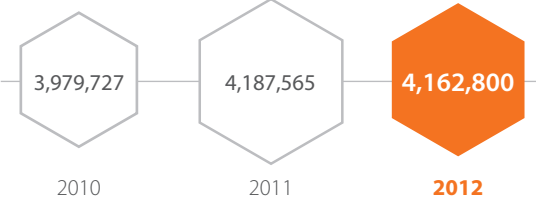
Expansion of 42,000 ton PVC Plant with In-house Technology Gives the Company the World's 10th Largest Production Capacity

In August 2012, the company successfully completed the expansion of the 42,000 ton Yeosu PVC plant with its own technology, bringing its total production capacity from 860,000 tons to 900,000 tons per year. An unparalleled cost competitiveness realized through a full vertical integration of its PVC business ranging from the foundation to the provision of final products, along with the company's now 10th largest production capacity in the world, enhanced its global competitiveness, thereby helping it develop a global market more aggressively.

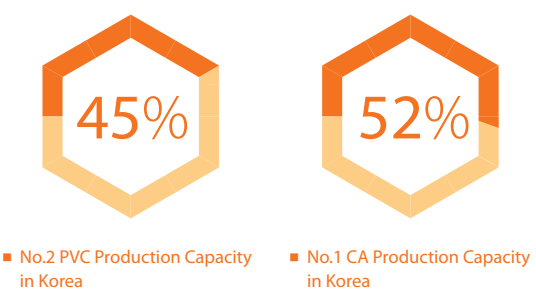
2012 Revenue  
(Unit: KRW 100 million)



Production Volume  
(Unit: MT)



Domestic Market Share



PVC Compounds >



Photovoltaic Business



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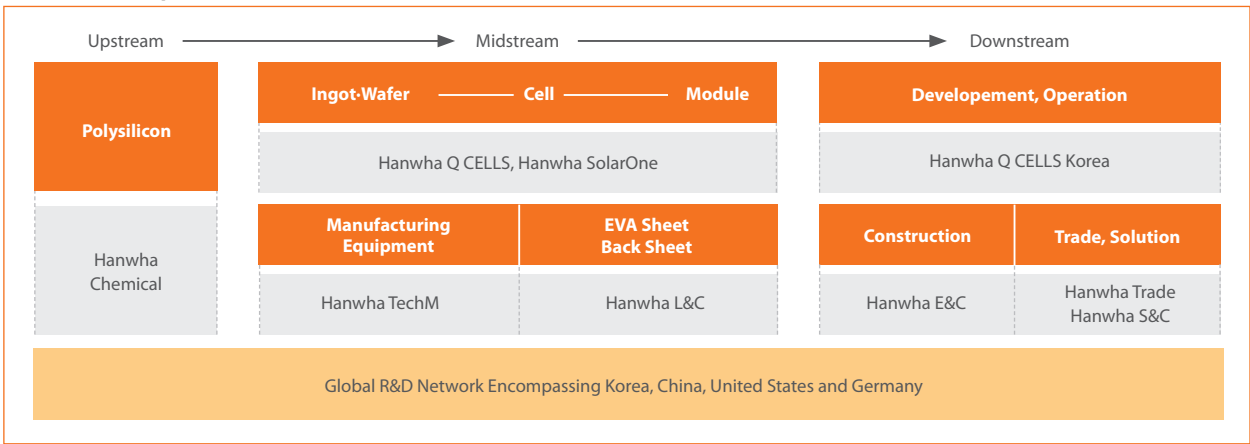
The photovoltaic business is a next generation green business with a proven track record in safety that converts solar energy into electric energy and supplies it to customers. We acquired a world-leading photovoltaic company in 2010 and entered into the raw material (polysilicon) business in 2011, completing vertical integration into the photovoltaic business.

Business History

- 2008 Declaration of photovoltaic business launch
- 2010 Acquisition of Solarfun Power Holdings (now Hanwha SolarOne); acquisition of shares of 1366 Technologies; appointment of Dr. Chris Eberspacher as CTO
- 2011 Entry into the polysilicon business (plant with a production capacity of 10,000 ton/year in the Yeosu National Industrial Complex currently under construction); acquisition of shares of Crystal Solar
- 2012 Acquisition of Q CELLS in Germany; rose as the world's third largest producer of photovoltaic panels with its annual cell production capacity of 2.3GW



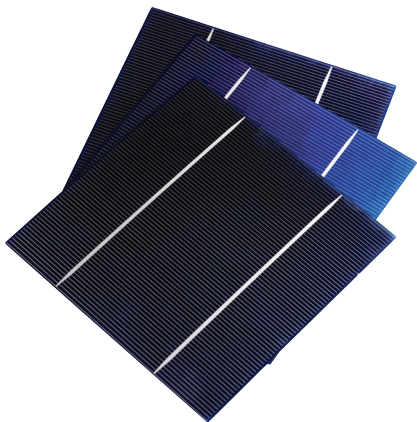
Hanwha Group Solar Business Value Chain



Entrance into Polysilicon Business Completes the Company's Vertical Integration of Solar Businesses

Hanwha Chemical is building a polysilicon plant in Yeosu with commercial production scheduled in early 2014. By doing so, the company will have completed a full vertical integration of its photovoltaic businesses ranging from raw material to final products and related services. Hanwha Group's global network encompassing Europe, Asia, Australia and United States, when coupled with the powerful sales network of Hanwha Q CELLS and Hanwha SolarOne, will provide the company with a rock-solid platform on which it can grow as world-class leader in the photovoltaic business.

Cell >



Biopharmaceuticals Business

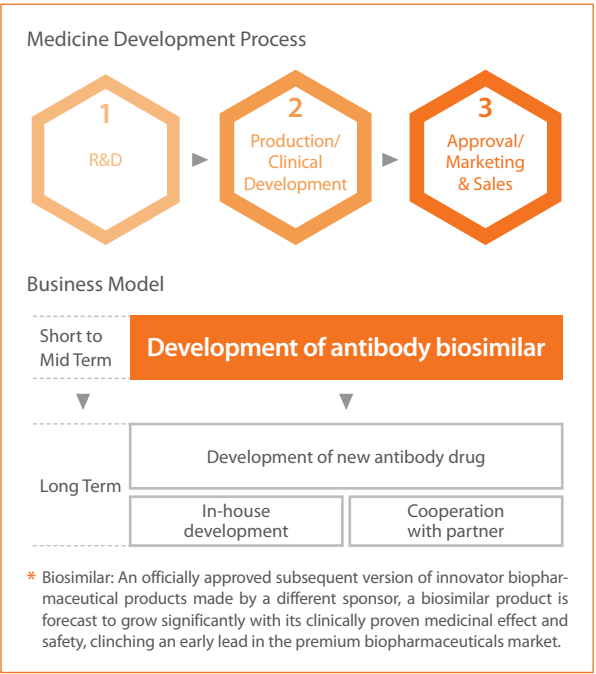


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Biopharmaceuticals are produced from the cells and genes of diverse organisms. The demand for biopharmaceuticals is increasing steadily for its capability to selectively treat target areas. With its own technology, the company developed HD203, a biosimilar\* for treating rheumatoid arthritis, and is currently perfecting the line for a full commercial production of the final product.

Business History

- 2006 Started therapeutic antibody development
- 2009 Completed development of HD203 and started the phase 1 clinical trial
- 2010 Started the phase 3 clinical trial of HD203
- 2012 Completed construction of the biopharmaceuticals production plant in the Osong Bioscience Complex



Initiative for Enhanced Competitiveness in Biopharmaceutical Business

The company's biopharmaceutical business division is focusing its efforts on developing therapeutic antibodies, new biopharmaceuticals based on antibodies, and biosimilar products to hone its competitive edge in the steadily growing biopharmaceutical industry. By developing a first-rate capability in the material properties analysis data, clinical test, manufacturing and approval process, which is required for the development of biosimilar products of antibodies, the company is striving to advance as a world-class company with a proven reputation in the global biopharmaceutical market for its high-quality products.



Construction of Osong Plant, the Company's Production Base for Biosimilar Products

We have completed construction of the cGMP biopharmaceuticals production plant in Osong, which has the cultivation capacity of 7,000 L. The foundation for the company's early entry into the global pharmaceutical market, the Osong Plant is equipped with some of the latest production facilities that enable mass commercial production and a sample production of biosimilar products for clinical tests as well as a sophisticated automated facility and a first-rate quality assurance system.

HD203 >





# Battery Material Business



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Secondary batteries enable repeated usage through recharging and discharging. They are widely used in mobile phones, automobiles, and other devices. We are a global manufacturer of cathode materials, which is a raw material that constitutes more than 25% of the components of Lithium-ion batteries.

## Business History

- 2004** Started development of cathode materials
- 2009** Developed the world's First Supercritical Hydrothermal Synthesis cathode material for Lithium-ion batteries and began plant construction
- 2010** Completed cathode material (LFP) plant (annual capacity: 700 tons)
- 2012** Initiated development of a next generation material for secondary batteries including LFP-CNT and LFMP

## World's First Supercritical Hydrothermal Synthesis Cathode Material—LFP (Lithium Iron Phosphate)

Among various cathode materials, LFP has by far the most superior material properties in terms of safety and service life, and boasts high stability in supply and cost competitiveness as it is made from low cost materials such as Iron (Fe).

Our LFP ensures the stability of batteries thanks to the unique chemical structure of the compound, and guarantees an extended battery service life since it undergoes limited structural drifting during usage. LFP is an ideal material for mid-to large-size Lithium-ion batteries, which is used to power electric vehicles and commercial energy storage systems, making it a highly prospective product in the renewable energy market. Our new cathode material is produced by our key technology "Supercritical Hydrothermal Synthesis\*", which uses supercritical liquid properties containing characteristics of both liquid and gas simultaneously. This caught the attention of the market as the first mass-produced product using this innovative method.

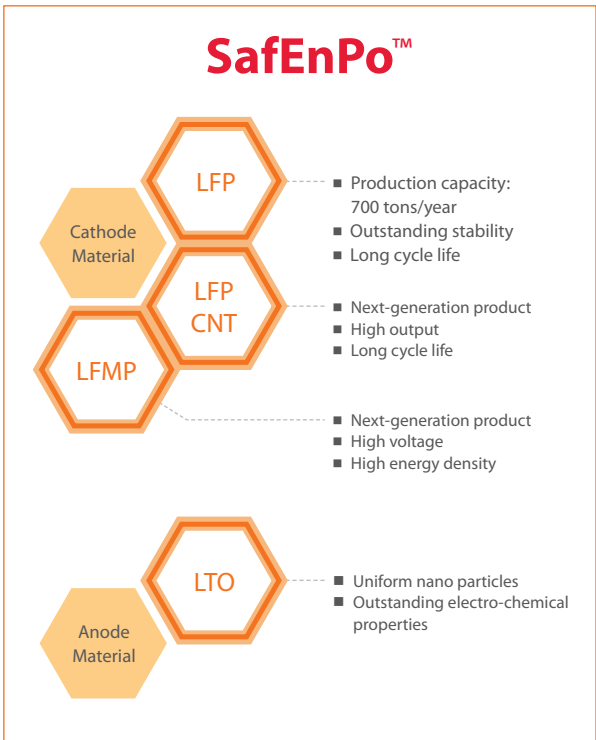
\* Supercritical Hydrothermal Synthesis: A process that synthesizes materials in the supercritical hydrothermal state where the distinction between liquid, solid and gas becomes fuzzy against water.

LFP (Lithium Iron Phosphate) developed by Hanwha Chemical >



## SafEnPo™

We introduced 'SafEnPo™' as our new brand of secondary battery material, and have been carrying out a product marketing campaign to expand the business.



# Nano Technology Business



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Nano technology refers to the technology that uses nano (10<sup>-9</sup>)-sized materials and process. It can open new possibilities by combining with existing technologies in many fields including physics, materials, and electronics. We own mass production technology and, surface treatment technology for CNT (Carbon Nanotube), which has been called a "dream material" because of its extraordinary electrical, thermal, and mechanical properties. The development of new applied materials using CNT will help us to continue expanding our nano technology business.

## Business History

- 2007** Licensing of nanoparticle production technology from Seoul National University
- 2008** Acquisition of Iljin Nanotech (Hanwha Nanotech), a CNT manufacturer in Korea
- 2009** Single-walled CNT mass production and purification technologies awarded by the Prime Minister of Korea
- 2011** Acquisition of stakes in XG Sciences, a U.S. graphene manufacturer
- 2013** Merger of Hanwha Nanotech

## CNT (Carbon Nanotube)

### Unprecedented Material Properties

Dream material with extraordinary electrical, thermal, and mechanical properties.

### Impending Commercialization Potential for CNT-applied Products

Improved cost-competitiveness through the development of mass production technology for CNT increases the potential commercialization of CNT-applied products—highly prospective environmentally friendly and high-tech material—as an additive to lightweight composite material.

### Unlimited Market Potential

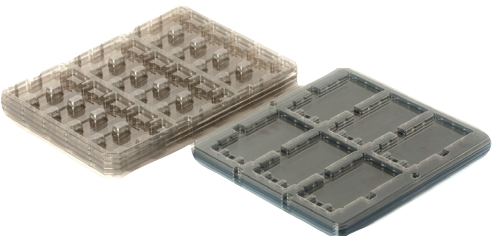
CNT can be applied as a base material to a wide range of products such as next generation military equipment, transparent conductive film, polymer composites, high-performance automotive parts, thermal-conductive film, next generation light sources, bio sensors and next generation semiconductors.



## Industry's First Successful Commercialization of CNT-applied Products

We have succeeded in developing CNT technology for various applications such as the transparent electrode, reinforcing and conductive additives, as well as the electrodes for secondary batteries. We are also developing various specialized items custom-designed to meet the needs of various end-users by diversifying its application potential through the development of in-house technology. The company is now at the forefront of the commercialization of cutting-edge materials based on nano technology.

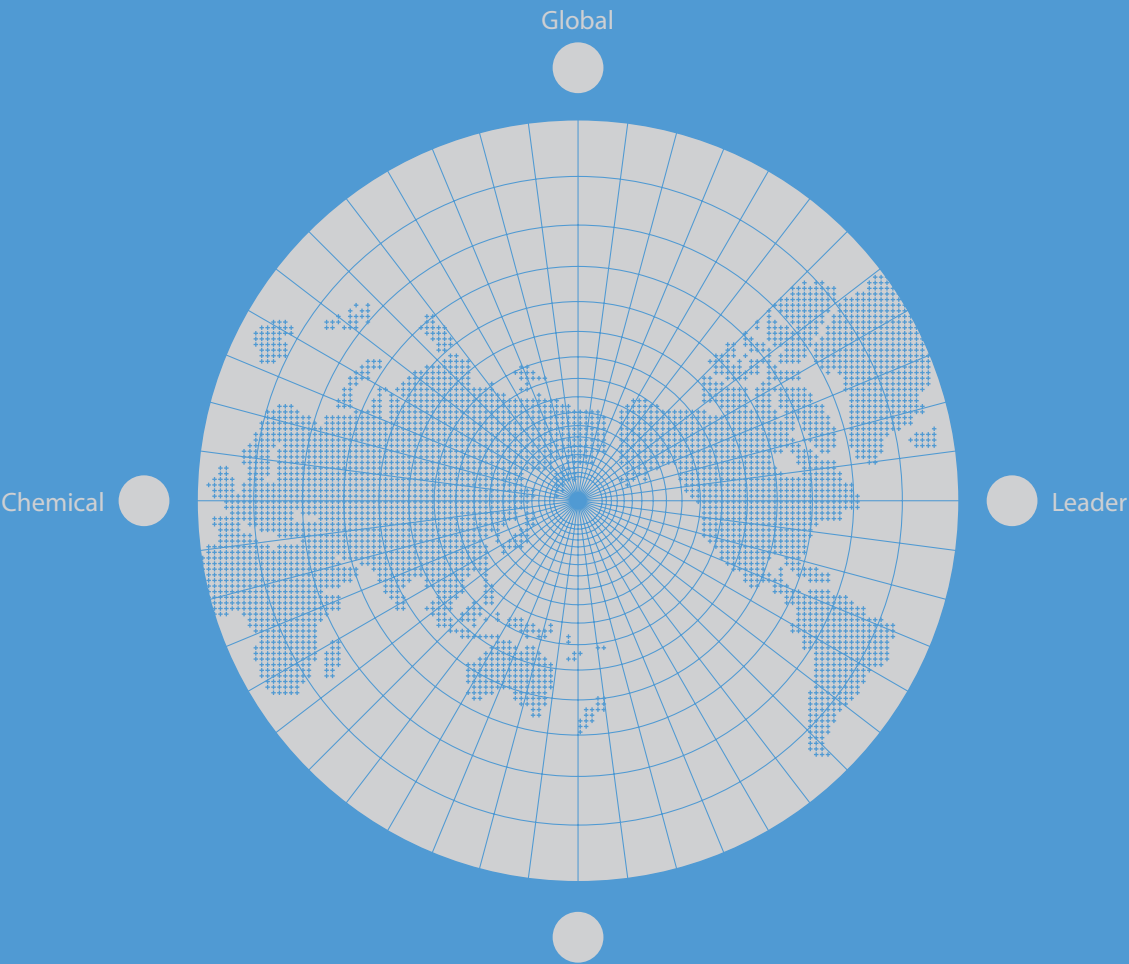
A CNT-applied mobile phone battery case:



# SUSTAINABLE MANAGEMENT

# 2

- > Sustainability Vision & Strategy
- > Materiality Assessment
- > Stakeholder Communication
- > 2012 Sustainable Management – Highlights



VISION FOR THE WORLD

We will realize the vision for a sustainable future by enhancing awareness of our management philosophy and fulfilling our social responsibility.

We are establishing major strategies and visions for maintaining and developing a sustainable management by identifying diverse issues and analyzing present challenges and risks. The “firm resolve for sustainable development” is our promise for society, which is endorsed and supported by each and every member of Hanwha Chemical.



# Sustainability Vision & Strategy

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We are establishing major strategies on the diverse issues required for maintaining and developing sustainable management. We will do our utmost to control risks with efficiency by anticipating future management environments, striving for technological development for the future with a spirit of challenge.

## Vision: Global Chemical Leader 2015

By 2015, we aim to become a global chemical player that is valued by our customers, trusted by our shareholders, and recognized by our employees. Our strategy offers a concrete roadmap to achieving these objectives.

### Global Chemical Leader 2015

2015

KRW 9 trillion in revenues,  
KRW 1.2 trillion in operating income

Global

Develop new initiatives for an innovative business portfolio and quality growth by identifying and focusing on new growth engines

Chemical Leader

Transformation from a domestic company into a global giant

## Mission



Enhance competitiveness and revenues in the petrochemical business by:

- Increasing the share of specialty products
- Boosting overseas sales
- Enhancing cost competitiveness



Increase the share of global operations with:

- Construction of an EVA/LDPE/W&C plant in Saudi Arabia
- Expansion of ASR plant in Thailand
- Enlargement of PVC plant in Ningbo, China



Establish the base for new growth portfolio with:

- Construction of a polysilicon plant
- Strengthening the biopharmaceutical business
- Expansion of the market for cathode materials and CNT-applied materials

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## Tasks and Strategies Facing the Company for a Sustainable Development

We are keenly aware of the issues that must be considered to grow with society, and of our entailed responsibility for sustainable development.

Global warming and the resulting climate change caused by greenhouse gas emissions is one of the most pressing issues for chemical businesses. Deeply aware of the severity of this issue, we are pushing ahead with positive low-carbon management focusing on the reduction of greenhouse gas emissions, and proactive development of new renewable energy that will help reduce fossil fuel consumption.

The advancement of our suppliers is also an essential management consideration required for a balanced development of society. The excessive concentration of the country's wealth in a few conglomerates, which was somewhat inevitable in the past's rapid economic growth, has been one of the hottest social issues in Korea recently. We are proactively communicating with our suppliers for diverse ways of collaboration through scheduled round-table meetings and education sessions, and by signing agreements for win-win growth while also establishing and implementing relevant strategies to this end.

We are also seeking some practical ways to help socially disadvantaged classes who are unable to benefit from the outreach programs of the government and other charity institutions. As we are keenly aware of the need for carefully designed support programs for the socially disadvantaged classes, we are negotiating one-time supports or special events in exchange for the implementation of long-term projects that will help those beneficiaries to grow and develop themselves.

## Our Resolve for Sustainable Growth

To fulfill its social responsibilities, Hanwha Chemical declared key principles for all executives and staff to abide by when implementing everyday tasks. The following six principles reflect the company's business objectives and management philosophy that promote desirable values for our stakeholders.

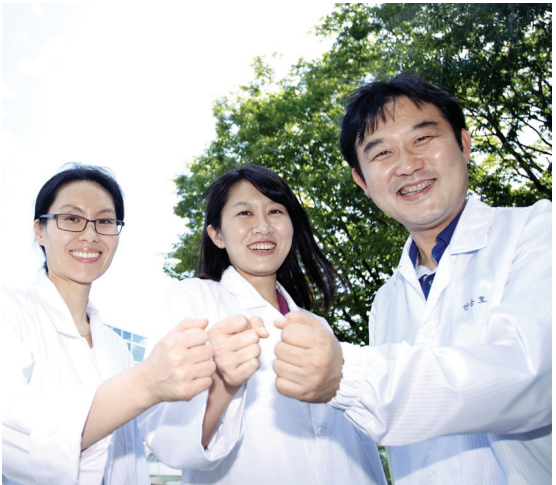
- We pursue sustainable businesses that are beneficial to society and the environment
- We carefully consider the characteristics of each local area we work within, and contribute to the development of those respective communities
- We sincerely listen to the opinions of our stakeholders and keep improving those areas that need our attention
- We perform our duties in a sincere and fair manner by complying with the laws and code of ethics
- We are deeply aware of the importance of the environment and rigorously comply with environmental, health and safety standards
- We implement the spirit of sharing faithfully and participate proudly in the activities of social contribution with a sense of duty

## Organization for Sustainable Management

The company's sustainable management is realized through close collaboration among related departments that handle issues of economy, society and environment according to the company's mid- and long-term vision. We practice the principles of sustainable management across the entire spectrum of our business activities.

In 2012, the company assessed the implementation of its sustainable management through an analysis of company-wide CSR practices and an online survey of stakeholders. This was performed by the Public & Investors Relation Team in the Strategic Planning Division, and its results were submitted to the company CEO. The self-assessment by the department responsible for sustainable management coupled with the survey on the actual satisfaction level of stakeholders, as well as analysis on the management environment and industry trends, will lay the groundwork for the company to surge ahead as a global leader in sustainable management.

## Key Directions of Sustainable Management



Materiality Assessment

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We generated sustainable management-related issues by analyzing the internal/external environment and prioritized them according to their significance and relevance to the company’s sustainable management. We also strove to deliver information effectively and accurately by conducting a comprehensive review on the content and complementing them by following the report composition principles.

Report Composition System

1. Composition of Sustainability Issue Pool

We determined those issues that our stakeholders have interest in, as well as other issues with potential implications to our management, by analyzing key stakeholders and various internal and external company management data.

Analysis on Stakeholder-related Issues

1 Analysis on Media Reports

News reports on the company’s management published in 2012 by various online and offline media were analyzed prior to being sorted by issue importance according to the number of incidents indicated. Other miscellaneous reports on the company’s share prices or fleeting mentions of the company name were excluded.

2 Online Survey on Stakeholders

A weeklong online survey on the stakeholders was conducted to identify their satisfaction level on the company’s sustainable management practices; top issues that drew the most interest were sorted according to the number of mentions.

Analysis on Management-related Issues

3 Analysis on Management Strategy and Management Environment

Top keywords on the company’s management that were drawn from an analysis on the company’s mid-and long-term vision, direction of its sustainable management, and market issues were repackaged as the key management issues.

4 Analysis on Competition

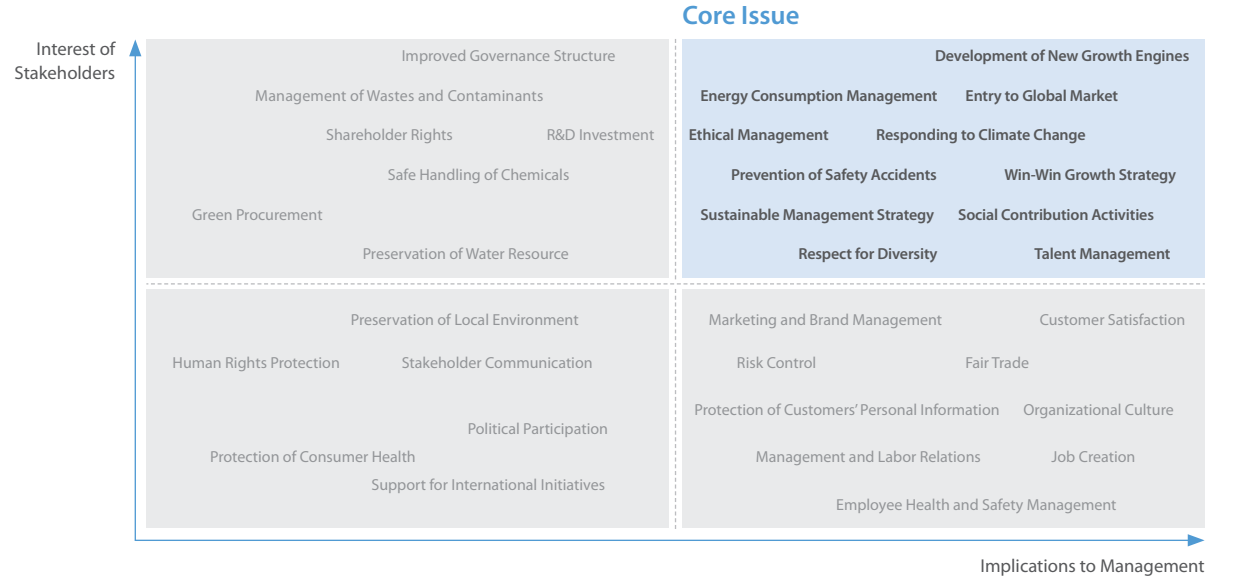
Key issues that businesses in the chemical industry should pay attention to were selected by analyzing the sustainable management practices of leading companies in the petro-chemical and photovoltaic industry.

5 Analysis of Global Standards Including GRI, ISO 26000

We undertook recent updates of global standards and guidelines, including UNGC, ISO 26000, GRI G 3.1, and reflected the relevant issues.

2. Selection of Key Issues

We narrowed down entire issue pool to select key issues shown below according to their respective implications to our business and interest of our stakeholders.



3. Composition of the Report and DMA

The report was composed based on the core selected issues while additional miscellaneous issues were covered across the entire report. For more details, please visit the company homepage (hcc.hanwha.com) or refer to the business report in DART (e-disclosure: dart.fss.or.kr).

■ Composition of the Report

Core Issue	Hanwha Chemical Report 2013	Title	Pages
Development of new growth engines	Part 1	Photovoltaic business, Biopharmaceutical business, Secondary battery material business, Nano technology business	16-19
Entry into global market		PO business, Chemical business, Photovoltaic business	12-16
Sustainable management strategy	Part 2	Vision and strategy	22-33
Responding to climate change	Part 3, 4	Responding to climate change	38-39
Energy consumption management		Environment, Safety and health management	36-37
Prevention of safety accidents		Safety and health management	43
Talent management		Education and training of top talents	44-45
Respect for diversity		Preservation of diversity and prevention of discrimination	45
Social contribution activities		Social contribution activities	47-49
Win-win growth strategy		Win-win growth	50

■ DMA (Disclosure on Management Approach)

	Core Issue	Managed by	Key Achievement	Future Plan and Objective
Economy	Development of new growth engines	Corporate Strategy & Planning Office, Business Development Division, Each Business Division	■ Acquisition of global photovoltaic company ■ Completion of biopharmaceutical plant	■ Expansion of photovoltaic business ■ Production of biopharmaceuticals and development of new anti-body medicine ■ Development of nano technology-applied materials ■ Expansion of marketing for secondary battery materials
	Entry to global market	Business Development Division, Each Business Division	■ Construction of EVA/LDPE, W&C Compound plant in Saudi Arabia	■ Commercial operation of Saudi Arabia plant and expansion of market share
Society	Social contribution activities	General Administration Department (General Affairs Team)	■ Reestablishment of social contribution strategy ■ Expansion of administrative support by reflecting business-specific characteristics	■ Expansion of programs that capitalize on the business capabilities such as “Energy Class for a Better Tomorrow”
	Win-win growth strategy	Corporate Strategy & Planning Office (Public & Investors Relation Team, Technology & ESH Team), General Administration Department (Supply Management Team)	■ Signing of shared growth agreement with 133 suppliers ■ Support for win-win growth fund ■ Education session for suppliers ■ Education of 2nd generation managers	■ Expansion of practical win-win collaboration with suppliers through continued communication
	Talent management initiative	HR Division, Corporate Strategy & Planning Office (Corporate Innovation Team)	■ Education program custom-designed along the hierarchy and provision of the female employee retention program ■ Grand Award at the 100 Best Companies to Work for 2013 Korea Award	■ Enhanced education on global competence, enhancement of female-friendly management
Environment	Responding to climate change	Corporate Strategy & Planning Office (Technology & ESH Team), Environment & Safety Team in Each Business Operation	■ Improved performance in reducing green house gas emissions ■ 12,174 ton CO <sub>2</sub> eq > 27,109 ton CO <sub>2</sub> eq	■ Efficient data management and improved performance in reducing greenhouse gas emissions through consolidated management of greenhouse gas emissions and energy consumption
	Energy consumption management			
	Prevention of safety accidents		■ Ulsan Plant 1 received Prime Minister’s Award in the Korea Industrial Safety Awards	■ Enhance environment, health and safety management in the workplace

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Stakeholder Communication

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We maintain close cooperative relationships with many stakeholders including customers, shareholders, subcontractors, social organizations, and government institutions. We provide them with relevant information via our sustainability report, website, and social networking service (SNS). We operate diverse communication channels, including the following, in an effort to have opinions on sustainable development reflected in our operation.

Major Communication Channels



Shareholders/Investors

The General Shareholders' Meeting convenes every March to provide management and customer information to shareholders and investors. Shareholders' proposal rights are protected under the relevant laws. A variety of investor relations support, including one-on-one meetings and telephone consultations, is offered to institutional investors and analysts. Key management status, stock and financial information are disclosed and uploaded onto the website in real time.

Employees

As part of the GWP (Great Workplace) initiative, we run training sessions/workshops, and offer online bulletins, employee surveys, and communication guidebooks. We encourage active internal communication. The Labor-Management Committee and self-reporting system under the Ethics Management Secretariat are also helpful vehicles for addressing and collecting employees' concerns.

Partners/Customers

We launched the BPS (Best Partners) program to support and assist our partners with technology development, process improvement, quality management, and troubleshooting. The CEO also chairs a meeting of our partners' CEOs for trust building and win-win growth through continued collaboration.

Local Community/Environmental Organizations

As members of the community, we do our best to provide support for the less privileged, multicultural households, the disabled, welfare institutions, and others in need, for the purpose of sharing happiness with more stakeholders. We act in accordance with the strategies established for the environmental, safety and health sectors, and carry out voluntary activities for a clean environment in close collaboration with local communities.

Government/Associations

Our employees are required to carry out business activities in accordance with the programs and policies established for ethical management and fair trade. We also attend scheduled and ad hoc meetings with the government and relevant associations and carry out any agreements reached with them. We are committed to willingly address major issues raised in the industry, exchange positive communication with those concerned, and set an example for others to follow in fulfilling our corporate responsibilities.

Stakeholder Survey

In an effort to analyze the stakeholders' awareness of and satisfaction on the company's sustainable management, and hence identify those issues that need further improvement, we conducted an online survey from September 27 to October 5 in 2012. The survey results provided us basic data for establishing the company's future strategy for sustainable management.

Selection of Survey Issues

Survey questions were selected by analyzing related indicators specified in global standards such as ISO 26000 and GRI, and those on the sustainable management in the chemical industry that are frequently covered by news media, as well as those on internal management. The selected questions were then divided into common questions and those for each stakeholder group.

Survey Target and Sample Size

The company's core stakeholders were divided into four different groups according to their shared interest. We aimed to conduct the survey on a sample of 200 stakeholders that were made up of four 50-people sets selected randomly from each stakeholder group with shared interest.

(Unit: Person, %)

Employees, Labor union, Management	Partners, Suppliers, Customers	Government, Institutions, Competitors, Investment Bodies	Local Community, NGOs
50 (25%)	50 (25%)	50 (25%)	50 (25%)

Survey Questions

Common questions	Interest in the company's sustainable management, strength and weakness
Questions for each group	Questions designed according to key themes of each group
<ul style="list-style-type: none"><li>■ Employees/Labor union/Management: Human resource management, protection of human rights.</li><li>■ Partners/Suppliers/Customers: Supply chain management, Win-Win growth.</li><li>■ Government/Institutions/Competitors/Investment bodies: Corporate governance, investment on businesses.</li><li>■ Local community/NGO: Social contribution activities, environmental conservation.</li></ul>	

10th Anniversary of Hanwha Chemical Sustainability Report

The company published its first sustainability report in 2003, the first of its kind in the domestic chemical industry. Initially published by the company in an effort to fulfill its responsibilities to the environment and society, the former biennial report had been published until 2011; however, the sustainability report has been published annually since 2012. We strive to provide our stakeholders with a report offering reliable and clear-cut information, acting as a trustworthy communication channel for our stakeholders through which their valuable opinions can be reflected in the company's sustainable management.



Company Blog Opened to Communicate with More Stakeholders

In October 2011, we started our official blog Chemical Dream, and joined social media sites Facebook and Twitter. There, you can read news updates about our business, obtain interesting and useful information on chemistry, and learn about diverse cultural events.

- [www.chemidream.com](http://www.chemidream.com)
- [www.twitter.com/chemidream](http://www.twitter.com/chemidream)
- [www.facebook.com/chemidream](http://www.facebook.com/chemidream)
- [hcc.hanwha.co.kr](http://hcc.hanwha.co.kr)

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## 2012 Sustainable Management-Highlights

The highlights of this Sustainability Report, which were selected based on the key issues in 2012, are as follows:

### Shared Economic Values

(Unit: KRW 100 million)

		2010	2011	2012
Shareholders/Investors	Total cash dividend	637	637	354
Creditors	Interest payment	647	646	721
Customers	Domestic sales revenue	18,180	19,684	18,117
	Overseas sales revenue	18,102	20,020	17,473
Suppliers	Materials purchasing cost	24,896	27,913	26,620
	Service purchasing cost	668	623	752
Employees	Salary payment	1,775	1,895	1,755
	Retirement benefit appropriation fund	203	210	260
	Other employee benefits	258	331	326
Society	Donated funds	39	59	35
	Tax payment	73	89	62
	Corporate tax	986	1,256	451

### Business Highlights

p. 12-15

42,000 ton

40,000 ton

**PVC 42,000 ton ↑ EVA 40,000 ton ↑**  
The company expanded the share of high value-added products in the product portfolio, while at the same time strengthening its market dominance by expanding production capacity for its mainstay products.

p. 13

200,000 ton

**Construction of New Plant in Saudi Arabia**  
The company worked on constructing an EVA/LDPE plant with an annual production capacity of 200,000 tons as well as a resin plant for power cables in Saudi Arabia, an oil-producing country with excellent cost competitiveness.

p. 16

**Acquisition of Q CELLS, 3rd Global Photovoltaic Producer**  
By creating synergy from the world-class technology and know-how of Q CELLS and the operational competence of Hanwha Solar One, we are closer than ever to becoming a global leader in the photovoltaic business.

### Society

p. 44-45

**Percentage of Female Employees: 12%**  
The company has steadily increased the percentage of female employees, and since 2012 it has been running a robust employment retention program in an effort to help female employees develop their professional career while balancing work and family.

p. 46

**Selected as a Recipient of the 100 Great Place to Work in Korea Award**  
The company has been promoting an organizational culture that allows employees to work happily and proudly through an installed culture of trust and understanding, meet with the CEO, and be guaranteed use of personal leave. Our efforts were recognized in 2012 when it was awarded a 100 Great Place to Work in Korea Award in the manufacturing category.

p. 47-49

**Volunteer Activities: 34,645 Hours**  
Our employees have participated in a total of 716 volunteer activities in 2012 that amounted to 34,645 hours, helping the company fulfill its social responsibilities. The company's volunteer activity consists of diverse programs custom-designed for the needs of each local community we are working in.

### Environment

p. 36-37

**Korea Industrial Safety Awards**  
We are proud to have maintained a clean and safe work place. The Ulsan Plant received the Prime Minister's Award in the Korea Industrial Safety Awards for its advanced safety and fire-prevention practices.

p. 38-39

**Reduced Greenhouse Gas Emission: 27,109 ton**  
The company proactively responded to climate change by starting an initiative to reduce greenhouse gas emissions, and by introducing a consolidated energy consumption management system.

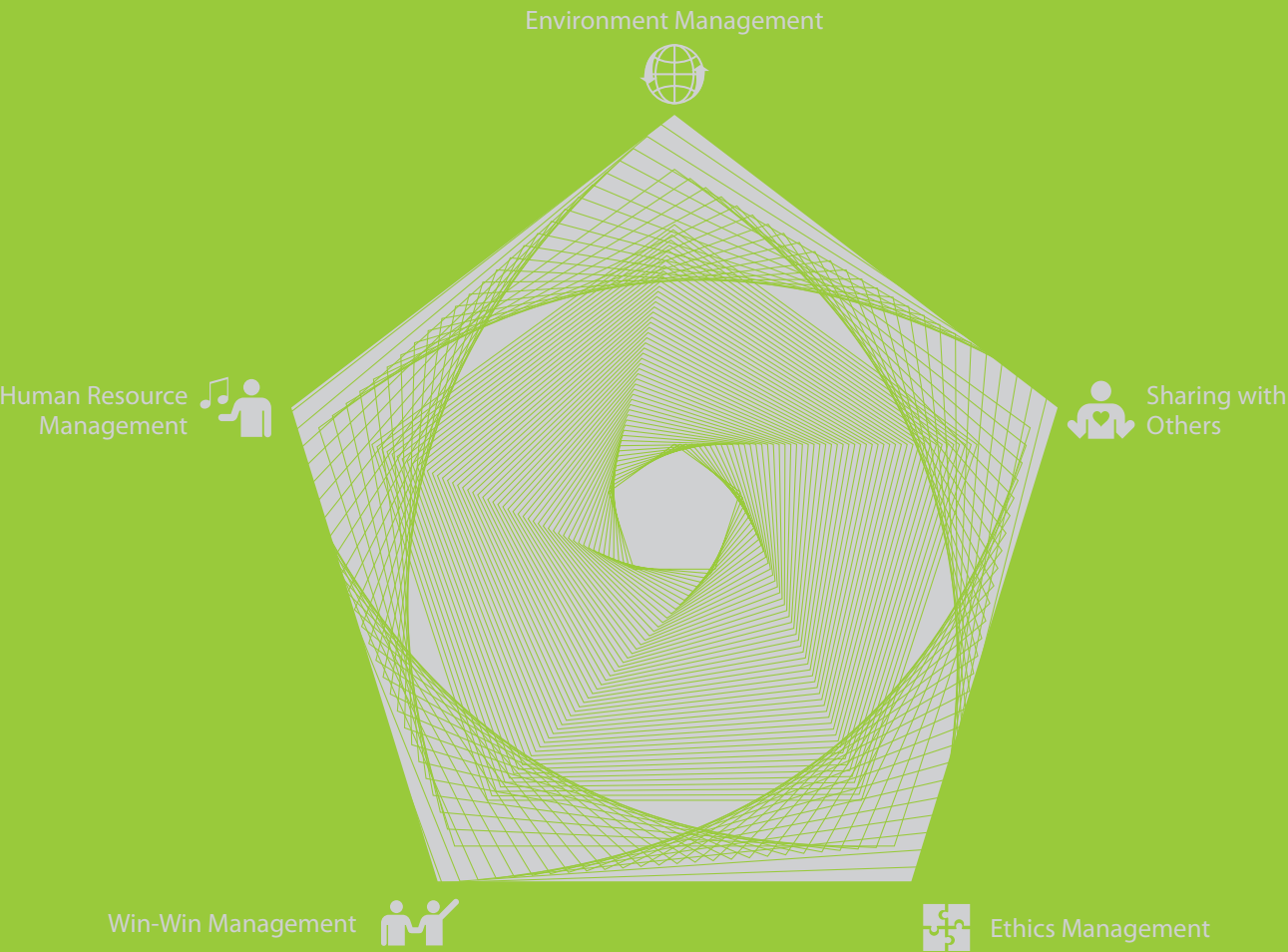
p. 40-42

**Recycle Rate of Wastewater: 24%**  
The company improved the wastewater recycling rate by running an in-house wastewater recycling facility in an effort to realize an environmentally friendly business operation, thereby reducing costs.

# OUR ROLE IN SUSTAINABLE SOCIETY

3

- > Environment Management
- > Human Resource Management
- > Sharing with Others
- > Win-Win Management
- > Ethics Management



## FIVE ROLES FOR SUSTIANABLE SOCIETY

We are making persistent efforts to ensure sustainable and efficient shared growth with others and to ensure that nature is maintained in a healthy and pristine condition for the next generation.

We are pushing ahead with a strategy to develop green products and businesses while contributing to the society by continuously providing practical solutions to less-privileged populations. Through this, we aim to grow with society through sharing with others.



## Five Promises for a Sustainable Society

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We are implementing responsible management in five areas including the environment and society in an effort to realize sustainable growth with society. The “Five Roles” represent our promise as well as basic responsibility to ensure the happiness of our stakeholders, and contain key issues drawn up through the materiality assessment implemented for this sustainability report.

Human Resource  
Management



Environment  
Management



Sharing with  
Others

Win-Win  
Management



Ethics  
Management

### Environment Management

- Eco-friendly Technology Development – p. 34
- Strategy for Environment, Health & Safety – p. 36
- Responding to Climate Change – p. 38
- Environment Conservation Efforts in Workplaces – p. 40
- Health and Safety Management – p. 43

We are diversifying our business portfolio to reinforce it as more environmentally friendly and future-oriented. We improved our petrochemical products to make them safer and friendlier to the environment, enhanced our technology competence in secondary battery materials and renewable energy, while building the foundation for a healthier generation in the future. We are also committed to preventing safety accidents and minimizing environmental contamination through the implementation of the Health and Safety Management System.

### Human Resource Management

- Talent Development – p. 44
- Great Workplace (GWP) – p. 46

Executives and employees of Hanwha Chemical are sharpening their global competence through the systematic and fair talent development program provided by the company. We are implementing diverse programs to improve the quality of work conditions: personal leave and other various employee benefits; a smart work system to rationalize work process; and improvement of rights of female employees through the maternity advocacy protection at work policy. The Great Place to Work activities of the company symbolize our corporate culture that values trust and mutual understanding more than anything else.

### Sharing with Others

- Social Contributions – p. 47

We strive to provide practical assistance to less-privileged populations in society by encouraging our employees to participate in social contribution activities. Our social contribution activity is characterized for its emphasis on personalized support for beneficiaries and continuous help. Our business operations are implementing unique programs custom-designed for the needs of the local community they are working in. We also ensure efficient fundraising and allocation of the donated money through active management of the ‘Matching Grant’ program.

### Win-Win Management

- Shared Growth with Partners – p. 50
- Procurement Policy and Supplier Evaluation – p. 51
- Customer Satisfaction – p. 52

The company is providing support in technology and capital to establish partnerships built upon continued growth and the trust of our customers. As many businesses in the industry are run by a second-generation ownership, we are running separate in-house management education programs for them. We have also implemented a purchasing process based on rigorous policies and regulations, and a purchasing management system, while also expanding our support to first-rate suppliers selected through the regular supplier assessment program.

### Ethics Management

- Compliance Program (CP) – p. 53
- Ethics Management – p. 54

Understanding that complying with laws and market rules is the most basic responsibility required for any corporate citizen, we are striving to instill such a sense of responsibility in the work process and everyday life of our employees. The company endeavors to prevent unfair business practices and minimize the risk of legal infringement through regular education sessions and assignment of in-house compliance officers, while running clear guidelines on the ethical management and whistle-blower system the company developed internally to prevent the taking of any fraudulent interest from our partners and suppliers.

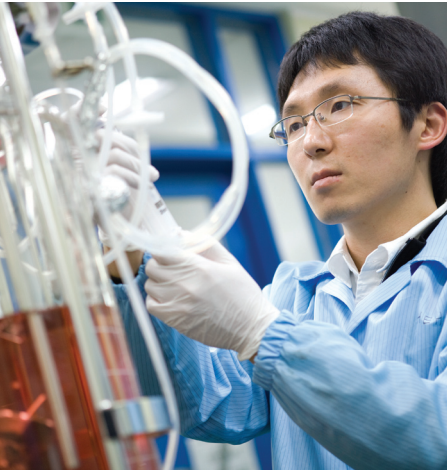
33



Eco-friendly Technology Development



Adequately responding to energy and natural resource problems related to human survival, and developing high value-added green businesses for sustainable growth, have recently become pressing issues for the chemical industry. We are laying the groundwork for green growth in a challenging management environment, exploring future-oriented new businesses such as environmentally friendly energy, and sophisticated next-generation materials, while at the same time making existing petrochemical products more environmentally friendly.

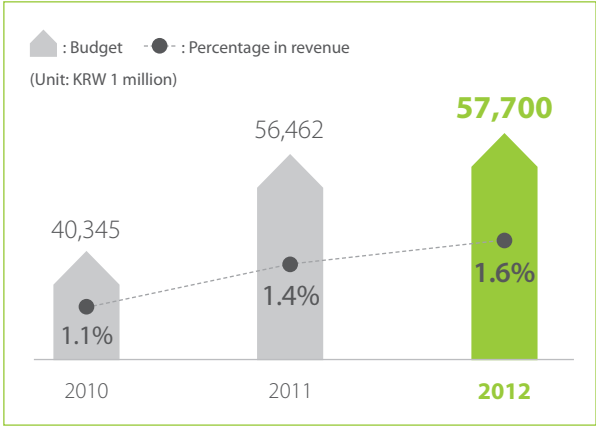


Daejeon R&D Center

The Daejeon R&D Center, the company's R&D hub for next generation technologies, is sharpening its technology competence by focusing on several key areas: improvement of polyethylene material properties and research on a polymeric catalyst; productivity improvement of Chlor-Alkali production; development of derivative products; development of next generation electrical/electronic materials and antibody medicine manufacturing technology; and development of ultra-low price high-efficiency crystalline structure silicon solar cells.

R&D Budget

The company's R&D budget for the past three years:



Ensuring Environmental Friendliness of Products

Ensuring the environmental friendliness of products for customers and the environment is paramount. We are conducting assessments on the environmental friendliness of each product by analyzing for hazardous ingredients in raw materials and finished products. Related analysis and assessment procedures are shown below:

Procedures for Ensuring Environmental Friendliness

Analyses of Environmentally Hazardous Materials	<ul style="list-style-type: none"><li>■ Analysis of the top six RoHS regulated materials (Pb, Cd, Hg, PBBs/PBDEs)</li><li>■ Analysis of 9 Phthalates* (DMP, DEP, DIBP, DNBP, BBP, DEHP, DNOP, DINP, DIDP)</li><li>■ Analysis of extra regulated materials requested by client (RoHS and heavy metals)</li></ul>
TVOC Analysis and Assessment	<ul style="list-style-type: none"><li>■ Raw materials/Finished Products: TVOC/FA* and individual VOC* analysis</li><li>■ Assessment on TVOC/FA emissions: Raw materials and finished products for construction supply/automotive interior</li></ul>

\* Phthalates: Chemical additives used to soften plastic.  
\* TVOC/FA: Total volatile organic compounds/Failure analysis.  
\* VOC (Volatile Organic Compounds): Chemical substance that generates photochemical oxidizing materials such as ozone, which promote smog creation by triggering a photochemical reaction in the air.

Eco-friendly Plasticizer

**Status:** Supervision and regulation over the use of chemical substances are being reinforced worldwide amid higher interest in environmental protection. Phthalate-based plasticizers are suspected of containing environmental hormones. Dioctyl phthalate (DOP, Di 2-ethylhexyl phthalate) has been designated as a harmful substance and its use will be banned in Europe and other countries, beginning in 2013. Recently, the use of DOP is being banned in products for children, including toys.

**Our solution:** We are developing and producing environmentally friendly plasticizers\*, such as HCCFLEX SP-390 (DOTP), which can replace phthalate-based plasticizers, while retaining good workability, material properties, and stability. We are also making efforts to develop new plasticizers with enhanced eco-friendliness, stability, and workability. Hanwha Chemical's new plasticizers have been tested for toxicity to ensure safety, and registered in foreign countries as new materials.

\* Plasticizer: An organic substance added to plastic or paint to improve processability in a high temperature.

Eco-friendly Halogen\* Free Compounds

**Status:** International organizations and environmental activist groups are pushing for more stringent regulations, such as RoHS and REACH, on materials that are hazardous to the environment and the human body. Furthermore, there are growing requests for restrictions on the use of raw materials suspected of containing hazardous properties such as halogen\* containing PVC, BFRs (Brominated Flame Retardants\*) and CFRs (Chlorinated Flame Retardants), and for the introduction of environmentally friendly alternative materials.

\* Halogen: Elements such as fluorine, chlorine and bromine, that are potentially hazardous to the human body and cause problems in the endocrine system.  
\* Flame Retardant: Chemical additive used to improve the flame retardant properties of plastics.

**Our solution:** We are developing eco-friendly compounds for home appliances and construction supplies that contain choice properties required for power cable jackets, and bear non-flammable characteristics.

PSR (Paste Resin) for Eco-friendly Wallpaper

**Status:** We are closely collaborating with wallpaper manufacturers to eliminate hazardous additives (phthalate plasticizers, heavy metal stabilizers) that are used in the production of PVC wallpaper, and to produce low-VOC products.

**Our solution:** We are currently developing PSR appropriate for manufacturing eco-friendly wallpapers. We also eliminated VOC generated from PSR, while replacing the emulsifier with an eco-friendly additive. In addition, we are developing low-viscosity PSR to minimize the use of volatile compounds in the wallpaper industry.

Secondary Battery Materials

**Status:** The market for secondary cells, which are rechargeable batteries widely used in mobile phones, automobiles, robots and electricity storage, is continuing to grow. In particular, as research into zero-emission electric vehicles has grown more active, the industry for highly stable secondary cell materials is growing as well.

**Our solution:** We are developing active materials (anode/cathode) for the lithium-ion secondary battery, which is a next generation electric/electronic component. We are currently producing LFP, an cathode active material with excellent stability and durability, using a supercritical hydrothermal synthesis method.

- LFP supercritical hydrothermal synthesis method has been certified as green technology.
- LFP ecological/environmental toxicity test; registration as a new chemical in China and Taiwan; acquisition of chemical material safety data sheet.

We are also pushing for commercial production of LFP-CNT products developed with our base technology as well as development of LFMP/LCP and high-capacity layered products.

Highly Efficient Next-generation Solar Cells

**Status:** In the photovoltaic market, world-class businesses are engaged in strong competition for technological development. We are focusing research on EWT\* single crystal rear contact solar cells to develop high efficient cells with 20.3% efficiency.

**Our solution:** We are heading efforts for the development of highly efficient (21% or higher) solar cells, including EWT and back-contact solar cells. As a member of the consortium formed with universities and research institutes, we are also carrying out a government-supported project to develop non-contact electrode-forming technology in preparation for the use of thin wafers.

\* EWT: A backside electrode solar cell with its total electrodes installed in the back. It is a highly efficient solar cell that can be produced in a low-cost process similar to standard solar cells.

New Hydrogen-storing Nano Materials

**Status:** Hydrogen is considered the ultimate energy source, as it is nearly inexhaustible, and produces water as its only byproduct. Solving the problem of safe hydrogen-storage is critical if we are to lead in the coming hydrogen economy.

**Our solution:** We have developed a scaffold-transition metal hydride ion compound material as a candidate material for hydrogen storage, based on the Kubas binding\* theory which states that the absorptivity of hydrogen molecules can be greatly increased in special circumstances. This method is safer than existing methods using high pressure physisorption, while allowing reversible high capacity hydrogen storage. The material produces less byproduct and requires less post treatment than normal chemical bond, thus more eco-friendly.

\* Kubas Binding: A special bond which forms between transition metals and hydrogen molecules.



# Strategy for Environment, Health & Safety



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We are establishing world-class safety and a health management system and culture to fulfill our responsibilities for sustainable growth and environmental preservation.

## Environment, Health & Safety Policy

We were the first in Korea to declare a corporate Health, Environment, and Safety Program in 1991. The environment, health, and safety are recognized as critical pillars of corporate management for sustainable development and social responsibility.

### ECO-YHES

ECO-YHES means Yes! Health, Environment, and Safety set against the backdrop of a forest symbolizes sustainability and social responsibility.



## EHS Committee

The company's Environmental Safety & Health Committee informs employees of environmental safety-related priority items and plans set for each year in connection with a need to push ahead with consistent policies and garner favorable results. The committee also encourages all departments to pour all possible efforts into improving results in environmental safety & health activities, reminding them of top management's firm commitment to them.

### Environment, Health & Safety Policy

We understand Environment, Health & Safety as the company's intrinsic values and will strive to conduct the following activities to ensure the continued development of the company and fulfill our social responsibilities:

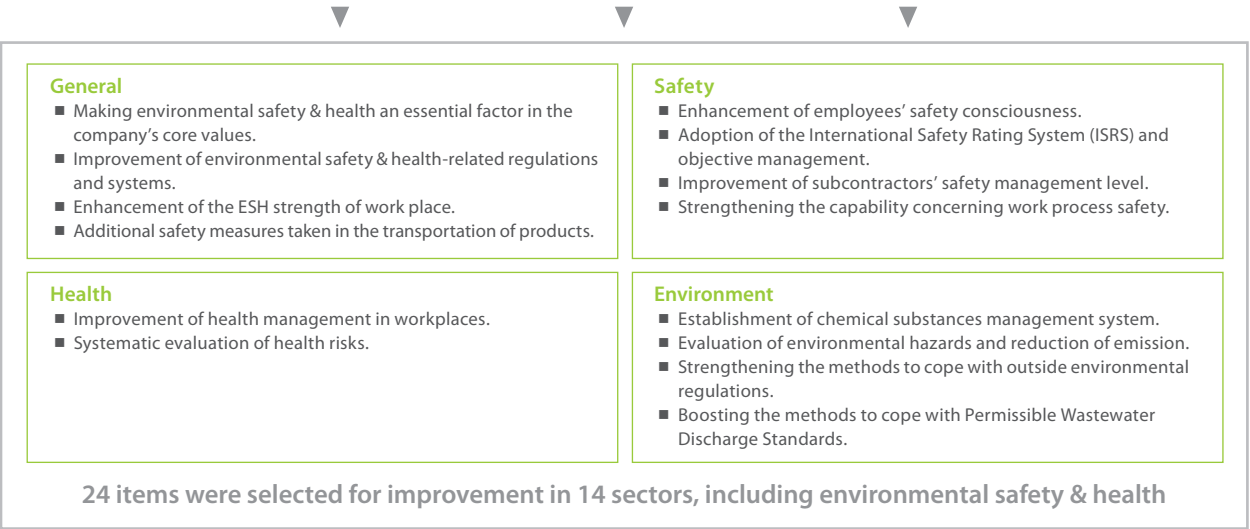
1. We will establish an advanced environment, health and safety management system by considering these issues as our top management objectives, while striving to achieve continued improvement in performance.
2. We will do our utmost to ensure the efficient use and fundamentally control of resources and energy, and reduce the emissions of environmental contaminants in the entire business process.
3. We will improve the health of employees by promoting a safe work environment and continued improvement, and minimize the possibility of potential accidents and property losses.
4. We will strive to realize an environment, health and safety culture where entire stakeholders including employees, local communities, customers and government are all satisfied, and comply with related regulations.



## Development and Implementation of Strategy to Advance Environmental Safety & Health Management

We have selected 24 items for improvement in 14 sectors concerning environmental safety and health, and we are monitoring the quarterly improvement objectives in an effort to establish and operate a safety and health system that meets international standards, and to instill accountability in the entire process of business operation.

Objective: Attaining an environmental safety grade that meets international standards and instilling accountability in the entire process of business operation



## ESH Management Certificate

In an effort to consider ESH in the entire process of the business operation and planning, executing, improving and monitoring our ESH activities, we have introduced diverse ESH management systems including ISO 14001\*, OHSAS 18001\*, and KOSHA 18001\*. Also, we are managing the data on our ESH objectively through third party evaluation with regard to greenhouse gases and other environmental emissions.

\* ISO 14001: Environment management specifications with highest significance among ISO 14000 series, the international standard on the environment management.  
\* OHSAS 18001: Occupational Health & Safety Management System 18001.  
\* KOSHA 18001: Korea Occupational Safety & Health Agency.

## International Safety Rating System (ISRS<sup>7</sup>)

We are aiming to achieve Level 8 from the ISRS by 2015 to enhance our competence as a global leader. The Yeosu and Ulsan Plants both achieved Level 6 from ISRS in 2012.

### International Safety Rating System (ISRS)

ISRS is one of the internationally accredited safety management evaluation systems. It offers a systematic analysis concerning 20 safety management items. We are carrying out safety management activities and aiming to achieve a Level 8 from the ISRS. (Level 8 of ISRS<sup>7</sup> is given to the top 5% of those global companies that are pursuing ISRS<sup>7</sup>.)

## Key Milestone in 2012

### Received Prime Minister Award in the 11th Korea Industrial Safety Awards

As a result of continued interest and improvement efforts in safety and fire prevention, coupled with achievements such as the acquisition of the Space Safety Certificate and the introduction of an advanced safety management system, Ulsan Plant 1 received a Prime Minister Award in the 11th Korea Industrial Safety Awards held in November 2012.

### Achieved Level 6 from ISRS<sup>7</sup>

The Yeosu and Ulsan Plants each achieved Level 6 from ISRS<sup>7</sup> in 2012 after they were evaluated for ISRS<sup>7</sup> by DNV Korea in an effort to ensure continued improvement of its ESH activities through an objective and advanced safety level assessment.

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Responding to Climate Change



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We have established a “Mid/long-term Master Plan for Low-Carbon Green Growth by 2020.” Every year, each project is reviewed for its risk and opportunity and followed by a revision of plans accordingly.

Climate Change Response Strategy

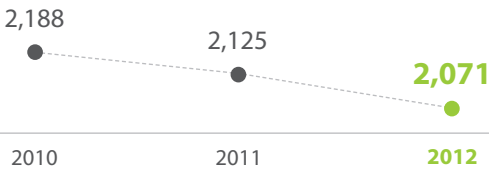
The petrochemical industry requires a great amount of energy. This industry emits more carbon dioxide (CO<sub>2</sub>) than any other industrial sectors, with the exception of the primary metal industries, such as iron & steel and foundries. Thus, we have been placed on the government’s greenhouse gas/energy target management list. As one way to address this, we are operating a voluntary greenhouse gas reduction program that is based on our developed guideline to cope with climate change more effectively.

Mid/long-term Vision and Target

**Vision:** Green Global Chemical Leader, sustainable through green growth.

**Target:** 15% reduction of CO<sub>2</sub> emissions vis-à-vis BAU by 2020.

Greenhouse Gas Emissions Yearly Trend  
(Consolidated amount for Head Office,  
Daejeon R&D Center and the Yeosu/Ulsan Plants)



Strategies and Key Projects

Our mid/long-term master plan and action plans are outlined below. Every year, each project is reviewed for performance and followed by a revision of plans accordingly.

Low Carbon Manufacturing

- Improve energy efficiency and adopt high-efficiency facilities.
- Build waste energy recycling networks within the industrial complex to reduce CO<sub>2</sub> emissions.
- Expand the share of renewable energy.
- Review feasibility of energy (fuel) conversion.

Low Carbon Infrastructure

- Establish a GHG energy management system.
- Establish the in-house emission trading and carbon accounting systems; respond more proactively to government agencies and public affairs.
- Reinforce capability for low carbon, green growth; participate in pilot government-initiated projects.
- Enhance corporate transparency through disclosure of carbon-related information.

Voluntary and Systematic Management of Greenhouse Gas and Energy; Proactive Activities for Greenhouse Gas Reduction

- Establish the in-house greenhouse gas/energy calculation criteria and calculation of emissions based on the 2005 Intergovernmental Panel on Climate Change (IPCC) guidelines.
- Conduct a third-party inspection every year, beginning in 2010, as the government’s list of greenhouse gas/energy target management.



Greenhouse Gas Reduction Activities

Carbon Disclosure Project (CDP)

The Carbon Disclosure Project is a global program that provides investors in the climate change issue with the management strategy and data collected from listed companies all over the world. The company has been a member of the project since 2009 along with other global companies hailing from over 60 countries, and in 2011 it was selected as an exemplary company in the Korean raw materials sector.

Participation in a Trial Run of Emission Trading Scheme

The emission trading scheme is the governmental program for tradable emission permits that will be effective beginning in 2015, where companies are required to purchase an emission permit should they emit CO<sub>2</sub> gases larger than their respective quota, or sell them in an opposing situation. We have accumulated rich experience and know-how in greenhouse gas reduction by participating in a government program trial run since 2012. Based on such competence and expertise, the company will proactively participate in the Emission Trading Scheme in Korea and other countries, effective beginning in 2015.

Greenhouse Gas/Energy Consolidated Management System

The company deployed a system for consolidated management of its performance in reducing greenhouse gas and improving energy efficiency. The greenhouse gas/energy consolidated management system, or H-GEMS, allows for an integrated management and search for energy consumption status throughout the entire business operation by linking with the intranet system, while helping the company use and analyze the data in diverse ways for prompt responses to situations. The company will push for a more effective management of its energy conservation activities by capitalizing on the system’s strength.

Hanwha Chemical Greenhouse Gas/  
Energy Consolidated Management System >



Status of Greenhouse Gas Reduction Projects

We invested about KRW 2.6 billion in 2012 in a total of 125 greenhouse gas reduction projects to ensure low-carbon production and to maximize energy efficiency in the production plants.

Reduction Result

	2010	2011	2012
Greenhouse gas reduction result	23,071 tons	12,174 tons	27,109 tons
Energy reduction result	3,651 (TJ)	1,998 (TJ)	1,713 (TJ)
Amount invested	KRW 1.96 billion	KRW 3.15 billion	KRW 2.59 billion
Major programs	<ul style="list-style-type: none"><li>■ Optimization of LDPE steam operation system.</li><li>■ Energy saved by utilizing exhaust low pressure steam.</li></ul>	<ul style="list-style-type: none"><li>■ Condensed steam saved by supplying 33% caustic soda.</li><li>■ Energy saved by applying performance diagnosis system.</li><li>■ Steam saved by replacing VCM incinerator.</li></ul>	<ul style="list-style-type: none"><li>■ Replacement of electrolytic bath, membrane and electrodes.</li><li>■ Improvement energy efficiency by adopting Plant Triage (Process Operational Efficiency Enhancement Program).</li><li>■ Raised hydrogen boiler operation rate by minimizing hydrogen emission.</li><li>■ Expanded 25% NaOH plant.</li></ul>

Energy Efficiency Improvement through Electrolytic Bath Overhaul

A facility to decompose salt water to chlorine and caustic soda through an electrolysis apparatus, the electrolytic bath consumes a substantial amount of energy that amounts to a large share of production costs. Therefore, lowering the energy consumption of the electrolytic bath can improve the overall energy efficiency of the plant and reduce costs significantly. Yeosu Plant, armed with many different electrolytic baths supplied by diverse manufacturers and competitive operational capabilities, has been striving to lower electricity consumption. The company lowered the electricity bill even more in 2012, by introducing electrodes that can be operated at low voltages and hence improve the power consumption efficiency.

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Environment Conservation Efforts in the Workplaces



As a responsible member of the local community, we have stringent standards and monitoring systems in place that control the emission of environmental contaminants and chemicals.



Conservation of the Atmospheric Environment

Our workplaces located in national industrial complexes in Yeosu and Ulsan are subject to strict emission control. We set more stringent internal permissible emission standards than what is stipulated under the law in an effort to improve air quality and maintain a pleasant workplace atmosphere. The company is providing around-the-clock monitoring for potential environmental contamination with this system, and treats the emitted contaminants with the pollution prevention system. In addition, the company is striving to improve its air pollutant reduction efficiency by conducting scheduled maintenances and inspections on the facility. Ulsan Plant 3, in particular, went further in their effort to reduce contaminants in 2012 by changing the derivative fuel currently used for the boilers to clean LNG.

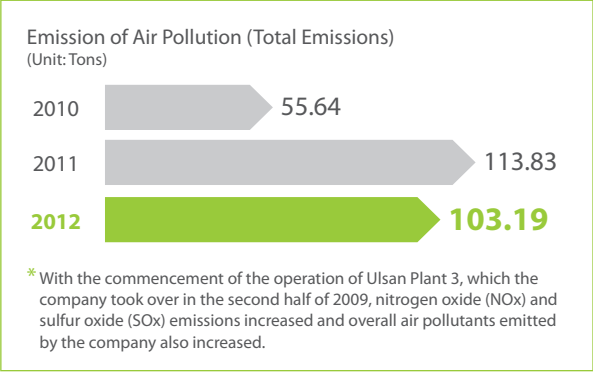
Operation of Additional LDAR\* System

We are continuing to expand the LDAR System to all workplaces for quantitative management of the sources of harmful chemical substance emissions. The Yeosu Plant finished expanding the system to the OXY4·CA4 Purification Process, which was newly established in 2010, and the existing PE Production Team-2 Purification Process, in July 2011. The Ulsan Plant will also adopt the LDAR System in the first half of 2012 through the establishment of inventory related to Xylene and Octanol.

\* LDAR (Leak Detection and Repair): a system for regular measurement of chemicals emitted from non-point sources, i.e. valves, flanges, and pumps of production facilities. In the event of out-of-range measurements, site inspection and Maintenance Machinery Team are called upon.

Analyzing Air Pollutants In/Out of Plants

For hazardous chemicals used in the plants, we designated monitoring points along the plant peripheries and analyzed air pollution levels multiple times every quarter. Within the plants, real-time monitoring devices were installed to prevent leakage. For sulfur oxides, which impact crop harvests, with other resident companies in the Yeosu Industrial Complex, we carry out environmental impact assessments around the plants twice a year and compensate the neighbors for harvest volume reduction. The Ulsan Plant was designated by the Ministry of Environment as a pilot plant to self-run the air pollutant monitoring facility and computerize its operation log, while minimizing malodorous smells by identifying the causes of such stench with the odor map and preemptively eliminating the source of those unpleasant smells.



Water Resource Protection

We are committed to reusing wastewater occurring in plants in other processes to reduce the amount of water used and reduce the amount of wastewater as much as possible through the operation of wastewater recycling facilities.

Wastewater Management

To reduce regulatory risks, Yeosu and Ulsan Plant 2 built their own wastewater purification facilities, where wastewater is reprocessed after the initial processing. At Ulsan Plant 1, a public wastewater purification facility began operating in February 2011.

Establishment of Wastewater Treatment Facility

In 2011, the PVC Production Team of the Yeosu Plant came to meet the Permissible Wastewater Discharge Standards (vinyl chloride: 1mg/L) by establishing a facility for removing vinyl chloride monomers (VCM) remaining in wastewater to be prepared against ever-more stringent regulations. Ulsan Plant 1 installed a facility to reduce EDC, a harmful chemical substance in wastewater before discharging in its VCM process. Ulsan Plant 2 expanded a biological wastewater treatment process to reduce VCM in wastewater.

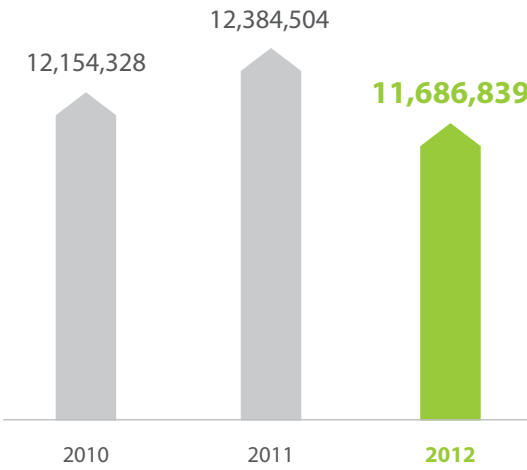
Stream Protection Activities

The Yeosu and Ulsan Plants have joined in stream purification activities, with the former assuming the responsibility for the Nam-su Stream and the latter for the Mugeo Stream. Their employees, jointly with local NGOs, have planted flowers on an annual basis.

Optimization of Water Usage

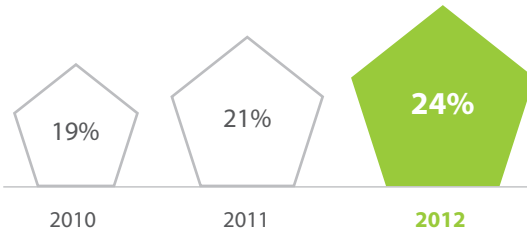
The Yeosu Plant has increased its water usage efficiency by about 10%, compared to three years ago in 2009, through consistent improvements in production process and facility maintenance.

Amount of Water Used  
(Unit: Tons)



\* In 2012, the company's total amount of water used decreased thanks to the increase of wastewater recycling in the Yeosu and Ulsan Plants through activities by the wastewater reduction task force as well as from annual facility repair and maintenance.

Wastewater Recycle Rate



Key Milestone in 2012

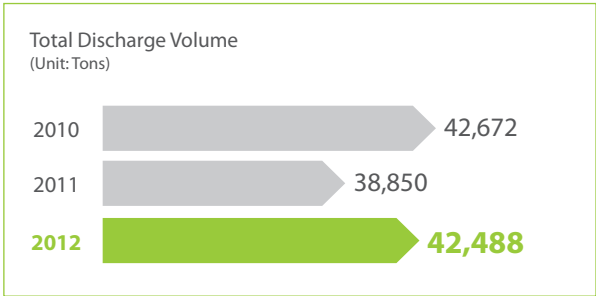
Operation of Wastewater/Waste Reduction Task Force

The Yeosu and Ulsan Plants launched the wastewater/waste reduction task force in 2012 for stable management of wastewater/waste, and secured about 1,000 tons of wastewater/waste reduction potential as a result of recycling wastewater in the existing process or exploring items for wastewater/waste reduction. The Ulsan Plant is also pushing ahead with a plan to reduce wastewater by 19.4% (227,208 tons) and disposed waste by 8.1% (952 tons), hence bringing KRW 2.485 billion worth of tangible and intangible benefits to the company.



Wastes Disposal and Soil Management

We are encouraging our employees to reduce waste disposal in the entire business process and increase the share of recyclable waste. As part of such efforts, we collect inevitable waste generated during the packaging process and hand them over to a dedicated waste recycling business. We are also managing all waste from their sources for establishing a recycling economy by running various waste reduction programs.



Periodical Inspection of Waste Disposal Contractors

We make our best efforts to improve the work process to maximize waste recycling and attain proper waste disposal contractors. We also carry out an inspection of waste disposal contractors every year to ensure that they dispose of waste from the company properly in accordance with the law.

Soil Pollution Inspection

In 2012, we conducted an inspection of soil pollution levels affected by oil storage tanks with the focus on BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) and TPH (Total Petroleum Hydrocarbon) under the Soil Environment Conservation Act, Article 13. The Ulsan Plant passed the soil pollution inspection related to TPH in heating oil tanks for the employee housing complex.

Distribution of Safety Guidelines for Liquid Waste Transportation

The Ulsan Plant distributes safety effluent guidelines for the transportation of liquid waste and supplies emergency detailed responses for the relevant truck drivers in an effort to prevent safety accidents. In anticipation of the commencement of the zero ocean dumping of land-based wastes requirement in 2014, we are also reducing waterborne waste disposal by revamping our environmental facilities.

Asbestos Inspection

We carried out asbestos inspections on buildings within plants for the safety of employees under the Occupational Safety and Health Act, Article 38, and the Asbestos Safety Management Act. We have established relevant work standards for tagging of the materials that contain asbestos, and drawing up of an asbestos map for proper management and systematic removal or replacement of asbestos as required.

Chemicals Management

In an attempt to minimize hazardous impacts on the environment, a chemical reduction program is underway along with the development of guidelines for safe handling and prevention of intoxication along the distribution channel.

Chemical Control Under a Global Scheme

We are operating the Chemical Integrated Management System, which is a lifecycle management system for chemicals in anticipation of the implementation of domestic and global environmental regulations including REACH\*, RoHS\*, GHS\* and K-REACH, thereby minimizing the potential impact on the environment and preventing health and safety accidents among employees. We also completed the registration of VCM, ECH, and Chlorine with the EU REACH (Registration, Evaluation, Authorization and Restriction of Chemicals). We stay committed to strict chemical control aligned with the global scheme.

\* REACH (Registration, Evaluation, Authorization and Restriction of Chemicals): European Community regulation on chemicals and their safe use, which regulates registration, assessment and approval process of chemicals according to their respective toxicity.

\* RoHS (Restriction of the Use of Certain Hazardous Substances): Electrical and Electronic Equipment Directive that bans the use of six regulated materials (Pb, Cd, Hg, PBBs/PBDEs).

\* GHS (Globally Harmonized System): Worldwide classification and labeling system of chemicals according to their toxicity.

Minimize Leak of Hazardous Chemicals

We are installing and managing relevant facilities and sensors to prevent the leak of toxic chemicals from entire potential sources of hazardous materials. For the quantitative management and improvement of potential toxic chemical sources, we introduced the Leak Detection And Repair (LDAR) system, thereby locating and containing sources of chemical leaks.

SVHC Free\* Product Certification

We obtained certification for the content of 49 SVHC in our products from an authorized institution (Korea Testing & Research Institute) and provided relevant information to customers. We also responded actively to an annual expansion of SVHC.

\* SVHC (Substances of Very High Concern) Free: Products with less than 0.1% of the reported substances in terms of weight.

Chemicals Management System

We are building a chemicals management system in an attempt to manage those factors that may compromise the safety of employees and customers or harm their environment. This system will control the entire production process by ensuring adequate management of the chemicals database and by overseeing toxic chemicals, the supply chain, consumption amounts and various statistics.

Health & Safety Management



To ensure a pleasant and safe workplace environment, we are implementing a culture of health and safety management focused on prevention, such as rigorous loss prevention and improvement of partner safety standards.

Loss Prevention

Everyone working in our company has a right to work in a safe and pleasant environment. The company is pushing ahead with a culture of health and safety management focused on prevention, by running diverse specialized sub-committees including the Change Management Committee and the Reactive Chemicals Subcommittee. These committees are both operated under the Safety and Loss Prevention Committee, in an attempt to prevent personnel and material loss in our workplaces.

We are also fostering a principle-based safety management culture in the company by making it compulsory for the labor and management to participate in a two-way communication procedure such as the Industrial Health and Safety Committee and the Health and Safety Council with Resident Partners in the event that the company establishes and modifies the application of health and safety management principles.

Job Hazard Assessment Before Work (Take 5)

We make it compulsory for everyone to attain a work permit and conduct a work hazard assessment together with the Maintenance Team, Production Team and partners before they start work. By raising awareness on the major work hazards and reinforcing preventive measures, we are controlling those work hazards proactively and preemptively.

What is Take 5?

Take 5 is a daily session that the safety manager, maintenance/electricity system technician and employees of partner companies take five minutes to review a checklist about work preparedness and work hazards.

Key Milestones in 2012

We are striving to make our workplace safer by improving the safety standards of our partner companies as well as our own. The company ensured that the safety budget of partner companies, in itself an investment on accident prevention, may reflect the market reality. We are also striving to raise the safety awareness of our partner companies by awarding prizes to them based on the assessment of their health and safety preparedness.

Partners Consultations

Managers and CEOs of partner companies are invited to safety meetings in an attempt to foster shared growth and culture of health and safety management. The Ulsan Plant is implementing Health and Safety Supporters and a Health and Safety Win-Win Collaboration Program, thereby helping them improve their respective health and safety standards. These programs also help establish a self-regulated safety assurance system through the partner company hazard assessment and revamping of the health and safety assurance budget appropriation procedure.

Distribution of Manual for Drawing up Permit to Work

Our most concerted efforts go into preventing safety accidents by requiring supervisors to familiarize themselves with and utilize the manual for drawing up a permit to work. In 2012, we created a flash animation-based education material on safe work procedure so that employees of subcontractors may understand it better, while the Ulsan Plant has been using the Workplace Safety Checklist beginning in 2012 to ensure the compliance of the safe work procedure.

Safety Drills against Emergency Situations

The prevention of a fire, explosion or chemical leak is of paramount importance for chemical plants. In the event of an accident, it is critical to minimize loss through prompt response. In an attempt to ensure total preparedness against emergency situations, we are conducting repeated drills based on the emergency drill scenarios of key risk factors. We also signed an agreement for mutual cooperation with neighboring businesses in the industrial complex in an effort to minimize loss through cooperation in the event of a safety accident such as a toxic chemical leak.





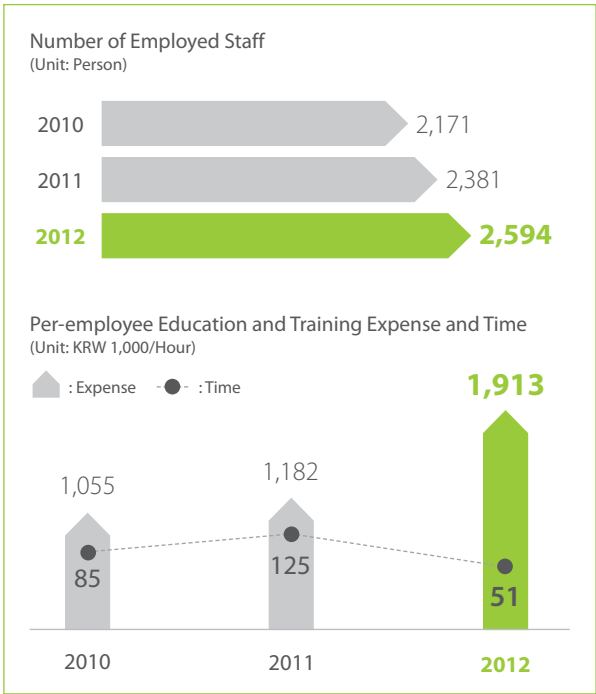
Talent Development



Amidst forays into global markets and the diversification of business sectors, we carry out educational programs and adopt personnel systems required to train our employees to meet their needs.

Number of Employed Staff

The total number of employed staff of Hanwha Chemical as of the end of 2012 was 2,594, a 9% increase from 2011. The company continues to hire new employees to prepare for entering new global businesses; the number of female employees has steadily increased every year to account for some 12% of the entire current staff. By age, employees between 41 and 50 account for the largest share followed by those under 30. The number of foreign employees has increased to 14.



HR Development System

We operate a variety of human resource training programs designed to strengthen our employees' capabilities in connection with a need to achieve the vision of Global Chemical Leader 2015. The programs include business skill training sessions tailored for different levels of employees and on/offline language proficiency sessions, as well as book clubs and cultural lectures designed to promote a creative workplace environment.

Expert Training Programs

We run programs designed to help employees enhance their skills in specialty areas. And we also supporting to accomplish diplomas, including MBAs, both at home and abroad.

Engineers course	Sales staff course	Researchers course
Diploma from a foreign university	Diploma from a domestic university	Executive MBA
Lectures outside the company	Online job skills courses	

Global Expert Training Programs

We help employees enhance their capabilities as global experts through overseas training programs or domestic intensive language courses. We also encourage talented employees to obtain diplomas at universities in foreign countries, while making efforts to train employees as regional experts.

Conference participation	Language proficiency	Training sessions in foreign countries (for engineers)
Regional experts	Global job training	Intensive foreign language courses
Training sessions in China	In-house language programs	Support for private language institutions

Programs for Training Future Leaders

We host leadership educational sessions to train future business leaders. We also run a mentoring system designed to help new employees fulfill assignments in a timely and efficient manner.

Educational session for new employees	Educational session for experienced employees	Mentoring
Management curriculum by position level		

HR Policy and Performance

We do our best to develop capable employees, motivate individual employees, and provide performance-based compensation. Policies such as special promotions, annuity, and continuing education credit requirements are adopted for such purposes.

Performance-oriented HR Policy

Young talent full of creativity and passion are fully encouraged to leverage their assets. Employees can be promoted within a minimum of two years according to their competency and performance.

Annual Salary System

All employees are subject to an annual salary disposition, where they individually negotiate annual compensation according to their competency and performance evaluations. Employees also receive a certain percentage of company profit, depending on the performance of their division/plant (performance incentives). We are proud to offer the highest level of compensation in the industry. Our average monthly salary paid to newly hired employees in 2012 was 352% of the legal minimum wage.

Welfare & Benefits

In addition to the legally required welfare programs, we provide support for medical expenses of our employees and their families, as well as congratulatory bonuses and condolence payments. We also offer 'fun events' and access to various clubs to enable open communication among employees.

Smart Work in Sales Division

We started the Smart Work system in November 2012, in which the company's sales staff is allowed to work from anywhere and at any time without the need to come to the office by relying on the benefits of smart devices. The system aims to sharpen the competence of sales staff through innovations in work style and organizational culture and enhancement of customer-centric sales activities.

Labor-Management Partnership

We allow employees to join in all labor union activities as desired. We also hold periodic labor-management meetings under the Collective Agreement and inform employees of important management-related matters. Additionally, we do our best to maintain a cooperative relationship between employees and management and between labor unions. By the end of 2012, a total of 800 employees (32%) were members of the labor union. We increased the level of our labor-management partnership by maintaining a no-dispute status (9 years for the Yeosu Plant, 14 years for the Ulsan Plant).

Labor-Management Cooperation Activities in 2012

- Ulsan Plant:** Labor Union Welfare Chief received Chamber of Commerce Chairman's Award (May. 1, 2012)
- Ulsan Plant:** Labor-Management Ceremony for Workplace Safety (Jan. 7, 2012)
- Ulsan Plant:** Labor-Management Hanmaum Hiking (Apr. 1~Jun. 30, 2012)
- Ulsan Plant:** Labor-Management volunteer activities in rural areas (Sep. 21/24, 2012)
- Yeosu Plant:** Labor-Management Hanmaum Track Meet (Jul. 4, 2012)
- Yeosu Plant:** Labor Union Leader Lee Hang-ju attended the government-labor council chaired by the Ministry of Employment and Labor.
- Ulsan Plant:** Recognized for good labor-management practice (Jun. 21, 2012)

Diversity and Anti-discrimination

We comply with ILO conventions and domestic labor laws, banning child labor and forced labor. We leave no room for discrimination based on gender, religion, political affiliation, social status, nationality, or ethnicity in the process of hiring, assignments, promotions, compensations, or training. We also utilize management training and diverse general courses to build mutual respect and minimize possibilities for any human rights infringement. The share of foreign and female employees has increased every year; in 2012 foreign employees increased by 40% year-on-year while some 33% of newly hired employees were female.

Organizational Culture Free from Sexual Harassment

We are committed to appointing a gender equality counselor in each workplace to prevent sexual harassment and require all employees to attend an annual educational session for the prevention of sexual harassment. We promote an organizational culture free from sexual harassment by establishing stringent rules on punishments against any perpetrator.

Proactive Maternity Protection at Work for Female Employees

We are striving to create maternity protection at work by implementing diverse programs such as the installation of a Women's Lounge in each business operation and reduction of work hours during pregnancy. We are also promoting a friendly workplace environment for pregnant employees by differentiating the necklace color of ID cards for pregnant employees and distributing guidelines for caring for pregnant women, thereby encouraging their workplace partners to be conscientious of any special needs. Furthermore, we also strive to help address their problems and difficulties by listening to their concerns through meetings designated for pregnant women and working mothers. We encourage female employees to use maternity leave.

Maternity and Parental Leave in 2012	
Return to work rate before and after maternity leave	Return to work rate after parental leave
100% (9 out of 9)	50% (1 out of 2)

Great Workplace (GWP)



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We put forth our best efforts to position our core values of challenge, dedication, and integrity into practice. We also encourage employees to feel a sense of Hanwha pride based on mutual respect and trust, and do our best to foster a pleasant workplace environment.

GWP Activities Based on Trust and Communication

We carry out GWP (Great Workplace) activities designed to help employees work in a rewarding atmosphere through mutual trust and a deep sense of pride as Hanwha employees. In such an atmosphere, we hope our employees will feel a sense of ownership and will help the company grow as a global business, achieve its vision, and establish a performance-oriented organizational culture.

We are committed to finding the best practices for all to follow to achieve the goal of GWP based on mutual trust and communication. To such an end, each team selects its GWP agent, who is designated to play a leading role in GWP activities, in an attempt to innovate corporate culture with positive employee participation. Our focus is to make the GWP culture take root through activities based on the GWP Code of Conduct.



Diverse communication is promoted to form consensus among employees and invite their positive participation. Examples of such efforts are: sessions designed to remind employees of HCC's vision and strategy, CEO management explanatory sessions, Good Morning CEO, questionnaire-based surveys on organizational culture, and online communication activities.

In addition, we strive to improve the welfare for female employees through diverse initiatives that include: meetings with female employees to promote a workplace environment conducive to long-term retention of top female talents; guidelines to care for pregnant women and distributing colored IDs; and the installation of a nursing room.

The company was recognized for its continued efforts to improve corporate culture through the receipt of four honors in the 100 Great Place to Work in 2012 Korea Awards: Grand Prix in the manufacturing segment; GWP Team Performance Innovation Prize; GWP Innovation Leader Prize; and GWP Fun Place to Work Prize.



GWP Code of Conduct

Expectations of supervisors

- Provide instructions clearly and consistently.
- Praise and encourage.
- Listen to opinions and offer feedback.
- Share business objectives and information.
- Assign appropriate rights and responsibilities.

Expectations of employees

- Behave in an appropriate manner.
- Carry out duties faithfully and earnestly.
- Observe principles and procedures.
- Commit to helping the organization fulfill its objectives.
- Maintain a positive and cheerful mindset.

Social Contribution



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In lieu of any insincere donations or one-time events, we are wholeheartedly committed to fulfilling our social responsibilities as active members of the community. Through our more personal commitment to inspiring hope and happiness in socially disadvantaged communities, we look to brighten the world for a better tomorrow.

Social Contribution Strategy

Our social contribution strategy aims to deliver the energy of hope to the community in order to increase positive values for humanity and promote healthy and environmentally friendly living through its social contribution activities.

Hanwha Volunteers

**Hanwha Chemical is Creating a Better Society and Brighter Future by Fulfilling its Responsibilities to Society through Sharing and Caring**

As much as we care for our dream, your dream is just as important. We are united in the single dream that we can create a society where everyone grows together by fulfilling their respective responsibility and through sharing and caring. Each company employee expresses deep care for their neighbors and the environment as a corporate citizen, while participating proactively in a variety of social contribution activities for the next generation.



**Hanwha Group Symbol for Social Contribution  
Happy Smile, Two Friends Facing Each Other**

From a distance, it looks like a happy child. Up close, it looks like two friends facing each other in a warm embrace. Love and devotion from Hanwha staff will ensure the healthy growth of our future leaders and bright smiles for everyone. Green symbolizes the present, nature, and the environment, and yellow symbolizes the future, culture, and welfare. Orange, used to bridge the two friends or in this case, the two generations, symbolizes love, attention, and passion for the future.

Records of Social Contribution Activities

The company allows employees to participate in social contribution activities during weekday work hours. It is a valuable opportunity for employees to develop their sense of belonging while also contributing to society.

(Unit: Person, Hour)

	2010	2011	2012
No. of participants	1,878	2,086	2,069
Hours	34,674	35,086	34,645

\* Excludes those working in overseas offices and others on leave of absence.

Records of Donated Funds

Donations

(Unit: KRW Million )

	2010	2011	2012
Social Welfare	797	1,612	2,261
Art and Culture	733	130	193
Community	508	442	221
Nurturing Future Leaders	1,855	3,860	813
Total	3,893	5,927	3,490

Matching Grants

We adopted Matching Grants to increase the participation and commitment of employees. Under the design, the company makes a financial contribution in proportion to the funds raised by employees. After the launch in 2002, we increased the company contribution rate from 100% to 150%. Entitled Funds for the Brighter World, they are allocated to many different programs.

(Unit: KRW Million)

	2010	2011	2012
Raised Funds	640	672	745



Social Contribution Programs

To ensure systematic and earnest implementation of our social contribution activities, we tailor our activities to the needs of each community we work in according to four different areas: Social Welfare, Art and Culture, Community and Nurturing Future Leaders.

Social Welfare for the Less Privileged

Multiple programs are being run to improve the social welfare of the less privileged. Youth soccer classes and a Youth World Cup have been organized to help low-income and disabled children develop creativity and engage in society. Vocation training programs for disabled youth are also being offered. Children of multicultural backgrounds can also receive help in developing their talents and adjusting to Korean culture.



Holding Culture & Art Events for Life Enrichment

We believe in the power of culture and art to enrich people's lives. With our full stewardship, the annual Symphony Festival (at the Seoul Arts Center) and Circuit Concerts are contributing to a higher, more valued appreciation for classical music. Meanwhile, the National Pottery Contest for the Disabled offers artistic experiences for the disabled.



Making Warm and Beautiful Communities

To create warmth and beauty in our communities, we carry out environmental protection campaigns (in and out of our business sites), bathing and medical services for the low-income or physically limited the elderly in rural villages, assistance to needy and vulnerable children, and home repairs.



Education and Public Campaigns for Future Leaders

Another focus of our social contributions is developing future leaders. The Chemistry Frontiers Festival for high school students who like chemistry, helps them discover science-minded talents. We have also supported the Bukil Academic Foundation, developing it into the best cultivator of talents in Korea.



Social Contribution Activities Tailored for Community

The company's head office, Daejeon R&D Center, and the Yeosu and Ulsan Plants each have a dedicated social contribution division for tailored community-relevant activities that they perform in close consultation with the local community and key institutions.



Head Office: Joyful Hands, Happy Hearts

(Creative Classes for the Children of Multicultural Families)

As of the end of 2012, some 140,000 foreigners hailing from 135 countries are estimated to have married with Koreans to build families in the country. We believe it to be very important to foster a social environment where children of those multicultural families can grow as a proud citizen in the country. We are offering them monthly creative classes by the company's head office in an attempt to enhance their self-esteem and sense of achievement, and teach them how to express themselves.



Yeosu Plant: Love Home Repair

(Home Repair for Welfare Facilities on Remote Islands and Elderly Singles)

We are also supporting elderly singles to ensure they live a safe and comfortable life with local welfare. Members of the Yeosu Plant social contribution team visit elderly singles, youth-headed households and people with disabilities five to eight times per year to fix home electrical facilities, repair roofs or replace wallpaper, making their living environments more pleasant.



Ulsan Plant: Party of Happiness for Hope Sharing

(Custom-designed Recreational Activities)

We don't want to stop at simply providing donations or assistance to individuals in need; be it a joyful sing-along or full-blown party, we are ready to join them for a quality entertaining time together to give them what they really want. Volunteers at the Ulsan Plant are fielding interesting-and sometimes heart-wrenching-stories from people to select the candidate site to visit every month. They then prepare everything from party decorations, entertainment and refreshments to ensure the party is a great quality time for the selected beneficiaries. The program is implemented in close consultation with the social welfare council in Ulsan City.



Daejeon R&D Center: Rainbow Camp & Honorary Teen Police Scouts

(Assimilation Program for Multicultural Families)

The company's Daejeon R&D Center is running a variety of specialized programs for foreign immigrants and their children to help them understand and assimilate into Korean culture through diverse family getaway programs including ski camps, culinary competitions and traditional village schools, which are designed to foster family bonding through the aforementioned excursions. The Center has also signed an MOU with Chungcheongnam-do Office of Education and appointed the children of multicultural families as members of the Honorary Teen Police Scouts, in an effort to help them stand up against bullying in the school, thereby enhancing their self-esteem.



## Shared Growth with Partners



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We provide full cooperation to subcontractors in connection with a need to enhance their technological capabilities and competitiveness. We put forth our best efforts to maintain a collaborative relationship with them based on mutual trust and maximize synergies from shared growth.

### Shared Growth Activities

We operate programs designed to provide financial, technological, and educational competitiveness enhancement-related support to our subcontractors in an effort to enjoy shared growth with them.

#### 1. Financial Assistance:

Cash payments, guaranteed fee support, shared growth funds, etc.

#### 2. Competitiveness Improvement:

New product development support, co-patent, tax consulting, BPS, etc.

#### 3. Mutual Trust:

Partner staff training, regular information hearing per issue, size expansion, etc.

#### 4. Enhanced Awareness:

Enhance awareness of employees on the shared growth.

### 2. Competitiveness Improvement: Partner Staff Training & BPS (Best PartnerS)

We provide support for customer businesses to attend seminars held at processing technology universities and technological lectures held in foreign countries. We distribute the Hanwha Quarterly Bulletin to a total of 1,463 contractors, which contains the latest useful information on accounting, tax, legal matters, environment, and safety.

Best PartnerS means “partners for success.” We strive to share our own technologies, knowledge, and know-how with customers to improve profits and to continue to grow together. In terms of energy savings, facility support, quality management, the environment, and health and safety strategies, we accurately define customer needs before offering our expert assistance and we received favorable responses.

### 3. Mutual Trust: Agreement on Shared Growth with Subcontractors

We signed an agreement on shared growth with a total of 133 subcontractors starting in December 2012. Through the agreement, we promised to provide diverse support for them, including support designed to assist them with sound financial operation and enhance their technological capabilities.

To enhance mutual trust between the company and partners, the company's CEO and executives make visit, while promoting shared goodwill through continued communication and special events including invitations to baseball games.

### 4. Enhanced Awareness: Employee Education

In an effort to enhance employee awareness on shared growth, we offer diverse education sessions. Executives and staff either attend seminars held outside or attend an in-house class offered by an external guest expert.



#### Hanwha Chemical's Partners



- Raw Materials
- Service Providers
- Transportation
- Proxy purchaser

- Purchasers of Hanwha Chemical Products

### 1. Financial Assistance: Full Cash Payment for Subcontractor-provided Goods/Services and Support for Shared Growth Funds

Since 2010, we have paid fees fully and timely without the use of credit, for the goods/services provided by subcontractors to prevent financial difficulty in their operations. Transportation businesses and sub-subcontractors doing business with us have also enjoyed such measures taken by us since December 2011. The company is also running a KRW 15 billion Shared Growth Fund, providing a total of KRW 5.4 billion in financial support to subcontractors.

## Procurement Policy & Supplier Evaluation



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We are committed to thoroughly controlling the entire purchasing procedure and to select suppliers in accordance with clearly defined evaluation criteria to contribute to our growth as a trustworthy business.

### Procurement Policy

Key sites comply with their own procurement guidelines, which were developed according to the procurement policy. The policy is to ensure that all procurement procedures (principle, application, criteria, material inspection, payments, and defectives) are predefined and executed. Each site signs procurement agreements after a full evaluation of the suppliers' quotes, supply capacity, track record, and reliability. We are advising our regional and overseas business operations to purchase via local suppliers.

### Supplier Evaluation

Suppliers are evaluated, pre-and post-supply, on their safety control organization and facilities, staff training, health screening, etc. Anti-pollution, waste management, and collection statuses are also assessed in addition to their business performance and credit ratings. Our policy stresses their responsibility to the environment.

### Support Provided to Reliable Suppliers

We provide businesses selected as reliable suppliers through an evaluation procedure with more opportunities to take part in biddings concerning their supply to us. We strive to develop more constructive relationships with them by inviting them to cultural events and informal meetings designed to engage their opinions, including complaints. We will keep promoting the spirit of “moving further ahead together than running faster alone” through sincere communication with our partners.

### Follow-up Evaluation of Contractors



- Safety program
- Safety supervisor



- Quality of collaboration
- Quality of products
- On-time delivery
- Credit rating



- Prior preparations
- Accident prevention
- QC compliance
- Supervision





## Customer Satisfaction



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A B2B company, Hanwha Chemical sells most of its products directly to major corporations and SME. We are supplying our products to customers in Asia and the rest of the world while providing services tailored for the needs of our customers. Earning the trust of our customers is of paramount importance to the company.

### Quality Assurance System and Quality Manual

We established our quality assurance system in accordance with the ISO 9001:2008 international quality management system in an effort to provide products with the quality that exceeds the expectations of our customers. The company's quality manual stipulates: the company-wide process and interaction required for the operation of quality assurance system; survey and resolution of customer complaints; and business process required for communication with customers and consistent quality improvement.



### Technology Share for Customer Development

#### Seminar for Second-generation Business Owners

As many businesses of our customers are run by second-generation ownership, we are operating various in-house management education programs for them. We invited second-generation managers to a seminar held in December 2012, where we discussed various macro-economic issues for 2013 as well as a new business strategy for SMEs in the era of low growth.

#### Processing Technology Seminar and Technology Exchange Session

Since 1988 the company has held the Processing Technology Seminar for customers where various company field expertise are shared with those representing our customers, thereby establishing partnerships built upon continued growth and trust. During the 57th PVC Processing Technology Seminar held in 2012, 47 customers were invited to our Ulsan Plant for a tour of the production line and a special presentation on the processability of PVC and facility maintenance know-how. We also invited tarpaulin processing businesses for a technology exchange session, where they exchanged information on the material property and processability of tarpaulin and were offered an opportunity to test analysis equipment.

### Customer Privacy Policy

The company is taking stringent measures to protect information by establishing a dedicated security assurance team and stipulating regulation on information security. In particular, we take extraordinary caution in handling information on customer privacy. We have an information security secretariat and an information security officer posted in each business operation, where they are striving to raise employees' awareness on the importance of information security while ensuring company employees and subcontractors to be fully versed and in compliance with information security regulations.



## Compliance Program (CP)



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As a global leader in the chemical industry, we are striving to enhance competitiveness through transparent and fair transactions and open up long-term opportunities for shared growth by maintaining cooperative relationships on an equal footing with subcontractors based on mutual trust.

### Fair Trade and Compliance Program

We operate programs for our compliance program in order to maintain an authentic business and we avoid implicit price collusion in an effort to protect consumers and to contribute to the balanced development of the national economy. We adopted the CP\* in 2003 to guarantee transparency and fairness. This has helped us prevent unfair cartels and ensure fairness in external relations in areas of marketing, procurement, and sales. As such we are protecting the company from potential loss arising from unfair trades while raising ethical standards as a global company.

\* Compliance Program (CP): An internal system operated by businesses to ensure employees comply with fair trade-related laws.



#### Seven Key Elements of CP

CP consists of seven elements: declaration by the management, designation of CP officer, distribution of CP handbooks, training programs, monitoring mechanisms, sanctions on violators, and documentation.

### Organization and Key Activities

We have a compliance secretariat in place through which employees are educated on fair trade, an internal monitoring system is implemented and fair trade-related laws and acts are reviewed.



#### Major Performances

In March 2011, the company pledged its compliance with the fair trade law followed by a special education session of the law in which the company CEO and executives participated in, in an effort to ensure our willingness for compliance. Through such efforts we elevated our supervision on the status of transaction to prevent any potential breach of law and act of cartel while monitoring the most recent development on the Fair Trade Act and sharing it with employees.

We also assigned a dedicated compliance officer who carries out diverse tasks, including activities designed to prevent breaches of law, and promotes participation in educational sessions and forums concerning fair trade. In 2012 the company faced no penalizations or sanctions for breach of the fair trade law.

# Ethics Management



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We carry out an ethical and transparent management campaign. Our employees are required to act in accordance with the Ethics Management Guidelines and report any suspected acts to management in connection with a need to grow as a reliable business that consistently stays on the right path.



## Status of Ethics Management

As a business committed to fulfilling its social responsibilities, we ask employees to carry out their business activities based on the in-house Ethics Charter announced in April 2003 and the relevant manual in an effort to adhere to transparency and fairness in all operations. We operate a separate organization dedicated to matters concerning ethical management.

## Organization



## Ethics Guideline

The Ethics Guideline was established with a key focus on compliance with the law and commercial customs, and respect for customers. It also serves as an important framework for our stakeholders.

## Ethics Management-related Reminders and SMS

On every special local holiday, when it is customary for Koreans to exchange gifts, we post a notice on the in-house bulletin boards and issue brief messages to employees as a reminder that they should refrain from accepting any gift presented to them that could be construed as an act of bribery. We ask the same of our subcontractors.

## Systems Concerning Information and Whistle-blowing

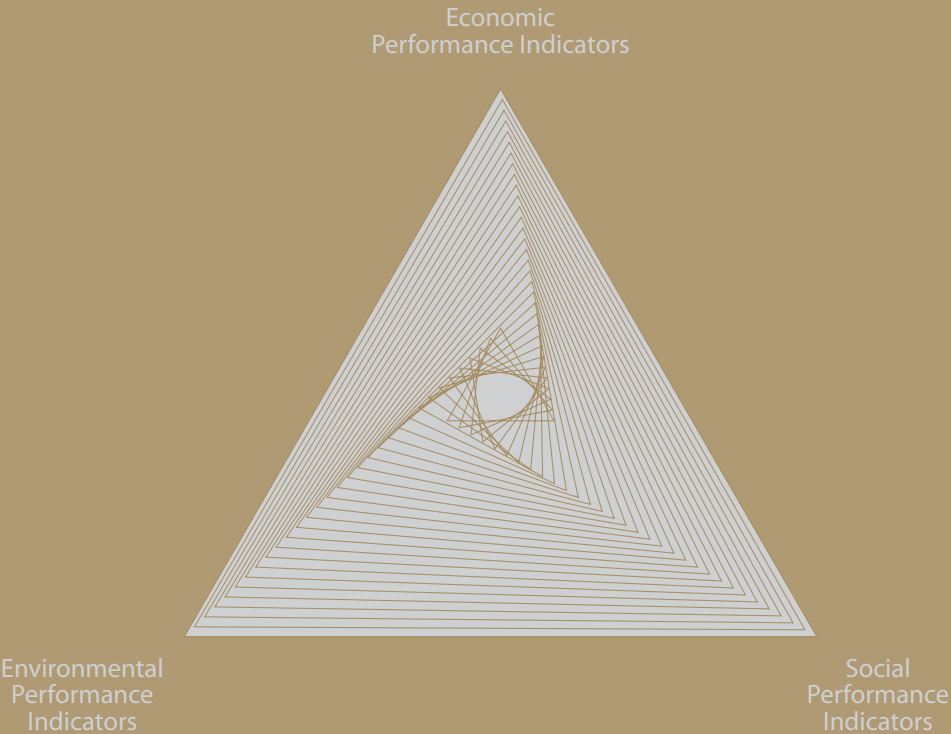
All stakeholders are invited to provide information or report any act perpetrated by or involving an employee suspected to be in violation of the Code of Conduct to the Ethics Management Secretariat via phone, fax, e-mail or website. The Secretariat strictly protects all informants and whistleblowers and maintains their identity as anonymous. As such, we are promoting a fair and rational work procedure in the company.

## Principles Concerning Ads and Sponsorship

We are committed to abstaining from improper marketing communication and carry out only legal advertisements and sponsorship on the principle of fairness and efficiency. We observe all existing laws and regulations concerning ads and have never been punished for violation.

# APPENDIX

# 4



TRIPLE BOTTOM LINE:  
ECONOMIC, SOCIETY, ENVIRONMENT VALUE CREATION



Economic Performance Indicators

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In 2012, our sales and operating income have both decreased rapidly due to challenging environments in the petrochemical market such as the global economic slump caused by the European financial crisis, slowing demand in China and the influx of low price products. Combined with the sluggish sales in the photovoltaic business, our sales and operating income stood at KRW 3,559.0 billion and KRW 141.2 billion, respectively, on a non-consolidated basis, and KRW 6,962.2 billion and KRW 5.2 billion, respectively, on a consolidated basis.

Non-Consolidated Financial Statement

\* Starting in 2011, we have made it a practice to report both non-consolidated and consolidated financial results in accordance with the K-IFRS, which includes the 39th and 38th financial statement.

	2011	2012
<b>Assets</b> (Unit: KRW)		
Current Assets	(1,224,262,478,360)	(1,033,550,064,440)
Cash and Cash Equivalents	265,131,669,575	192,162,614,676
Other Financial Asset	143,320,507,403	61,558,960,024
Trade Receivable and Other Receivable	503,454,273,919	467,313,729,120
Other Current Assets	10,301,291,272	9,557,714,308
Inventories	302,054,736,191	302,957,046,312
Non-Current Assets	(5,009,610,856,033)	(5,710,000,803,278)
Financial Asset Available for Sale	263,309,648,568	276,493,440,088
Other Financial Asset	20,792,752,515	31,978,610,967
Long-term Trade Receivable and Other Receivable	3,920,367,982	27,283,138,143
Investment in Associates	2,519,869,639,910	2,707,608,956,672
Invested Properties	180,360,441,122	180,697,338,081
Tangible Assets	1,965,779,585,155	2,427,504,245,098
Intangible Assets	55,345,968,850	58,406,285,786
Other Non-Current Assets	232,451,931	28,788,443
Total Assets	6,233,873,334,393	6,743,550,867,718
<b>Liabilities</b> (Unit: KRW)		
Current Liabilities	(1,228,215,496,877)	(1,373,921,330,453)
Account Payable and Other Payable	590,022,739,762	652,831,268,197
Borrowed Money	506,334,788,769	654,819,870,695
Other Financial Liabilities	36,517,425,702	36,657,429,236
Other Current Liabilities	10,802,696,221	13,474,221,186
Current Income Tax Payable	84,537,846,423	16,138,541,139
Non-Current Liabilities	(1,543,016,531,972)	(1,856,591,669,629)
Long-term Account Payable and Other Payable	1,130,575,400	1,130,575,400
Long-term Borrowed Money	1,253,686,893,416	1,404,309,795,986
Other Financial Liabilities	24,005,390,984	157,236,537,982
Confirmed Payroll Liabilities	112,166,040,590	148,073,064,522
Long-term Payroll Liabilities	3,686,540,000	6,600,940,000
Other Non-Current Liabilities	86,302,373	43,067,990
Deferred Income Tax Liabilities	148,254,789,209	139,197,687,749
Total Liabilities	2,771,232,028,849	3,230,513,000,082



Capital

(Unit: KRW)

	2011	2012
Capital Share	707,036,240,000	707,036,240,000
Capital Surplus	492,211,382,810	492,211,382,810
Other Comprehensive Gain/Loss Accumulation	60,049,431,181	68,062,119,009
Earned Surplus	2,203,344,251,553	2,245,728,125,817
Total Capital	3,462,641,305,544	3,513,037,867,636
Total Liabilities and Capital	6,233,873,334,393	6,743,550,867,718

Non-Consolidated Income Statements

(Unit: KRW)

	2011	2012
Sales	3,970,365,437,715	3,559,004,156,628
Cost of Goods Sold	3,176,312,277,727	3,057,243,673,551
Gross Margin	794,053,159,988	501,760,483,077
Sales and Administrative Expenses	321,888,433,245	360,579,792,822
Operating Income	472,164,726,743	141,180,690,255
Non-Operating Profits and Losses	73,426,183,514	16,620,747,500
Other Income	122,216,049,990	88,729,972,507
Other Expenses	(144,236,157,750)	(179,079,567,756)
Financial Income	159,973,437,695	163,206,289,138
Financial Expenses	(64,527,146,421)	(56,235,946,389)
Income before Income Tax Expense	545,590,910,257	157,801,437,755
Income Tax Expense	134,071,604,752	37,189,871,192
Net Income for the Year	411,519,305,505	120,611,566,563
Other Comprehensive Profits and Losses	(33,877,839,636)	(6,525,556,021)
Actuarial Gains and Losses	(24,842,546,853)	(19,179,741,226)
Valuation Gains and Losses of Financial Assets Available for Sale	(17,056,832,873)	10,570,828,270
Impact of Corporate Tax on Other Comprehensive Profits and Losses	8,021,540,090	2,083,356,935
Total Comprehensive Profits and Losses	377,641,465,869	114,086,010,542
Profit per Share	-	-
Primary Earnings per Share	2,910	853

Investment Indicators

Stability Ratios

(Unit: %)

	2011 (K-IFRS Excluded)	2012 (K-IFRS Excluded)
Current Ratio	99.68	75.23
Liabilities to Equity Ratio	80.03	91.96
Debt to Assets Ratio	28.2	30.5
Interest Coverage Ratio	7.32	2.51
Operating Income Margin	11.89	3.97
Net Income Margin	10.36	3.39
ROA	7.06	1.86
ROE	12.74	3.46
Sales Growth	9.43	-10.36
Operating Income Growth	-2.80	-70.10
Net Income Growth	3.10	-70.69
Total Assets Growth	15.00	8.18

Profitability Ratios

(Unit: %)

Growth and Operations Ratios

(Unit: %)

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Consolidated Financial Statement

\* Starting in 2011, we have made it a practice to report both non-consolidated and consolidated financial results in accordance with the K-IFRS, which includes the 39th and 38th financial statement.

	2011	2012
<b>Assets</b> (Unit: KRW)		
Current Assets	(3,671,563,243,566)	(3,582,567,048,893)
Cash and Cash Equivalents	848,723,198,608	594,314,912,340
Other Financial Asset	242,997,104,411	127,538,428,384
Trade Receivable and Other Receivable	1,245,188,944,073	1,307,690,905,854
Other Current Assets	208,853,450,325	124,698,793,810
Inventories	1,125,800,546,149	1,428,324,008,505
Non-Current Assets	(8,181,979,814,990)	(8,824,127,936,978)
Financial Asset Available for Sale	303,213,527,711	293,067,569,347
Other Financial Asset	45,683,050,654	53,307,002,967
Long-term Trade Receivable and Other Receivable	4,086,181,557	2,016,070,098
Investment in Associates	1,337,000,642,278	1,304,588,678,319
Invested Properties	618,823,066,819	611,882,856,086
Tangible Assets	5,410,335,530,959	5,905,748,249,723
Intangible Assets	367,977,279,054	531,193,381,391
Other Non-Current Assets	94,860,535,958	122,324,129,047
Total Assets	11,853,543,058,556	12,406,694,985,871
Current Liabilities	(4,109,013,058,872)	(4,249,333,987,744)
Account Payable and Other Payable	1,437,285,410,522	1,499,909,830,638
Borrowed Money	2,261,628,376,797	2,279,191,133,707
Other Financial Liabilities	113,953,653,301	127,968,917,976
Estimated Liabilities	62,856,568,095	74,406,783,169
Other Current Liabilities	149,891,075,431	240,858,839,315
Current Income Tax Payable	83,397,974,726	26,998,482,939
Non-Current Liabilities	(2,946,740,003,030)	(3,591,940,829,046)
Long-term Account Payable and Other Payable	22,647,956,171	18,509,040,042
Long-term Borrowed Money	2,294,286,627,646	2,835,462,738,781
Other Financial Liabilities	21,316,991,271	27,519,900,625
Confirmed Payroll Liabilities	228,728,054,639	289,517,783,348
Long-term Payroll Liabilities	0	29,763,273,476
Other Non-Current Liabilities	77,668,102	33,294,199
Deferred Income Tax Liabilities	379,682,705,201	391,134,798,575
Total Liabilities	7,055,753,061,902	7,841,274,816,790
Controlling Corporate Shareholder's Equity	(4,173,298,852,461)	(4,095,722,188,061)
Capital Share	707,036,240,000	707,036,240,000
Consolidated Capital Surplus	489,197,165,116	488,753,818,994
Consolidated Capital Adjustments	(2,623,594,220)	(2,646,690,209)
Consolidated Earned Surplus	2,794,496,129,040	2,731,494,773,835
Consolidated Other Comprehensive Gain/Loss Accumulation	185,192,912,525	171,084,045,441
Non-Controlling Shareholder's Equity	(624,491,144,193)	(469,697,981,020)
Total Capital	4,797,789,996,654	4,565,420,169,081
Total Liabilities and Capital	11,853,543,058,556	12,406,694,985,871

Consolidated Income Statement

	2011	2012
(Unit: KRW)		
Sales	7,942,644,582,717	6,962,213,423,288
Cost of Goods Sold	6,562,506,692,647	5,827,308,751,026
Gross Margin	1,380,137,890,070	1,134,904,672,262
Sales and Administrative Expenses	1,054,269,611,878	1,129,657,570,880
Operating Income	325,868,278,192	5,247,101,382
Non-Operating Profit and Loss	(44,785,080,474)	(63,456,619,578)
Other Income	232,793,873,894	269,765,951,120
Other Expenses	(200,191,321,832)	(206,138,746,446)
Financial Income	18,306,480,047	24,847,736,512
Financial Expenses	(191,827,352,139)	(212,851,599,762)
Valuation Gains and Loss Using Equity Method	96,133,239,556	60,920,038,998
Income before Income Tax Expense	281,083,197,718	(58,209,518,196)
Income Tax Expense	114,387,083,989	53,856,702,295
Net Income for the Year	166,696,113,729	(112,066,220,491)
Other Comprehensive Profit and Loss	4,136,629,918	(69,384,942,270)
Valuation Gains and Loss of Financial Assets Available for Sale	(2,143,025,248)	48,429,996,057
Statement of Change in Equity Using Equity Method	(17,856,960,907)	6,705,596,639
Valuation Gains and Loss of Hedging Derivatives	706,565,896	650,445,858
Translation Gains and Loss of Overseas Operation	67,556,420,262	(82,051,365,919)
Actuarial Gains and Loss	(48,215,021,471)	(30,930,993,706)
Statement of Change in Earned Surplus Using Equity Method	(6,800,318,009)	(5,368,336,284)
Impact of Corporate Tax on Other Comprehensive Profit and Loss	10,888,969,395	(6,820,284,915)
Total Comprehensive Profit and Loss	170,832,743,647	(181,451,162,761)
Input of Net Income for the Year	166,696,113,729	(112,066,220,491)
Controlling Company Owner's Equity	253,547,317,130	29,577,520,079
Non-Controlling Equity	(86,851,203,401)	(141,643,740,570)
Input of Total Comprehensive Profit and Loss	170,832,743,647	(181,451,162,761)
Controlling Company Owner's Equity	235,986,026,301	(12,601,825,050)
Non-Controlling Equity	(65,153,282,654)	(168,849,337,711)
Profit per Share	-	-
Primary Earnings per Share	1,793	209
	2011 (Linked with K-IFRS)	2012 (Linked with K-IFRS)
Current Ratio	89.35	34.31
Liabilities to Equity Ratio	147.06	171.75
Debt to Assets Ratio	38.4	41.2
Interest Coverage Ratio	1.7	0.02
Operating Income Margin	4.1	0.08
Net Income Margin	2.1	-1.61
ROA	1.58	-0.92
ROE	7.07	0.72
Sales Growth	10.6	-12.34
Operating Income Growth	-58.13	-98.39
Net Income Growth	-59.79	-167.23
Total Assets Growth	27.68	4.67

Investment Indicators

Stability Ratios

(Unit: %)

Profitability Ratios

(Unit: %)

Growth and Operations Ratios

(Unit: %)





## Environmental Performance Indicators

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In 2011, our overall production increased by approximately 0.8% from the preceding year. However, the recycling rate of disposed wastewater and waste has been improved through the operation of the wastewater/waste reduction task force team.

	2010	2011	2012
Production Amount (Unit: Tons)	4,594,747	4,411,095	4,446,395

	2010	2011	2012
Consumed Amount (T)	4,109,973	4,193,512	4,050,972
Raw Material Usage per unit production cost (Raw material usage/product)	0.894	0.951	0.930
* Per unit production cost: Raw material consumed to produce 1 ton of product. It can be adjudged that the lower the per unit production cost, the more rationally the production is being performed.			

			2010	2011	2012
Secondary Energy Consumption and per Unit Production Cost*	Energy	Electricity (TJ)	32,963	32,133	33,190
		Steam (T)	3,153	3,207	3,016
		Heat (T)	2,402	2,394	2,305
	Energy Usage per Unit Production Cost (Energy Usage/Product)		0.008	0.008	0.008

	2010	2011	2012
Yeosu Plant	1,560	1,554	1,483
Ulsan Plant	606	552	567
Daejeon R&D Center	22	19	21
Total	2,188	2,125	2,071

	2010	2011	2012
Dust (T)	34.90	31.79	28.59
SOx (T)	2.52	23.98	35.36
NOx (T)	18.22	58.06	39.24
Total Emissions (T)	55.64	113.83	103.19
Per Unit Production Cost (KT/T)	0.0121	0.0258	0.0232

\* The data for 2011 was modified to the values recalculated after publication of the previous sustainability report.

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	2010	2011	2012
Consumed Amount (T)	12,154,328	12,384,504	11,686,839
Per Unit Production Cost (T/T)	2.645	2.808	2.628

	2010	2011	2012
Wastewater Volume (T)	4,125,950	4,143,933	4,155,459
Per Unit Production Cost (T/T)	0.898	0.939	0.935
Recycled Amount (T)	800,882	883,896	1,005,904
Recycling Rate (%)	19	21	24

	2010	2011	2012
Total Emissions (T)	41,672	38,850	42,488
General (T)	32,770	28,054	29,959
Specified (T)	8,902	10,796	12,529
Waste Disposal Efficiency	9.069	8.807	9.556

	2010	2011	2012
Recycling (T)	16,849	16,859	16,924
Landfill Disposal (T)	21,006	18,913	19,955
Incinerator Disposal (T)	2,631	2,231	4,997
Ocean Disposal (T)	1,186	847	611
Recycling Rate (%)	40	43	40



## Social Performance Indicators

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In 2011, the number of company employees increased by 0.8% year-on-year to 2,594. The number of female employees also increased by 1% to 311.

	2010	2011	2012
Number of Employed Staff (Unit: Person)			
Head Office	536	652	745
Daejeon R&D Center	271	762	418
Yeosu Plant	751	629	811
Ulsan Plant	613	338	620
Total	2,171	2,381	2,594

	2010	2011	2012
Ratio per Age Group (Unit: Person)			
Below 30	432	560	630
31-40	601	560	629
41-50	909	996	1,047
Over 51	229	265	288
Total	2,171	2,381	2,594

	2010	2011	2012
Gender Ratio (Unit: %)			
Male	90	89	88
Female	10	11	12

	2010	2011	2012
Job Turnover Rate (Person)	18	27	19
(%)	0.80	1.10	0.73

\* Job turnover rate: number of employees who left the company/Total employees

	2010	2011	2012
Number of Employed Foreigners and Disabled Persons (Unit: Person)			
Disabled Employee	40	31	56
Foreign Employee	8	10	14

	2010	2011	2012
Accident Rate (Unit: %)			
Accident Rate	0	0	0

\* Accident rate: injured employees/total employees X 100

## Independent Assurance Statement

To the Management of Hanwha Chemical

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### Responsibility and Objective

The Institute for Industrial Policy Studies (hereafter “Auditor”) was engaged by Hanwha Chemical to review information specified in its 2013 Sustainability Report (hereafter “Report”) to provide an independent third-party assurance on the reported content. On the basis of the above, the Auditor presents the following independent statement of assurance.

Hanwha Chemical is responsible for all information and claims contained in the Report regarding the establishment of its sustainability management goals, performance management etc. The responsibility of the Auditor is to deliver the findings from its assurance undertaking to the management of Hanwha Chemical. The key objective of the assurance is to check whether there are any material bias or errors present in the Report; assess whether the underlying data collection system is in proper working order; while undertaking in an overall review of the Company’s process for identifying issues of material importance to sustainability management as well as the produced results so that the Auditor may deliver recommendations that can help improve the quality of future reporting.

### Assurance Type and Scope

For the purpose of this assurance, the Report was reviewed against the following reporting criteria.

- 1) AA1000 Assurance Standard (2008)\*
- 2) BEST Reporting Guidelines\*
- 3) GRI 3.1 Sustainability Management Reporting Guidelines\*

Scope of Assurance	Compliance with the three core AA1000S (2008) principles of Inclusivity, Materiality, and Responsiveness	GRI-checked GRI reporting level/ BEST Guideline reporting level
Assurance Type/Level	Type I/Moderate	A+/Level4
Assurance Criteria	<ul style="list-style-type: none"><li>■ The three AA1000AS (2008) principles and IPS Assurance Manual standards</li><li>■ IPS Performance Indicators Assurance Criteria™</li></ul>	GRI G 3.1 Sustainability Management Reporting Guidelines

\* AA1000AS (2008): Sustainability assurance standard developed by Account Ability, a London-based non-profit organization devoted to the issues of socially responsible management, it aims to assure credibility and quality of sustainability performance in the accounting, audit and reporting on the socially responsible and ethical management. AA1000AS (2008), the 2008 edition of the AA1000 Assurance Standard, has been applied beginning in 2010.

\* BEST Sustainability Guidelines: Local guidelines on the preparation and assurance of a sustainability report, developed in 2006 by the Ethical Management SM Forum in close collaboration with the Ministry of Knowledge Economy, the Institute for Industrial Policy Studies and Korea Chamber of Commerce. It provides five report levels.

\* GRI G 3.1 Guidelines: Guidelines on the preparation and assurance of a sustainability report jointly developed and enacted by CERES and UNEP. G.3.1, an expanded edition based upon G3 that was published on October 2006, was released in March 2011 to complement the guidelines with additional sections on human rights and local community. Publication of G4, the fourth edition, is planned for 2013.

### Work Undertaken

- A review of the source of disclosed data and department responsible for data management.
- A review of the data collection system for each of the reporting dimensions and a review of the adequacy of the reporting process.
- A review of the Company’s platform for responding to material issues.
- Interviews with persons responsible for each of the performance dimensions.
- Validation activities including an on-site review of the Company Headquarters (April 17, 2013).
- Level of application against GRI/BEST sustainability reporting guidelines.

### Limitations

For the purpose of this assurance, an on-site review was carried out of Hanwha Chemical’s local Head-quarter office. The review was based on available and disclosed data for the relevant reporting period and does not include online data. Financial and greenhouse gas-related data validated by third party providers were not included within the scope of this assurance.





Assurance Findings

Based on the assurance scope, methodology, and criteria outlined in the assurance statement, the Auditor did not find the Report to contain any material misstatements or bias. The reported performance data was also found to be adequately derived and reported upon without distortion based on data collected through the Company's underlying data collection system. Key assurance findings from the Auditor are included herein, and a detailed account of the results and follow-up recommendations has been submitted to Hanwha Chemical.

Inclusivity

Does Hanwha Chemical adhere to the principle of stakeholder engagement to ensure a responsible and strategic response toward sustainability management?

The Auditor took note of various efforts by the Company to broaden its stakeholder engagement activities such as carrying out stakeholder surveys in addition to key existing channels of communication, based on an appreciation of the importance of stakeholder participation in implementing sustainability management.

The following points were found to be particularly commendable.

- Efforts to collect clear and diverse views from stakeholders by dividing them into different sub-groups such as employees and staff, the labor union, executive management, business partners, suppliers, customers, government, institutions, competitors, investment institutions, local community, NGOs etc., when carrying out stakeholder surveys designed to assess each group's level of awareness, satisfaction, as well as areas of possible improvement.
- Efforts to build communication channels specific to different stakeholder groups such as business partners, shareholders and investors, management and staff, the government and relevant associations, local community, environmental organizations etc., while providing easy-to-access stakeholder participation channels such as blogs, Twitter, Facebook, websites etc.

Going forward, however, the Auditor suggests providing a status report on issues collected via stakeholder engagement, while putting in place a system for the actual reflection of collected feedback in its company-wide management activities.

Materiality

Does the Report contain information of the highest material importance to Hanwha Chemical stakeholders across the economic, social, and environmental dimensions?

It is the Auditor's view that the Report does not omit or exclude issues necessary for stakeholders to make informed judgments or decisions about the Company. We verified efforts by Hanwha Chemical to reflect material issues of the highest importance in its Report through the following activities: media research, online stakeholder surveys, an analysis of management strategies and business environment, local and global competition, international indicators and standards, etc.

The following points were found to be particularly commendable.

- Efforts to derive key report items from a composite pool of materiality issues while indicating where key relevant issues are addressed within the Report to better address the needs and interests of Company stakeholders.
- Providing access not only to key issues for the Company, but also mid-to-low priority issues as well as relevant activities and outcomes through its online website and business report.

Going forward, the Auditor recommends further developing the Company's system so that stakeholder views are reflected when forming a pool of key materiality issues so that it can better identify issues of material stakeholder importance and manage those issues within more concrete parameters.

Responsiveness

Does the Report provide an adequate response to stakeholder demands and interests?

The Auditor confirmed efforts by Hanwha Chemical to assess and respond to key issues of concern to Company stakeholders by putting in place communication channels specific to different stakeholder groups.

The following points were found to be particularly commendable.

- The Report outlines the current status of the Company's response to various materiality findings (ex. new growth drivers and global market advance, sustainability management strategies, response to climate change, energy management etc.).
- The Report outlines the Company's vision and strategies for different stakeholder groups through DMAs (Disclosures on Management Approach) while reporting on its plan and outcome for each relevant issue, making it easier to assess the Company's response to various issues of stakeholder interest and concern.

Going forward, the Auditor suggests continuously managing the Company's response to issues raised by stakeholders, as well as its goals and outcomes, to demonstrate to its stakeholders that it is making an effort to respond to stakeholder demands and interests.

Level of GRI Application

Relative to the GRI G 3.1 Guidelines, the Report was found to conform to an "A+" level of application. Relative to the BEST Guidelines, in view of the coverage and depth of information provided, the Auditor finds the Report to fulfill 93.7% of the reporting requirements necessary to qualify for a Level 4 Report (from Level 1 to 5).

Recommendations

As the seventh Report by Hanwha Chemical, the Auditor found its "2013 Sustainability Report" commendable in the following respects. The Report (1) reflects the Company's transparent management of sustainability management initiatives and its outcomes based on an underlying validation principle; (2) applies diverse sustainability reporting guidelines based on different standards to assess Hanwha Chemical's level of responsiveness toward sustainability management; and (3) reports on the sustainability value of various lines of business engaged in by the Company, ranging from petrochemicals to new business areas to show strategic company-wide efforts by Hanwha Chemical to better manage its sustainability management program.

For future reports, the Auditor recommends considering the following.

- Present mid-to-long term sustainability management objectives as well as response measures by the Company and their results.
- Strengthen its reporting strategy around key issues identified through materiality testing.
- Respond to the revised GRI G 4 guidelines by broadening the scope of managed issues in consideration of Tier 2 and Tier 3 supply chain partners.
- Strengthen quantitative reporting on anti-corruption and ethical business management outcomes.
- Share concrete case studies showing the Company's response to issues assessed through stakeholder engagement.
- Establish more direct channels for stakeholder engagement such as expert interviews, stakeholder councils etc.

Independence

Apart from this independent assurance undertaking, the Auditor was not involved in the preparation of any part of the Report, and has no commercial affiliation with Hanwha Chemical that might compromise our independence.

Qualifications of the Auditor

Commissioned by Hanwha Chemical as the Auditor for this assurance undertaking, the Institute for Industrial Policy Studies (IPS) was established in 1993 and has since developed into a specialized institution with broad expertise in the areas of business ethics, CSR, and sustainability management since 2002. The Auditor is composed of experts in business management, accounting, and environmental science including professors at Korea's top universities and practitioners with professional accreditation and extensive experience in sustainability management.



AA1000  
Licensed Assurance Provider  
000-24

April 23, 2013

Kim, Jae-Eun

President, The Institute for Industrial Policy Studies

*Kim*



GRI G 3.1 Index

GRI presents economic, environmental, and social results concerning a designated period in a reasonable and balanced way. We have ascertained that the company’s sustainability report has been drawn up based on GRI, and it meets the report requirements of Level A (Report on all indicators and ‘Piecemeal Report’ on some indicators) concerning in-house level diagnosis and application of the results of the third party verification, in this case, by the Institute for Industrial Policy Studies (IPS).



●: Report ○: Piecemeal Report ○: Not Report N/A

Indicator		Contents	Report	Page	BEST in Category	Remarks
Strategy and Analysis	1.1	Statement from the most senior decision-maker of the organization	●	4-5	A_1	
	1.2	Description of key impacts, risks, and opportunities	●	4-5, 9, 10-11	A_2	
Organizational Profile	2.1	Name of the organization	●	6	A_3	
	2.2	Primary brands, products & services	●	6, 10-19	A_4	
	2.3	Operational structure of the organization, including main divisions, operating companies, subsidiaries, and joint ventures	●	7, 8	A_5	
	2.4	Location of organization's headquarters	●	7	A_6	
	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	A_7	
	2.6	Nature of ownership and legal form	●	8	A_8	
	2.7	Markets served	●	6, 8	A_9	
	2.8	Scale of the reporting organization	●	6, 62	A_10	
	2.9	Significant changes during the reporting period regarding size, structure, or ownership	●	16, 18	B_8	
	2.10	Awards received in the reporting period	●	72	CO8	

Indicator		Contents	Report	Page	BEST in Category	Remarks
Report Parameters	3.1	Reporting period	●	1	B_3	
	3.2	Date of most recent previous report	●	1	B_8	
	3.3	Reporting cycle	●	1	B_6	
	3.4	Contact point for questions regarding the report or its contents	●	73, 74	B_9	
	3.5	Process for defining report content	●	1, 24-25	B_4	
	3.6	Boundary of the report	●	1	B_1	
	3.7	State any specific limitations on the scope or boundary of the report	●	1	B_2	
	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	●	1	A_6	
	3.9	Data measurement techniques and the bases of calculations	●	1, 60-61	-	
	3.10	Explanation of the effect of any restatements of information provided in earlier reports, and the reasons for such restatement	●	1	-	
	3.11	Significant changes from previous reporting periods in the scope, boundary, or measurement methods applied in the report	N/A	1, 24-25	B_5	
	3.12	Table identifying the location of the Standard Disclosures in the report	●	66-69	B_10	
	3.13	Policy and current practice with regard to seeking external assurance for the report	●	63-65	B_7	
Governance, Commitments, and Engagement	4.1	Governance structure of the organization	●	8	GR1	
	4.2	Indication of whether the Chair of the highest governance body is also an executive officer	●	8	GR1, GR3	DART e-disclosure
	4.3	Number of members of the highest governance body that are independent and/or non-executive members	●	8	GR2	
	4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body	●	8, 9	GR12	
	4.5	Linkage between compensation for members of the highest governance body, senior managers and executives	●	8	GR7	
	4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided	●	8	GR13	
	4.7	Process for determining the qualifications and expertise of the members of the highest governance body for guiding the organization's strategy on economic, environmental, and social topics	●	8	GR4	
	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	●	22, 23, 36, 46	-	
	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	●	8-9	GR5	
	4.10	Processes for evaluating the highest governance body's own performance, particularly with respect to economic, environmental, and social performance	●	8	GR6	
	4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization	●	9	GR11	
	4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes to or endorses	●	70, 71	GR10	
	4.13	Memberships in associations (such as industry associations) and/or national/international advocacy organizations in which the organization is a part of	●	71	A_11	
	4.14	List of stakeholder groups engaged by the organization	●	26	C_1, C_2	
	4.15	Basis for identification and selection of stakeholders with whom to engage	●	26	C_1	
	4.16	Approaches to stakeholder engagement, including frequency of engagement by type and by stakeholder group	●	26, 27	C_2	
	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	●	24-27	C_3	
EC		Disclosure on Management Approach	○	25	EC1	
Economic Indicator	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	●	28	EC2	
	EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	●	38-39	EC3	
	EC3	Coverage of the organization's defined benefit plan obligations	○	-	EC4	National pension
	EC4	Significant financial assistance received from government	●	39	EC5	
Market	EC5	Range of ratios of standard entry-level wage by gender compared to local minimum wage at significant locations of operation	●	45	EM4	
	EC6	Policy, practices, and proportion of spending on locally based suppliers at significant locations of operation	○	51	EC4	
	EC7	Procedures for local hiring and proportion of senior management hired from the local community at locations of significant operation	○	-	EC4	
Indirect Economic Effect	EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement	●	47	EC6	
	EC9	Understanding and describing significant indirect economic impacts, including the extent of impacts	●	28	EC7	





Indicator		Contents	Report	Page	BEST in Category	Remarks
EN		Disclosure on Management Approach	㉑	25	-	
Raw Material	EN1	Materials used by weight or volume	●	60-61	EV10	
	EN2	Percentage of materials used that are recycled input materials	●	61	EV11	
Energy	EN3	Direct energy consumption by primary energy source	●	60	EV7	
	EN4	Indirect energy consumption by primary source	●	60	EV8	
	EN5	Energy saved due to conservation and efficiency improvements	●	60	EV5	
	EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives	●	11, 16, 60-61	EV5	
	EN7	Initiatives to reduce indirect energy consumption and reductions achieved	●	35, 38-39, 60	EV5, EV25	
Water	EN8	Total water withdrawal by source	●	41, 61	EV9	
	EN9	Water sources significantly affected by withdrawal of water	●	41	EV20	
	EN10	Percentage and total volume of water recycled and reused	●	41, 61	EV18	
Bio-diversity	EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	●	7, 40-42	EV22	
	EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas		40-42	EV22, EV26	
	EN13	Habitats protected or restored	㉑	40-42	EV27	
	EN14	Strategies, current actions, and future plans for managing impacts on biodiversity	N/A	-	EV6, EV26	
	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	-	EV28	
Emission Waste-water Waste Disposal	EN16	Total direct and indirect greenhouse gas emissions by weight	●	38-39, 60	EV12	
	EN17	Other relevant indirect greenhouse gas emissions by weight	●	38-39, 60	EV13	
	EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved	●	38-39, 60	EV4	
	EN19	Emissions of ozone-depleting substances by weight	●	38-39, 60	EV14	
	EN20	NO, SO, and other significant air emissions by type and weight	●	60	EV15	
	EN21	Total water discharge by quality and destination	●	61	EV17	
	EN22	Total weight of waste by type and disposal method	●	61	EV16	
	EN23	Total number and volume of significant spills	●	-	EV21	No spill reported
	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	●	40-42	EV29	
	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	㉑	41	EV19	
Product and Service	EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation	●	10-19, 34-42	EV23	
	EN27	Percentage of products sold and their packaging materials that are reclaimed by category	㉑	34-35, 61	EV24	
Compliance	EN28	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with Environmental laws and regulations	●	34-35	EV31	No breach reported
Transportation	EN29	Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce	●	37-42	EV30	
General	EN30	Total environmental protection expenditures and investments by type	●	39	EV1	
LA		Disclosure on Management Approach	㉑	25	-	
Employment	LA1	Total workforce by employment type, employment contract, and region, broken down by gender	●	44, 62	EM1	
	LA2	Total number and rate of new employee hires and employee turnover by age group, gender, and region	●	44, 62	EM5	
	LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	●	45	EM20	
Labor-Management Relation	LA4	Percentage of employees covered by collective bargaining agreements	●	45	EM12	
	LA5	Minimum notice period (s) regarding operational changes, including whether it is specified in collective agreements	㉑	45	EM13	
ESH	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	●	45	EM14	
	LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region and by gender	●	62	EM19	
	LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases	●	43, 45	EM18	
	LA9	Health and safety topics covered in formal agreements with trade unions	●	45	EM15	

Indicator		Contents	Report	Page	BEST in Category	Remarks
Education & Training	LA10	Average hours of training per year per employee by gender, and by employee category	●	44	EM27	
	LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	●	44	EM28	
	LA12	Percentage of employees receiving regular performance and career development reviews, by gender	●	44	EM29	
Diversity and Equal Employment	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	●	8, 62	EM2	Hired 1 senior manager according to local law (Ningbo, China)
	LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	●	45	EM3	
	LA15	Return to work and retention rates after parental leave, by gender	●	43, 45	-	
HR		Disclosure on Management Approach	㉑	25	-	
Human Rights Indicator	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	●	51	PN2	
	HR2	Percentage of significant suppliers, contractors and other business partners that have undergone human rights screening, and actions taken	㉑	51	PN3	
	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	●	53-54	EM30	
	HR4	Total number of incidents of discrimination and corrective actions taken	●	-	EM7	No confirmed discrimination
	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	●	45, 71	EM8	
	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	●	45, 71	EM9	
	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	●	45, 71	EM10	
	HR8	Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations	㉑	-	EM31	100% (Privacy protection and performance evaluation)
	HR9	Total number of incidents of violations involving rights of indigenous people and actions taken	N/A	-	CO2	No operation in the native reservation
	HR10	Percentage and total number of operations that have been subject to human rights reviews and/or impact assessments	㉑	7		
	HR11	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms	●	53-54	-	No confirmed infringement of human rights
SO		Disclosure on Management Approach	㉑	25	-	
Social Indicator	SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	●	47-49	CO2	
	SO2	Percentage and total number of business units analyzed for risks related to corruption	●	47-49	CO5	
	SO3	Percentage of employees trained in the organization's anti-corruption policies and procedures	●	53, 69	CO5	(Employee: 100%)
	SO4	Actions taken in response to incidents of corruption	●	54	CO5	No reported corruption
	SO5	Public policy positions and participation in public policy development and lobbying	●	39	CO6	
	SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country	N/A	-	CO7	No donation to political party
	SO7	Total number of legal actions for anticompetitive behavior, anti-trust, and monopoly practices and their outcomes	●	53-54	CS3	No confirmed unfair competition or act of cartel
	SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations	●	-	CO9	No confirmed infringement
	SO9	Operations with significant potential or actual negative impacts on local communities	●	7, 47-49	-	
	SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities	●	47-49	-	
PR		Disclosure on Management Approach	㉑	25	-	
Product Indicator	PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and service categories subject to such procedures	●	40-43	CS4	
	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	●		CS11	No confirmed infringement
	PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements	●	10-19	CS5	
	PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes	●		CS12	No confirmed infringement
	PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	㉑	52	CS9	
	PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship	●	50	CS13	
	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	●	50	CS14	No confirmed infringement
	PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	●	52	CS15	No confirmed infringement
	PR9	Monetary value of significant fines for noncompliance with laws and regulations concerning the provision and use of products and services	●	52	CS12	No confirmed infringement

ISO 26000 Core Issues

ISO 26000 Standard

ISO 26000 Core Subjects and the Company’s Promotion of Relevant Activities

- ISO is an international index concerning matters that should be complied with by all social organizations, such as businesses, the government, and NGOs, concerning seven core issues, i.e. governance structure, human rights, labor, environment, consumers, fair operation, community participation and development.
- The company puts forth concerted efforts to fulfill its social responsibility demanded by international society, by managing diverse elements required by ISO 26000.

Core Subjects		Issue	Report	Page	Relevant Contents
Organizational Governance			●	8	Board of Directors/Major Subsidiaries and Affiliates
Human Rights	Issue1	Due diligence	●	54	Ethics Management–Informing and Whistleblowing Systems
	Issue 2	Human rights risk situations	●	54	Ethics Management-Informing and Whistleblowing Systems
	Issue 3	Avoidance of complicity	●	52	Information Security
	Issue 4	Resolving grievances	●	46, 52, 54	Great Workplace (GWP) Initiative/Ethics Management-Informing and Whistleblowing Systems/BPS (Best PartnerS)
	Issue 5	Discrimination and vulnerable groups	●	45	Diversity and Anti-discrimination
	Issue 6	Civil and political rights	●	45	Diversity and Anti-discrimination
	Issue 7	Economic, social and cultural rights	●	45	Welfare & Benefits
	Issue 8	Fundamental principles and rights at work	●	46	Great Workplace (GWP) Initiative
Labor Practices	Issue1	Employment and employment relationships	●	44-45, 47	HR Development Structure/Welfare & Benefits/Social Performance
	Issue 2	Conditions of work and social protection	●	45	Diversity and Anti-discrimination/Welfare & Benefits
	Issue 3	Social dialogue	●	45	Diversity and Anti-discrimination/Welfare & Benefits
	Issue 4	Health & safety at work	●	43	EHS Management
	Issue 5	Human development and training in the workplace	●	44	HR Development Structure
Environment	Issue1	Prevention of pollution	●	38-42, 60-61	Climate Change Response/Environment Conservation Efforts in Workplaces /Environmental Performance
	Issue 2	Sustainable resource use	●	38-42, 60-61	Climate Change Response/Environment Conservation Efforts in Workplaces /Environmental Performance
	Issue 3	Climate change mitigation and adaptation	●	38-39	Climate Change Response
	Issue 4	Protection of the environment, biodiversity and restoration of natural habitats	●	40-42	Environment Conservation Efforts in Workplaces
Fair Operating Practices	Issue1	Anti-corruption	●	54	Ethics Guideline, Proposals and Whistleblowing Systems
	Issue 2	Responsible political involvement	N/A	*	*The company does not participate in political areas.
	Issue 3	Fair competition	●	53	Compliance Program (CP)
	Issue 4	Promoting social responsibility in the value chain	●	50-51	Shared Growth Activities
	Issue 5	Respect for property rights	●	57	Compliance Program (CP)
Consumer Issues	Issue 1	Fair marketing, factual and unbiased information and fair contractual practices	●	52	Principles Concerning Ads and Sponsorship
	Issue 2	Protecting consumers’ health and safety	●	34-35	Environmentally Friendly R&D
	Issue 3	Sustainable consumption	●	34-35	Environmentally Friendly R&D
	Issue 4	Consumer service, support, and complaint and dispute resolution	●	54	BPS (Best PartnerS) Program
	Issue 5	Consumer data protection and privacy	●	52	Information Security
	Issue 6	Access to essential services	●	47-49	Social Contributions
Community Involvement and Development	Issue1	Education and Awareness	●	26-27	Stakeholders Participation
	Issue 2	Community involvement	●	47-49	Social Contributions
	Issue 3	Education and culture	●	47-49	Social Contributions
	Issue 4	Employment creation and skills development	●	44, 62	No. of Employees
	Issue 5	Technology development and access	●	34-35	Environmentally Friendly R&D
	Issue 6	Wealth and income creation	●	28	Distribution of Social Achievement
	Issue 7	Health	●	34-35	Environmentally Friendly R&D
	Issue 8	Social investment	●	50	Shared Growth Activities/BPS (Best PartnerS)



Membership in Sustainability Initiatives

We are working as a member of diverse organizations to ensure sustainable management and fulfill our responsibilities toward society.

UN Global Compact, UNGC

The company joined the UN Global Compact (UNGC) in January 2012 and does its best to fulfill its social responsibilities as a global business and comply with the ten principles set forth by the UNGC concerning human rights, labor, environment, and anticorruption.



United Nations Global Compact–The Ten Principles

1) Human Rights

Businesses should:

- Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights.
- Principle 2: Businesses should make sure that they are not complicit in human rights abuses.

2) Labour Standards

Businesses should uphold:

- Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining.
- Principle 4: Businesses should uphold the elimination of all forms of forced and compulsory labour.
- Principle 5: Businesses should uphold the effective abolition of child labour.
- Principle 6: Businesses should uphold the elimination of discrimination in respect of employment and occupation.

3) Environment

Businesses should:

- Principle 7: Businesses should support a precautionary approach to environmental challenges.
- Principle 8: Businesses should undertake initiatives to promote greater environmental responsibility.
- Principle 9: Businesses should encourage the development and diffusion of environmentally friendly technologies.

4) Anti-Corruption

- Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Organizations

Sustainable Management

KBCSD/UNGC

Economy

The Federation of Korean Industries/Korea Economic Research Institute/Fair Competition Federation/Korea-U.S. Economic Council/Korea Listed Companies Association/The Korea International Trade Association

Industry

Korea Petrochemical Industry Association/Korea Chemical Industry Council/Korea Chlor-Alkali Industry Association/The Korea Biotechnology Industry Organization/Korea Battery Industry Association/Korea Photovoltaic Industry Association/Nano Technology Research Association/Korea Industrial Technology Association/Korea Bio-medicine Industry Association

Environment

Korea Chemicals Management Association/Korea Responsible Care Council/Korea Vinyl Environmental Council/Green Company Council/Petrochemistry Safety Committee/Yeosu Industrial Complex Environment Council/Ulsan Petrochemistry Environment Committee/Korea Fire Safety Association



Key Awards

Date	Award	Awardee	Host
2012.01.16	10th Anniversary of Hope Sharing Holiday School-Certificate of Merit	Ulsan Plant	Good Neighbors
2012.02.03	50th Anniversary of Ulsan Industrial Center-Certificate of Merit, Prime Minister Prize	Ulsan Plant	Ulsan City
2012.03.08	CPR Contest, Participation Award	Lee SH/Seo JH	Yeosu Fire Department
2012.03.21	Commerce Day, Certificate of Merit	Kim KY Senior Researcher	Ministry of Knowledge Economy
2012.05.08	10th Anniversary of Complimentary Meal Service-Certificate of Merit	Ulsan Plant	Nam-gu, Ulsan Welfare Center
2012.06.05	Environmental Protection Awards-Certificate of Merit	Ulsan Plant 3	Nakdong River Environment Agency
2012.06.21	Exemplary Labor-Management Relationship	Ulsan Plant	Busan Employment and Labor Agency
2012.06.21	Korea Social Welfare Council Awards-Volunteer Activity Category	Cho YM	Korea Social Welfare Council
2012.08.10	Exemplary High-pressure Gas management	Oh YJ	Korea Gas Safety Corporation
2012.09.06	Exemplary Research Center in LMO Safety Management	Bio R&D Center	Korea Bioengineering Research Center
2012.09.20	Bioengineering Award, Grand Prix	Bio R&D Center	Korea Bioengineering Society
2012.09.25	Elderly's Day, Certificate of Merit	General Affairs Team	Yuseong-gu Office, Daejeon
2012.10.05	Yuseong-gu Office Ward Chief Prize	General Affairs Team	Yuseong-gu Office, Daejeon
2012.10.11	Renewable Energy Award, Grand Prix	Hanwha Chemical	Ministry of Knowledge Economy
2012.10.12	Environmental Protection Award	Hwang SY	City of Yeosu
2012.10.12	Emergency Treatment Contest	Hanwha Chemical	National Emergency Management Agency
2012.10.18	Exemplary Doctoral Thesis	Lee HS Researcher	Korea Chemical Society
2012.10.25	Great Place to Work in Korea Award, Manufacturing Segment	Hanwha Chemical	GMP Korea
2012.11.03	Korea Industrial Safety Awards, Prime Minister Award	Ulsan Plant 1	Ministry of Security and Public Administration
2012.11.09	Exemplary Fire Safety Award	Hwang SW	City of Ulsan
2012.11.09	Fire Day Award – Certificate of Merit	Hong MK	Ulsan Nambu Fire Department
2012.11.27	Exemplary Company in Social Contribution, Certificate of Merit	Baek HY	City of Ulsan
2012.11.31	Silver Tower Order of Industrial Service Merit, Trade Day.	Hang-hong Bang, CEO	Ministry of Knowledge Economy
2012.12.06	Exemplary Environmental Safety Assurance	Cho DS	Jeollannam-do Provincial Govt.
2012.12.18	New Technology Certificate (Heat Dissipation System Manufacturing Technology Using CNT Paint)	Nano Research Center	Ministry of Knowledge Economy
2012.12.20	Excellent Company in School Partnership Program	Ulsan Plant	Ulsan Office of Education
2012.12.30	Exemplary Support to FI Grand Prix, Certificate of Merit	Kim HK	Jeollanam-do Provincial Govt.
2012.12.31	Exemplary Company in Clean Day	Ulsan Plant	City of Ulsan
2012.12.31	Exemplary Emergency Rescue, Certificate of Merit	Park YB	Jeollanamdo Provincial Govt.

Contacts

Please refer to the following resources for additional information on Hanwha Chemical.

Hanwha Chemical		<a href="http://hcc.hanwha.co.kr">hcc.hanwha.co.kr</a>
Hanwha Group		<a href="http://www.hanwha.co.kr">www.hanwha.co.kr</a>
Annual Reports	DART (Financial Supervisory Service)	<a href="http://dart.fss.or.kr">dart.fss.or.kr</a>

Hanwha Chemical values and looks forward to ideas and feedback from stakeholders and readers. Please feel free to send us your comments on our Sustainability Report or other business activities. Thank you for your support and encouragement.

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