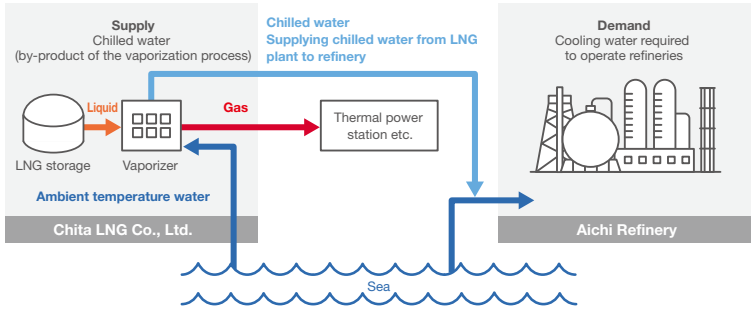
Water Management

Reduction of Water Consumption through Collaboration with Other Companies

At Aichi Refinery, we are working to reduce 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 overall reduction of water intake in the Chita area.

■ Chilled water supply through cooperation within the industrial complex



Conservation of Biodiversity

Concept of Conservation of Biodiversity

A tremendous variety of organisms live on Earth. They intertwine in highly complex ways to form ecosystems that are often resilient enough to absorb the impact of various external changes and thus returning to their original state. We are aware of our important mission to pass down sound ecosystems to future generations and thus maintain an environment in which diverse living organisms can thrive in the course of our corporate activities.

The History of Our Biodiversity Initiatives

Even before the recent rise in public interest elevated the conservation of biodiversity, we have long taken it to heart, adopting a management approach that aims to harmonize concerns about the natural environment and business operations.

In the course of constructing refineries and complexes, for example, we have ensured that the green areas within their premises exceed legal requirements. We began building and operating these refineries and complexes, which represent our main business sites, across Japan in the 1950s when the government introduced regulations mandating that businesses secure greenery within newly constructed manufacturing facilities. In response, we have consistently sought to do more than simply meet our legal obligations for square meters of greenery. We have also striven to harmonize our new facilities with their surrounding natural environments. Our approach has resulted in green areas far more extensive than the legal requirement. Initiatives like these are highly evaluated by external organizations. Hokkaido Refinery and Aichi Refinery have received the highest grade of 5 (Superlative Stage) in the "Social and Environmental Green Evaluation System (SEGES)" organized by the Organization for Landscape and Urban Green Infrastructure.

Source: SEGES website (Japanese only) **https://seges.jp/**

■ Hokkaido Refinery's green belt

■ Aichi Refinery's green belt

Conservation of Biodiversity

Our Recognition of the Importance of Biodiversity

In line with our Environmental Protection Policy (P. 16), which enshrines the importance of biodiversity, each relevant department is engaged in initiatives to conserve biodiversity.

In addition, the latest Global Risk Report (2020) issued by the World Economic Forum suggests that the threat to biodiversity constitutes a major environmental risk second only to climate change risk, while a special report compiled by the Intergovernmental Panel on Climate Change (IPCC) argues that biodiversity conservation and climate change response must go hand in hand and are not independent of each other. Accordingly, we consider biodiversity conservation initiatives to be of greater importance than ever before.

Methods for Developing a Framework for Initiatives

As discussed earlier, we have long been engaged in biodiversity conservation. Currently, we are striving to integrate our conventional initiatives with biodiversity conservation measures required under the recent global standards. In this way, we are striving to move forward in this field while ensuring no issues are left unaddressed.

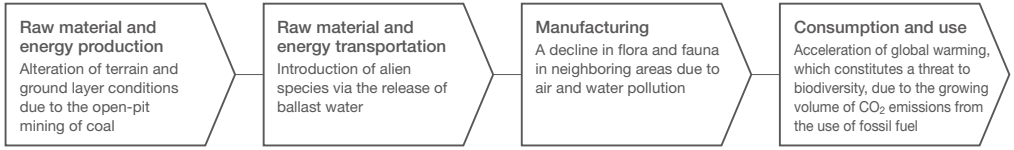
Specifically, we have organized our biodiversity conservation initiatives using the following methods.

(1) Accurate assessment of our business value chains regarding their impact on biodiversity
(2) Assessment of the proximity of our main business sites to specific regions requiring protection from the perspective of diversity conservation
(3) Prioritization of our initiatives in light of results of the above assessments (1) and (2) with an eye to achieving the following objectives
- Minimizing the negative impact of our operations
- Exerting a positive impact through our operations
- Collaborating with local communities

The Impact of Our Operations

The primary areas in which our business value chains affect biodiversity are presented in the following diagram. Also, referring to the Protected Planet, a website managed by the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), we have confirmed the proximity of our main business sites to regions requiring particular attention in terms of biodiversity conservation.

■ Noteworthy Impact of Our Operations on Biodiversity



Examples of Initiatives

Minimizing the negative impact of our operations

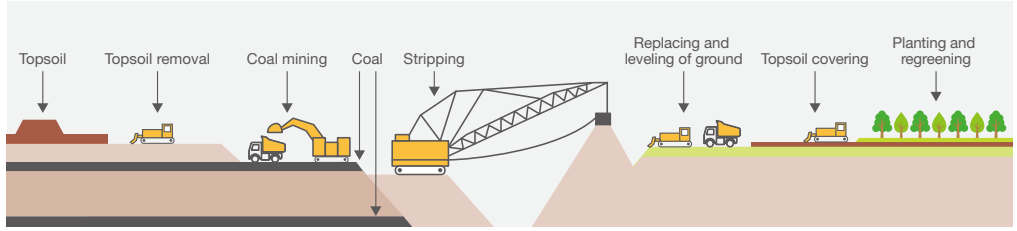
The exhaust gas, wastewater and industrial waste emitted from business operations can exert a significant negative impact on biota and ecosystems as a whole. We are minimizing such an impact by strictly adhering to emission-related regulations enforced in each country and region in which we operate to counter the negative effect of our industrial activities.

Exerting a positive impact through our operations

The open-pit mining of coal involves the excavation of surface soil to extract coal from underground reserves. This inevitably exerts a negative impact on biodiversity. However, we are ensuring that the impact of mining on the environment is as minimal as possible via mining site rehabilitation. Specifically, once mining is completed at a site, we ensure that the site is refilled and the native plant species are reinstated to again thrive, with the aim of restoring the site's biodiversity. In addition, we are engaged in these endeavors in line with the concept on Land Use Change presented below.

We have disclosed data on our coal mines in Australia, including areas that have been subject to drilling and rehabilitation. We will continue these and other efforts in the course of mining operations.

■ Rehabilitation of the mining site



(Prepared by Idemitsu in reference with materials issued by the Japan Coal Energy Center)

■ Concept of Land Use Change

Along with air and water, soil is an essential element when considering the global environment. In recent years, along with world population growth, areas that used to be green belts have been developed and converted to agricultural land at an accelerated rate. The United Nations has pointed out the importance of initiatives related to Land Use, Land-Use Change and Forestry (LULUCF). Land-use changes can result in the loss of CO_2 sinks and have serious adverse effects from the perspective of climate change. In addition, nutrient-rich topsoil, which had been protected from wind and rain by forests, has been lost due to deforestation, leading to desertification.

The Idemitsu Group is actively engaged in projects to minimize the environmental impact of changes in land use.

Conservation of Biodiversity

Status of Rehabilitation at Coal Mining Sites in Australia (Unit: ha)

Category	2017 results	2018 results	2019 results	2020 forecast
A. Mining sites	1337.8	1300.5	1433.9	1499.4
B. Unrehabilitated sites	1179.1	1062.3	1338.6	1196.5
C. Completed preparation for rehabilitation	N/A	N/A	N/A	N/A
D. Sites currently undergoing rehabilitation	158.7	238.2	263.7	302.9
E. Rehabilitated sites	None	None	None	None

■ A site that was rehabilitated in 2018 (one year after rehabilitation)

■ A site that was rehabilitated in 2010 (nine years after rehabilitation)

■ A site that was rehabilitated in 2008 (11 years after rehabilitation)

Collaboration with Local Communities

When it comes to biodiversity conservation, we believe that our company's efforts alone are not enough. We are acutely aware of the importance of collaboration with representatives from local communities in our efforts to ensure harmonious coexistence with the natural environments of the regions where we operate. Accordingly, we are engaged in various types of collaborative initiatives that take a community-rooted approach.

■ Idemitsu Appenai Watershed Forest, Hokkaido

■ Participants in the Teruha no Mori Ongaeshi Project aimed at giving back to the forest environment in Aya Town, Miyazaki Prefecture

Providing Students with Opportunities for Environmental Education

General public access to our production facilities is such as refineries and complexes is strictly restricted because there handle hazardous materials in the sites. This has allowed the green spaces in the facilities to flourish, becoming rich in biodiversity, providing sanctuaries for birds and other small animals, and, in some spots, developing into ideal habitats. The Hokkaido Refinery, the Chiba Complex, and the Aichi Refinery use these green spaces and natural parks to provide opportunities for environmental education to children and students of local elementary schools.

■ Bird watching (Hokkaido Refinery)

■ Nature observation (Aichi Refinery)

Conservation of Rare Species

Every time we install new equipment at our refineries and complexes, we conduct an environmental assessment to shelter any endangered plants species that have been identified through ecosystem surveys. Currently, at the Aichi Refinery we are working to conserve *Salvia plebeia*, a plant species designated quasi-endangered by the Ministry of the Environment. As this species was discovered on the grounds when new facility construction was undertaken, we have set aside conservation areas within the refinery's premises.