

•••• SHE Management¹⁾ ••••

SK innovation applies the concept of CSV(Creating Shared Value), which secures trust from the society and grows and develops with society beyond the conventional concept of social responsibilities such as minimizing accidents and pollutants. As this is the aim of SHE management pursued by SK innovation, we aim to achieve the status of a global top-tier company by establishing and operating higher SHE standards than legal requirements and growing into a role model for similar companies in the industry.

SHE Management System

SK innovation has analyzed required management factors for safety management by global advanced companies, established 13 major management factors encompassing those analysis results and reflected the operating system to implement these factors in the company's regulations and sub-procedures.

In addition, we carry out activities to boost the implementation of a system based on CEO leadership and perform audits on a regular basis to improve and supplement any insufficiencies to set up and operate a virtuous cycle of "Plan-Do-Check-Action."

SHE Management System Framework



1) SHE(Safety, Health, Environment)

Occupational Safety and Health

Spread of Awareness to Internalize Safety Culture

Ulsan Complex business site held the "Challenge! Ulsan Complex SHE Champion Contest". This event was held to recognize the significance of SHE practice by sharing the best practices for safety in each plant and experiencing safety practice by employees in person. Various activities were carried out, such as SHE photo and slogan contest, SHE champion plant selection, sharing best cases and Challenge! Golden Bell and experience events. About 1,300 employees participated in the contests. SK innovation expects this event to contribute to maintaining zero-accident business sites.

Operation of Occupational Safety and Health Commission

SK innovation runs the Occupational Safety and Health Commission in each business site in accordance with the Occupational Safety and Health Act. In the Occupational Safety and Health Commission, both labor union and company discuss and decide important safety and health issues to prevent any occupational accidents and improve the working environment for employees. The commission is composed of equal numbers of labor union members and management and includes the representatives of workers and business sites. In 2016, the commission had a discussion over improving working clothes and raising safety awareness and attended the advanced safety culture exhibition jointly by labor union and management.

Operation of Emergency Response System

SK innovation operates the emergency response system to cope with any emergency situations such as fire, explosion, leakage of toxic gas or natural disaster. While safety facilities suitable for the characteristics of the process in each process, the company has an in-company emergency response group to swiftly disseminate and cope with any incident. It focuses on preventing the spread of the incident through early response. Ulsan Complex organizes the emergency response group based on the office of emergency management and on-site command office under the supervision of a business director and leadership of a plant director, including technical support, contact, administrative support, financial support, on-site support, on-site response, fire extinguishing and prevention squad and personnel control squad. The emergency response group is operated by systemic division based on the size classified into Levels 1 to 5.

Implementation of Joint Emergency Response Drill

SK innovation has established a company-wide emergency response drill system. As the scope of emergency drill, which was previously conducted based on business sites, has broadened to the company-wide range, management members including the CEO fully acknowledge the roles of each functional group and emergency response process in case of emergency. We conduct the emergency response drill in a regular and repetitive way so that all members from management to employees are fully aware of their roles and process and fulfill their duties in any emergency.

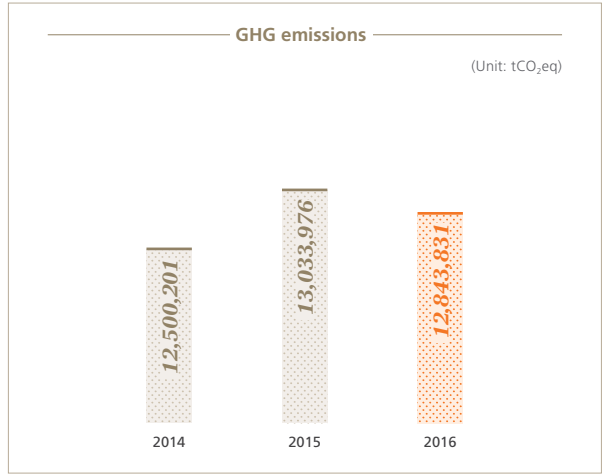
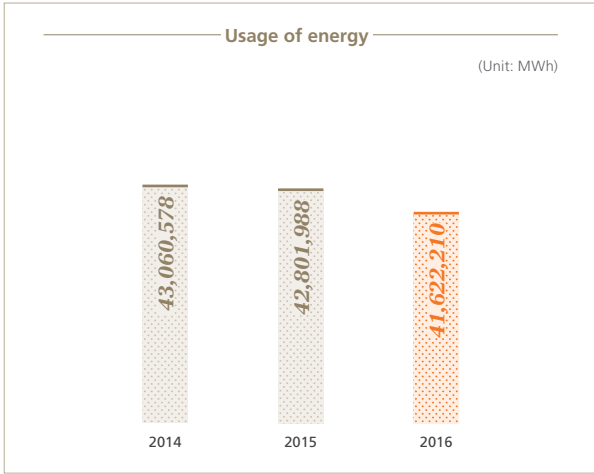


Emergency Response Drill

Health Management for Employees

SK innovation operates various facilities and programs to achieve health promotion for employees. Ulsan Complex runs an in-company medical center and provides a support program to present the right direction for health management and improve daily routine for health. In 2016, the center held lectures to prevent adult diseases, operated a promotion center for health experience and provided guidance on weight management and appropriate exercise. A total of 3,204 employees participated in the health management program. SK innovation helps employees to concentrate on their work based on physical and mental health by systemic health management.

Respond to Climate Change

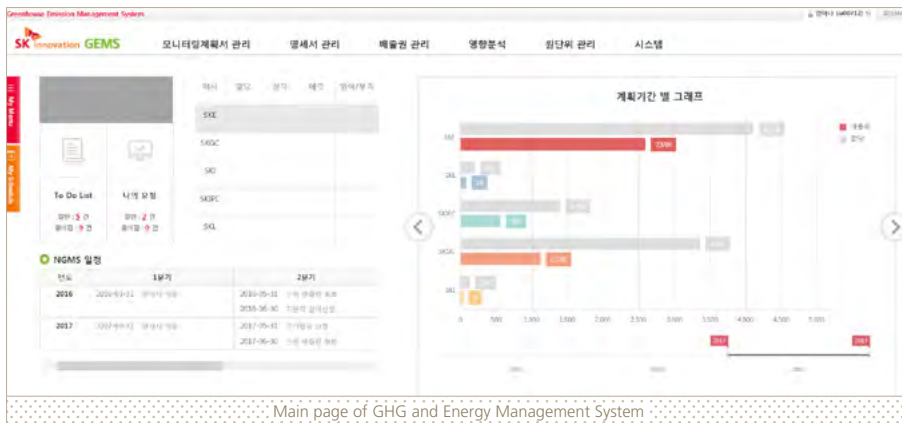


Energy Use

SK innovation manages the usage of energy based on the “Guidelines for the Operation of Greenhouse Gas and Energy Target Management” led by the government and collects data through Greenhouse Energy Management System(GEMS). The total amount of energy use in 2016 was 41,622,210MWh, down by 2.8% compared to the previous year. We aim to achieve a reduction of 9.5% compared to BAU by 2020.

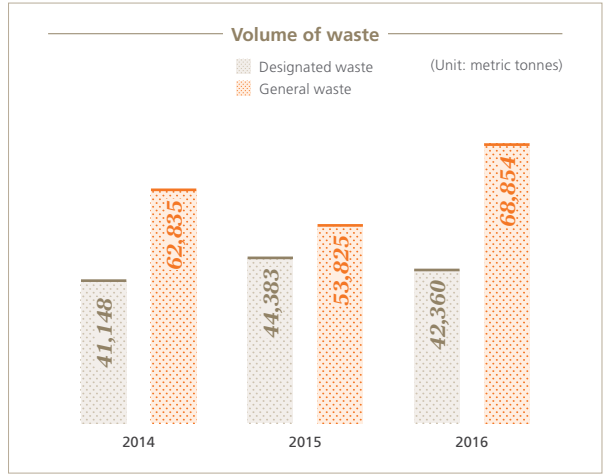
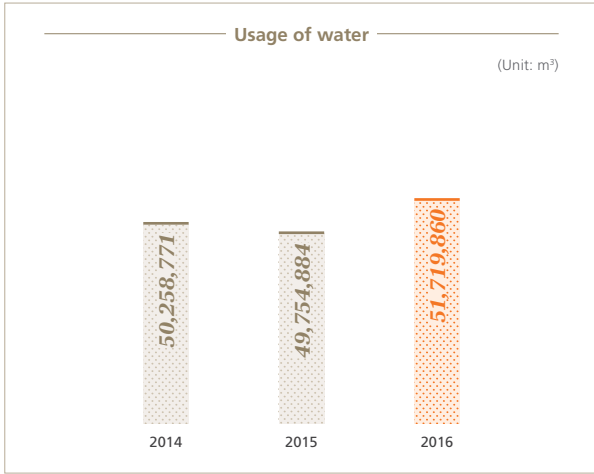
GHG Emission

The amount of GHG emissions is calculated on the basis of the Korea emission trading statement guidelines. The scope of calculation includes the petrochemical, chemical and lubricant business sectors and R&D, logistics, other business sectors including Ulsan Complex(SK energy, SK global chemical, SK lubricants), SK incheon petrochem’s Incheon business site; overseas business sites and supply chain are excluded. To deal with the Emission Trading Scheme more effectively, which has been implemented since 2015, SK innovation manages the amount of GHG emissions and basic unit based on the energy use. The total amount of GHG emissions in 2016 was 12,843,831tCO₂eq, which was a decrease of 1.46% compared to the previous year. We aim to achieve a reduction of 9.5% compared to BAU by 2020.



Main page of GHG and Energy Management System

Reduction of Environmental Impacts on Business Sites



Current Status of Water Pollutants Management

Business site	Wastewater treatment facility	Treatment method	Place of emission
SK energy(Ulsan)	Ulsan Complex Wastewater Treatment Facility	Biological + Advanced treatment	Public water body(East Sea)
	No. 2 FCC Wastewater Treatment Facility	Biological treatment	Yongyeon Sewage Treatment Plant
SK global chemical(Ulsan)	PE PP Wastewater Treatment Facility	Physicochemical treatment	Yongam Wastewater Treatment Plant
	EPDM Wastewater Treatment Facility	Biological treatment	Yongam Wastewater Treatment Plant
SK incheon petrochem(Incheon)	SK incheon petrochem Wastewater Treatment Facility	Biological + Advanced treatment	Gajwa Sewage Treatment Plant

Management of Water Resource

The usage of water by SK innovation is calculated based on water bills for major domestic business sites, including headquarters. Major sources of water intake include Daeam Dam, Daecheong Dam and Asan Bay. The usage of water in 2016 was 51,719,860 tons, a partial increase due to activities to improve the process in the plant¹⁾.

1) Activities to reform a part of the process to increase facility output(Revamp)

Management of Water Pollutants

SK innovation has installed and operated high-efficient and biological wastewater processing facility in which remote water quality monitoring and control system are applied. Any wastewater with pollutants in the production process is finally discharged through an activated carbon tower. Processed wastewater is partially recycled as water for fire extinguishing and landscaping to minimize the discharge of wastewater. We also apply a more stringent wastewater discharge concentration level than the legal standards and strictly manage the level.

Waste Management

SK innovation manages the amount of waste discharge by using an independently developed waste management system. Any generated waste is processed by self-reclamation, while part of the waste is recycled, incinerated and reclaimed by consigning the task to a specialist company whose consignment ability is verified. Waste oil is utilized to produce regenerative fuel. In 2016, waste oil collected from waste treatment facilities was partially disposed of or recycled and input to a crude oil tank again to reduce the amount and cost of waste oil generated. In terms of I/E material business, we adopted a waste oil recycling facility and input 65% of waste oil generated in the process, which decreased the amount of waste generation and saved an annual cost of KRW 1.07 billion as well as reduced oil waste.

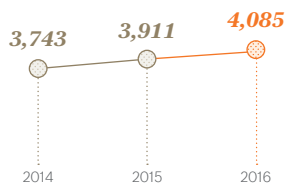
Management of Air Pollutants

SK innovation monitors the current status of air pollutants from major discharge facilities in business sites such as a heating furnace and boiler by using TMS¹⁾ on a real-time basis. With the aim of preventing any damage by hazardous air pollutants(HAPs,²⁾ the Company also applies LDAR³⁾ system at arsenic acid discharge facilities such as a pump, flange and valve and monitors such facilities at least once per year. We also operate odor-preventing facilities to sustain pleasant air environment in the local communities and business sites and run a channel for reporting civil complaints regarding environmental

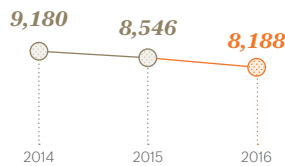
- 1) TMS: Telemetering System
- 2) Hazardous Air Pollutants
- 3) Leak Detection and Repair

Emissions of Air Pollutants

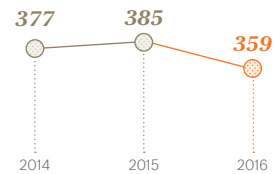
(Unit: metric tonnes)



SOx(Sulfur Oxides)



NOx(Nitrogen Oxides)



VOC(Volatile Organic Compounds)

Efforts to Prevent Oil Spill

Prevention of Marine Pollution

SK innovation prepares work standards and procedures and reinforces on-site monitoring practices to prevent any marine pollution accidents. A marine pollution prevention manager stays at and manages each facility such as single Buoy⁴⁾ mooring, Dolphin⁵⁾, crude oil tank and oil storage tank. In 2016, the Company increased the number of marine pollution prevention managers and appointed additional managers to allow managers to work fully in the nighttime shift.

Soil Environment Management

SK innovation conducts various activities to prevent soil pollution, which can be caused by leakage of pollutants. As we have agreed on the "Voluntary Agreement for the Preservation of Soil Environment" with the Ministry of Environment, we voluntarily purify contaminated soil and prevent any risk of the spread of soil pollution in advance. Furthermore, we conduct voluntary soil contamination survey every other year and monitor the level of soil contamination.



Oil spill response drills

- 4) Buoy: An oil loading/unloading facility to be installed over the sea to discharge oil from a large-sized oil tanker, which cannot be docked at the pier
- 5) Dolphin: A bridge to be installed heading out to sea from the land to dock a large-sized vessel