

ENVIRONMENTAL MANAGEMENT

Our Stance on the Environment

Under our Management Philosophy, Showa Shell Group has established sustainable development and social responsibility as elements of its Code of Conduct and implements our HSSE-MS following the Basic Policy on HSSE (P9).

We are working to lower its carbon footprint and conserve energy through its participation in the Commitment to a Low Carbon Society by Keidanren (the Japan Business Federation), as part of its efforts to help resolve global environmental issues such as climate change. The Group strives to spread solar panels as a form of renewable energy and develop higher efficiency solar power generation. We are also developing artificial photosynthesis technology as a next-generation innovation.

The Basic Policy on HSSE also outlines our social responsibility to prevent pollution. To ensure we never forget the history of pollution in Japan, Group companies have implemented various measures, such as providing education to the next generation of employees at pollution related facilities in the community. We respond to cases such as soil contamination risks emerge in compliance with laws and regulations, and take measures according to our own voluntary standards referencing those of Europe and the United States for chemical substances not stipulated by law.

Environmental Policy

We have formulated the Basic Policy on HSSE as our environmental policy. This policy outlines the establishment of a recycling-based society, life cycle assessment (LCA), environmental assessment, environmental education, environmental reporting, and the provisions for creating opportunities related to the environment. Initiatives are also being carried out based on the environmental policies of each site.

Environmental Management System

We carry out environmental management initiatives under the HSSE Promotion System (P10). Beginning this year, we appointed an executive to manage environmental strategy, and we require the report of progress of overall environmental initiatives, including on climate change, be reported to the Board of Directors in order to achieve of the Mid-Term Environmental Action Plan. We have obtained ISO 14001 environmental management system certification at 12 sites. The certification rate of refineries, our main manufacturing base, is 100%.

Environmental Education

We are working to promote awareness of the environment on a daily basis through energy conservation activities in offices under the company-wide ECO TRY 21 campaign. We also provide environmental education. This includes providing information on the environment at meetings of the head of each division and HSSE Focal Points, as well as sending out a monthly email to all employees with the latest information on environmental laws and regulations.

Environmental Accidents

One environmental accident occurred in 2017 as follows. We addressed the situation in an appropriate manner and are making every effort to prevent a reoccurrence.

\*An environmental accident refers to a chemical substance spill or detection of such in excess of the threshold set forth in environmental related laws and regulations or other accidents deemed as requiring measures be taken at the time of the accident per environmental related laws and regulations.

Date of Accident	Business Site	Summary of Accident
December 2017	Sado Oil Depot	Gasoline spill in ocean (approx. 200 liters)

Environmental Audits

We manage and inspect environmental activities using annual self-reviews at relevant divisions and Group companies following the HSSE Management System. In addition, we check the status of environmental activities in the internal audit targeting Showa Shell and its Group companies conducted once every five years.

Acquisition Status of ISO 14001 (Environmental) Certification

Company / Site	Date of Certification	Certifying Organization
Yamaguchi Refinery of Seibu Oil Co., Ltd.	December 1998	LRQA
Keihin Refinery of Toa Oil Co., Ltd.	June 1999	LRQA
Yokkaichi Refinery of Showa Yokkaichi Sekiyu Co., Ltd.	July 1999	LRQA
Toyotsu Petrotex Corporation	December 2000	LRQA
Japan Oil Network Co., Ltd.	December 2000	JQA-ISO CENTER
Central Research Laboratory of Showa Shell K.K., K.K. SVC Tokyo	January 2001	JET
Nippon Grease Co., Ltd.	March 2005	JACO
Yokohama Plant of Shell Lubricants Japan K.K.	June 2005	LRQA
Kobe Plant of Shell Lubricants Japan K.K.	September 2005	LRQA
Wakamatsu Gas K.K.	July 2010	JIAQA CENTER
Atsugi Research Center of Solar Frontier K.K.	November 2011	DNV
Kunitomi Plant of Solar Frontier K.K.	September 2012	DNV

Mid-Term Environmental Action Plan

We have established a Mid-Term Environmental Action Plan to facilitate the systematic implementation of environmental management across the entire Group. In the plan for 2016 to 2018, we have set targets not only for conventional environmental preserva-

tion, but also targets for areas where we must take responsible actions, such as water usage and the supply of renewable energy including biomass power. We are now working to achieve these targets over the medium term.

2016-2018 Mid-Term Environmental Action Plan

Items	Activity Themes	Medium-term Objectives	Results in 2017	Page Listing
Compliance	Promoting energy conservation and global warming prevention	Reduce medium- to long-term unit energy consumption by more than 1% annually on average, based on the Energy Conservation Act	Generally achieved	P15
		Participate in the petroleum industry's Action Plan for a Low-Carbon Society, leading up until 2020 (refinery energy-saving policy [total crude oil equivalent savings of 530 megaliters per year within the industry], usage of ETBE* biofuels [500 megaliters of crude oil equivalent for the industry in 2017])	Introduced high efficiency facilities and achieved PAJ's target	P15
		Conserve energy and reduce consumption of resources in offices under the ECO TRY 21 campaign (Management of temperature and lighting, Cool Biz, reduced printing)	Promoted electricity conservation and paperless meetings	—
	Preventing environmental pollution and reducing waste	Achieve zero emissions at Group refineries (An industrial waste output rate of 1% or less)	Maintained industrial waste output rate of less than 1% (0.008%)	P20
		Promote countermeasures of soil and groundwater contamination (Surveys at time of land development, preventive measures against groundwater pollution)	Instituted measures when conducting land development	P17
		Strengthen chemical substance management (Reduce use and storage of regulated chemicals)	Periodically conducted inspections	P18
CSR	Promoting environmental preservation activities and environmental communication	Present opportunities for stakeholders to think about the environment (Environmental Photo Contest, energy education program, Niigata Yukigunigata Megasolar Power Plant tours)	Held photo contest (13th) Megasolar power plant visits: 599 persons	P38
		Promote environmental and biodiversity preservation projects conducted cooperatively between employees and local communities (Participation in cleanup activities and forest and sea preservation activities around business site)	Implemented at each refinery and business site	P19
Business	Offer eco-friendly products and services	Contribute to the realization of a sustainable water environment (water usage monitoring and optimization)	Tracked the recycling rate for industrial water and introduced measures to counter the risk of water shortages	P20
		Prevalent CIS thin-film solar modules Supply renewable energy (megasolar and biomass power generation)	Electric power retail sales volume 1.1 billion kWh	P16 P16 - 17

\* ETBE: Ethyl tert-butyl ether is plant-based biofuel added to gasoline  
We expanded the number of items for disclosure through a checking legal compliance and an outside survey on climate change for the entire Group as part of our main environmental activities for 2017 outside of those above.

ENERGY CONSERVATION AND MEASURES TO PREVENT GLOBAL WARMING

Climate Change Actions

We are taking actions aiming to realize a low-carbon society based on a correct understanding of the impacts of risks and opportunities caused by climate change. We are working to reduce CO<sub>2</sub> emissions across the entire supply chain through the promotion of energy conservation in production and transportation, sales of eco-friendly products that reduce environmental impacts, and expansion of the renewable energy business, etc. In 2017, we established four new priority actions, and beginning in 2018 we have started to expand information disclosure in order to enhance Company's reliability by implementing these four actions.

Priority Actions Against Climate Change

Actions	Results and Page Listing
(1) Revise assessment of risks and opportunities concerning climate change	P14
(2) Disclose numerical targets for CO <sub>2</sub> emissions Reduce emissions by 170 thousand tCO <sub>2</sub> compared to 2009 by 2020	2016 achievements (P15)
(3) Expand information disclosure related to the scope of emissions and publish following international standards	P14
(4) Enhance reliability of information by obtaining independent practitioner's assurance	independent practitioner's assurance obtained (P72)