



## Water Management

### Concept of Utilization of Water Resources

The problem of water resources in the world has become serious. It is said that more than two billion people are unable to obtain safe drinking water. Japan has abundant water resources, and so it is rare to face a severe water shortage problem. However, there are many countries and regions overseas where water resources are depleted. Idemitsu Group is committed to the efficient use of water resources, as we operate business in areas with high water stress.

In addition to conventional water risk assessments, we have begun to identify and review risks of droughts and flood at some of our complexes, with reference to AQUEDUCT issued by the World Resources Institute (WRI) and information provided by the Ministry of Land, Infrastructure and Transport. In Japan, the risk of flooding is high, and damage is expected to increase due to climate change in the future. Therefore, we are working to strengthen related infrastructure facilities. (Concept of Climate Change Adaptation on page 21)

### Examples of Specific Initiatives

#### Strengthening of Water Recycling at Refineries and Complexes

Our refineries and complexes, which use a large amount of water, are working on reducing their water consumption.

A certain amount of water (seawater and fresh water) is required to cool the process fluid during the oil refining process at refineries. Fresh water (hot water) used for cooling is circulated in an air-cooled condenser for cooling, and is used again as cooling water for the process fluid to reduce the impact on the natural environment. As a water user, we will make further efforts to recycle water resources.

#### Recycling of industrial water (FY2018)

	Idemitsu	Showa Shell
Industrial water intake (thousand t)	59,281	40,316
Recycled (thousand t)	543,645	1,144,821
Recycling rate (%)	90.2	96.6

\* Scope of Idemitsu's data: Hokkaido Refinery, Chiba Complex, Aichi Refinery, Tokuyama Complex, Cray Valley Idemitsu Corporation, Prime Polymer Co., Ltd., Anesaki Works

\* Scope of Showa Shell's data: Showa Yokkaichi Sekiyu Co., Ltd., TOA Oil Co., Ltd., Seibu Oil Co., Ltd.

### Reduction of Water Consumption by Collaboration with Other Companies

At Aichi Refinery, we are working on reducing water consumption by sharing cold water with other companies through cooperation within the industrial complex. This is an initiative supported by the Research Association of Refinery Integration for Group-Operation (RING). By effectively using the chilled water discharged from the LNG vaporizer of Chita LNG Co., Ltd., which is adjacent to the complex, as process cooling water, we are contributing to the reduction of water intake in the Chita area as a whole.

#### ■ Chilled water supply through cooperation within the industrial complex

