



2 Energy Conservation and Responses to Global Warming

Increasing attention has come to be paid to global warming problem since the global summit in 1992. At the 3rd conference of countries concluding the global warming prevention treaty (COP3), or so-called Kyoto Conference, Japan set the target to reduce the greenhouse gas emission by 6% between 2008 and 2012 as compared with 1990. Discussions were resumed in subsequent meetings to reach a concrete agreement, and COP10 will be held in Buenos Aires, Argentina, in December 2004. It has been agreed to initiate a preliminary discussion on the framework for global warming prevention in/after 2013 in a conference on a ministerial level at COP10. In addition, it has been decided to hold an "Informal Experts Meeting on Modeling Activities Dealing with Climate Change," co-hosted by Japan and Brazil, in Tokyo in September 2004, in preparation for the ministerial meeting.

In Japan, the Ministry of Economy, Trade and Industry and the Ministry of Environment have been assessing and reviewing the "Guidelines of Measures to Prevent Global Warming" by the Japanese government, for the revision of the guidelines in March 2005.

The majority of greenhouse gasses, which are said to be the cause of global warming, are carbon dioxide. The emission of carbon dioxide comes from the consumption of fossil fuel. Therefore a response to global warming is in itself a response to energy conservation. Since the 1st oil crisis in 1973 Japan has promoted energy conservation. Various improvements in facilities and equipment have been introduced to petroleum industry including our company. We have established a program responding to the "Voluntary action plan of the petroleum industry for environment preservation" published in 1997 and are taking actions to achieve our date and quantity targets, which are concretely defined in our program.

① Voluntary Action Plan of the Petroleum Industry for Environment Preservation

The Petroleum Association established the "Voluntary action plan for environmental preservation" in February 1997 and its 6th following-up was made in October 2003. Likewise, the other industries, which are big consumers of energy, such as iron and steel, chemical and electric power industries establish their own voluntary action plans. The Federation of Economic Organizations (Keidanren) publishes the "Voluntary action plan for environmental preservation" consolidating action plans of those industries to disseminate domestically and internationally the status of Japanese industries in coping with prevention of global warming.

I. Preventive measures against warming (promotion of energy conservation)

- Reduce energy unit consumption by 10% in 2010 as compared with 1990.
- Reduce fuel used for product transport by 9% in 2010 as compared with 1990.

II. Measures for reduction of industrial wastes

- Reduce quantity of finally disposed wastes by 67% (2/3) in 2010 as compared with 1990.

III. Establishment of the environmental management system

IV. Technical cooperation with overseas

V. Marine environmental preservation measures

VI. Promotion of advertising activities

② About the Kyoto Mechanism

At the Kyoto Conference mentioned earlier, flexibility mechanisms, or so-called "Kyoto Mechanisms," consisting of Joint Implementation, Clean Development Mechanism and Emissions Trading, were adopted as an economic instrument aimed at internationally minimizing the cost for curtailing greenhouse gas emissions. Showa Shell is working to accumulate knowledge and know-how on the utilization of the Kyoto Mechanisms through a linkage with the Royal Dutch Shell group, who is taking the lead in addressing this issue.

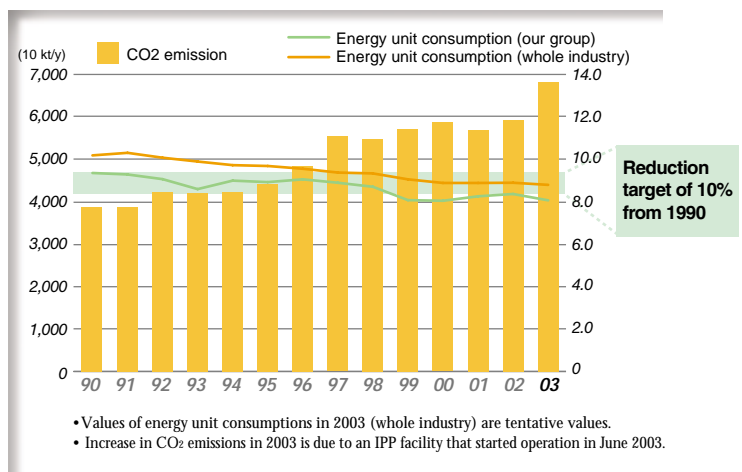
③ Energy Unit Consumption and CO2 Emissions

This section describes actions taken at the refinery sector, which accounts for approximately 85% of CO2 emissions by the whole Show Shell Sekiyu Group.

Because refineries consume energy for crude oil processing and emit such greenhouse gasses as CO2, we are making continuous efforts to build up the more efficient oil processing facilities not only for economic benefits, but also in view of global environmental preservation. Refineries of the group are making efforts to enhance energy efficiency every year, by means of introducing highly efficient equipment, waste heat recovery equipment and operation support system for energy conservation. The energy unit consumption has been decreasing satisfactorily and our target to reduce it by 10% in 2010 as compared with 1990 is expected to be achieved.

However, total fuel consumption and CO2 emission have been increasing since the complexity of refineries has increased and greater focus has been placed on sulfur-free products as a result of introducing desulfurisers and benzene reduction facilities to reduce environmental loading.

■ Evolution of energy unit consumption and CO2 emission of group refineries



*Energy unit consumption (%) [fuel (kl) / feedstock (1,000 kl)]

Crude oil equivalent of energy (fuel oil, fuel gas and electricity) consumed in a refinery to process 1,000 kl of feedstock. This figure serves as a yardstick of energy use efficiency: the lower the figure, the higher the efficiency.