

Preserving Biodiversity

Basic Policy

Recognizing that natural capital and biodiversity are foundational for realizing a sustainable society, the JFE Group has endorsed the Declaration of Biodiversity by Keidanren and Action Policy and conducts business in harmony with nature across the world. We particularly recognize the preservation of biodiversity as a key challenge and conduct assessments to minimize the ecological impact associated with our business activities. Our initiatives include cooperating with the community to monitor biodiversity and carry out preservation activities around the steelworks, the key facilities for our business, and in surrounding areas. We are also involved in developing iron and steelmaking slag products that can help restore the marine environment. Furthermore, beyond our business operations, we launched a joint research program with a local government and conduct environmental education for local communities.

Our core business of steel manufacturing uses large quantities of fresh water for cooling and cleansing products and facilities. For this reason, the efficient use of water resources with due consideration to the source of the water and stakeholders in the area is a key challenge.

And while we have always taken measures against meteorological disasters such as droughts and floods at our manufacturing sites in Japan, we are further reinforcing them in anticipation of the increased frequency and severity of weather events associated with climate change by securing alternative means and raising the height of embankments. We also seek to identify water-related risks throughout our business sites and supply chain in Japan and overseas, such as the risk of drought at the source of water intake and pollution at the point of discharge. In areas under water stress, we will respond appropriately through dialogue with stakeholders.

► [Declaration of Biodiversity by Keidanren and Action Policy \(Revised Edition\)](https://www.keidanren.or.jp/en/policy/2018/084.html)

(<https://www.keidanren.or.jp/en/policy/2018/084.html>)

System

The JFE Group recognizes the issue of water resources as a risk that may significantly impact operations, and we have taken action against meteorological disasters such as droughts and floods. In recent years, we have been seeking to adequately identify and manage water risks based on the assumption that disasters due to climate change will increase in frequency and severity.

With regard to Group risk management, the Group Sustainability Committee, under the leadership of the CEO, who heads the JFE Group CSR Council, discusses, supervises, and guides Group-wide environmental initiatives, including the proper use of water resources.

There were no violations of environmental laws or regulations related to water quality in FY2023, and no fines or penalties were imposed.

► [Framework for Environmental Management](#) (P.46)

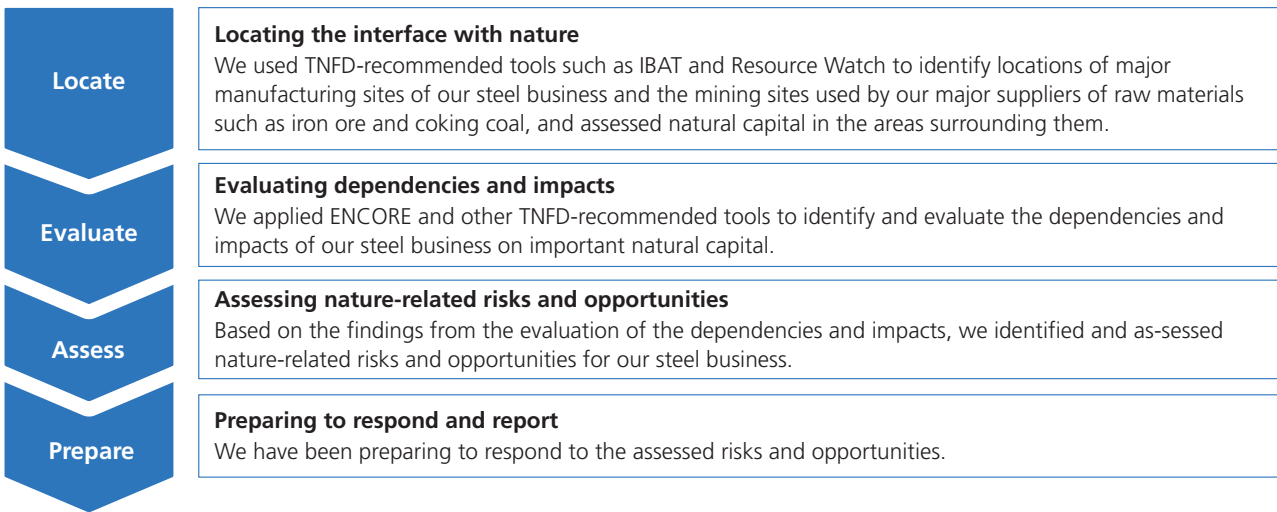
Initiatives

Assessing Impacts on Natural Capital

Evaluating Dependencies and Impacts in Line with the LEAP Approach

The JFE Group began pilot testing the LEAP approach in line with the recommendations of the Taskforce on Nature-Related Financial Decisions (TNFD), starting with the steel business and focusing on JFE Steel's leading manufacturing sites and key raw materials such as iron ore and coking coal. We will increase our understanding of relationships between nature and the Group's other businesses toward the disclosure of material risks and opportunities in accordance with the TNFD framework.

Progress in pilot LEAP assessment



Reviewing Specific Categories of Findings on the Dependencies and Impacts of the Steel Business on Nature (General Findings Related to the Steel Business)

Regarding the dependencies and impacts of our steel business on nature, we reviewed the findings under the categories of manufacturing at our production sites, procurement from our upstream supply chain at iron ore and coking coal mining sites, and product disposal at our downstream supply chain. Our procurement and manufacturing operations depend on natural resources, particularly related to water supply, the control of water volume, and climate adjustments. Meanwhile, our manufacturing operations have an adverse impact on nature through the use of water resources and by contributing to air pollution. The iron core and coking coal mining conducted at the upstream of our supply chain also impact nature through the use of terrestrial land and water resources, the emission of greenhouse gases, and pollution.

	Dependencies on nature						Impacts on nature										
	Supply service	Adjustment service					Climate change	Use of terrestrial and aquatic land			Use or resources		Pollution				
	Water resources	Air purification	Water volume control	Climate adjustment	Disaster mitigation	Erosion control	GHG emissions	Land areas	Freshwater areas	Sea areas	Water resources	Other	Air	Water quality	Soil	Waste	Disturbance
Procurement	High		High	High		Moderate	High	Very high	High		Very high		High	High	High	High	High
Manufacturing	Moderate	Moderate	Moderate		Moderate		High	Moderate			Very high		High	Moderate	Moderate	High	High
Product disposal																Moderate	

Very high High Moderate Low

Assessment of Leading Manufacturing Sites

Our assessment of leading manufacturing sites found that the East Japan Works and the West Japan Works are located in proximity to areas of high conservation significance such as Key Biodiversity Areas (KBAs). As a result, those sites have been identified priorities for evaluation and responses.

Manufacturing site	Criteria for priority locations				
	Conservation significance	Ecosystem integrity	Degradation in ecosystem integrity	Water-related physical risks	Importance of ecosystem services
East Japan Works, Chiba	Located in proximity				Not located in proximity
East Japan Works, Keihin	Not located in proximity				Not located in proximity
West Japan Works, Kurashiki	Located in proximity				Not located in proximity
West Japan Works, Fukuyama	Located in proximity				Not located in proximity
Chita Works	Located in proximity				Not located in proximity
Sendai Works	Located in proximity				Not located in proximity

Very high High Moderate Low

* Assessment based on the five criteria was performed by using the following indicators and tools.

- Conservation significance: Assessed with IBAT the proximity (within a 3-km radius) to areas of conservation significance, for example, protected areas and KBAs.
- Ecosystem integrity: Assessed based on the Biodiversity Intactness Index provided by Natural History Museum
- Rapid degradation in ecosystem integrity: Assessed based on the Pressure on Biodiversity indicator provided by WWF Biodiversity Risk Filter to measure at degree of influence on nature
- Water-related physical risks: Assessed based on the Baseline Water Stress indicator through the use of Aqueduct
- Importance of ecosystem services: Assessed with the Global Forest Watch tool the proximity (within a 3-km radius) to areas under the control of Indigenous Peoples and Local Communities (IPLCs)

Raw Material Suppliers

We located the interfaces of our major iron ore and coking coal suppliers in natural settings and assessed the state of nature at those sites (6 iron ore mines and 14 coking coal). The iron ore mines are in Australia and Brazil, and our assessment found that some of those in Brazil are located near areas of conservation significance and that those in Australia are exposed to high water stress and require responses to handle water-related risks. Our coking coal suppliers are mining in Australia, Canada and Indonesia. We learned from our assessment that their mines in Canada and Indonesia are located in areas with high ecosystem integrity and that some of their mines in Australia are in areas with degrading ecosystem integrity.

Raw material	Major supplier countries	Findings from the Assessment of the Areas in Proximity to the Mines*
Iron ore	Australia	Some of the mines are located in areas exposed to high water stress.
	Brazil	Some are located in areas of high conservation significance or areas with high ecosystem integrity.
Coking coal	Australia	Some are located in areas whose ecosystem integrity is degrading.
	Indonesia	Some are located in areas with high ecosystem integrity or in areas whose ecosystem integrity is degrading.
	Canada	Some are located in areas with high ecosystem integrity.

*Assessed using the same indicators and tools as those used for the assessment of our leading manufacturing sites

Assessment of Risks and Opportunities and JFE's Responses

We sorted out nature-related risks and opportunities currently deemed potential based on the aforementioned findings. The risks, some of which are recognized in our climate change scenario analysis, include physical risks that could be materialized due to a water shortage or natural disaster and potentially trigger a decrease in production at our manufacturing sites or a lack of procurement from suppliers, apart from transition risks that might occur if regulations concerning protected areas and pollution are tightened. The potential opportunities include an increase in demand for our eco-friendly products, processes and technologies as well as related developments and an increase in new orders for our engineering business.

Meanwhile, we ensured that JFE Steel's major iron ore and coking coal suppliers had performed their assessment concerning water resources and ecosystem and had publicly announced how to respond to their detected risks. We will keep monitoring the status of their response efforts as part of our supply chain management. We will also encourage more of our suppliers to adopt and observe the JFE Steel Procurement Guidelines.

As for our own material risks and opportunities, we will maintain the current measures taken for them and, while enhancing our assessment, we will keep a close watch on whether additional measures are necessary.

Category	Risks and Opportunities
Physical risks	Destabilization in raw material procurement due to a water shortage or natural disaster
	Decrease in production capabilities due to a water shortage or natural disaster
Transition risks	Destabilization in raw material procurement due to a protected area expansion, tighter regulation, or another issue
	Increase in operational costs due to a protected area expansion, tighter regulation, or another issue
Opportunities	Increase in demand for eco-friendly products, processes and technologies, and increase in development opportunities
	Increase in demand for recycled steel products
	Increase in new demand related to natural capital considerations in the engineering business

- ▶ [Initiatives to Address Climate Change Issues](#) (P.52)
- ▶ [Realizing a Recycling-Oriented Society](#) (P.115)
- ▶ [Initiatives for Blue Carbon Using Steel Slag Products and Acquisition of J Blue Credit™](#) (P.154)
- ▶ [Restoring Marine Ecosystems Using Steel Slag Products](#) (P.162)

Analyzing and Responding to Water Risks

As part of overall risk management, we identify, analyze and evaluate water risks based on past incidents of droughts and floods in the JFE Group's businesses, forecast data from the Meteorological Agency and results of our scenario analysis. In particular, we consider as key risks the damages to business sites and disruption of the supply chain caused by restrictions on water intake due to droughts or increasing severity of meteorological disasters. In response, we are further reinforcing measures such as using recycled water, securing alternative means, and strengthening drainage facilities.

JFE Steel

Water Risk Assessment and Measures

JFE Steel identifies and evaluates water-related risks based on past incidents of damage caused by droughts and floods, forecast data from the Meteorological Agency and results of scenario analysis. We conduct a further evaluation of water risks around each manufacturing site from different perspectives by also using the World Resource Institute (WRI)'s Aqeduct, a mapping tool for evaluating overall water risks from droughts and floods in each region around the world. According to the WRI's assessment in June 2024, water risks for all of Japan are not designated at a high level or above, but there will be risks of water shortages and flooding due to weather conditions in the future (2030s and 2040s). JFE Steel identifies steelworks under such weather risks and takes measures such as business continuity planning.

JFE Steel

Raised Effluent Standards to Reduce Water Resource Pollution Risks in Iron and Steelmaking Processes

JFE Steel strives to reduce its environmental impact on waterways by thoroughly purifying water used in iron and steelmaking processes before releasing it into public waterways or sewers. The company has concluded agreements with the administrative entity in each area that set out more rigorous effluent standards, compared to those stipulated under the Water Pollution Prevention Act. It also established a strict voluntary control standard to improve water quality. For FY2023, COD*, the water-quality index for wastewater, was 2.3 tonnes per day.

*COD stands for chemical oxygen demand, an indicator for water pollution in seas, oceans, lakes, and ponds. It represents the amount of oxygen (mg/l) consumed when pollutants present in water, such as organic matter, are oxidized.

JFE Engineering

Proper Management in Accordance with the Water Pollution Prevention Act and Sewerage Act

Wastewater from the JFE Engineering Yokohama head office, Tsurumi works, Tsu works, and the Kasaoka Monopile Factory is released into public waterways or sewer systems. Nitric oxide, phosphorus, and COD in the wastewater are measured on a regular basis and effectively managed in accordance with the Water Pollution Prevention Act and Sewerage Act.

For more on quantitative data related to water, please refer to the following information.

▶ [Environmental Data \(P.235\)](#)

Environmental Impact Assessment

To minimize the ecological impact of our business activities on surrounding areas, we are monitoring biodiversity around all of our business sites and planting trees while also preserving rare species in the compound. An environmental impact assessment is conducted in accordance with laws and regulations before launching construction of a new manufacturing site or business. We assess the biodiversity of the surrounding areas as well as our premises to fully understand the situation and to implement the necessary measures for preserving the ecosystem.

Key Initiatives in FY2023

JFE Steel

Replanted a Rare Species of Orchid Found at a Planned Construction Site

Plant No. 1 in the JFE Ohgishima Thermal Power Plant, an aging facility, was renovated and resumed operations in 2019. Before this construction, we conducted an environmental prediction and evaluation for the renovation, in accordance with the Environmental Impact Assessment Act and Electricity Business Act. As a result, the Kugenuma orchid, a plant listed in Japan's Ministry of Environment's fourth version of the Red List as an endangered species (Threatened II-Vulnerable, VU), was discovered at the planned construction site for power generation facilities. To preserve the orchids, we replanted them in a different location of the site that had a similar environment.



A Kugenuma orchid discovered at the planned construction site for the JFE Ohgishima Thermal Power Plant

JFE Steel

Contributing to Biodiversity and the Creation of an Attractive Seaside Town by Utilizing Steel Slag Products (Partnership Agreement with Yokohama City)

Silty sediment (sludge containing large amounts of organic matter) piles up at the ocean bed along the seaside frontage of Yamashita Park in Yokohama City, Kanagawa Prefecture, and significantly deteriorates water quality in summer. As a result, the ocean's ability to function as a spawning ground or environment for nurturing organisms has been lost.

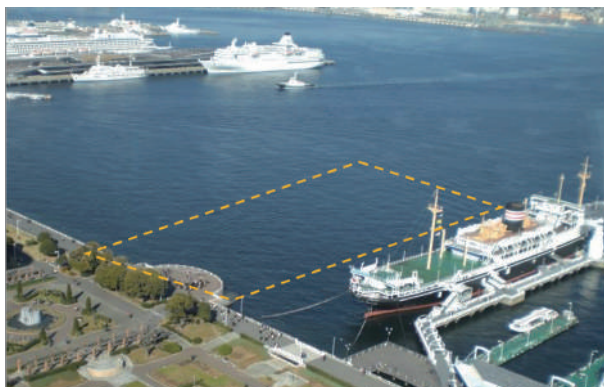
In a joint research project with Yokohama City, JFE Steel is restoring the intrinsic ability of the waters to purify seawater with the help of marine organisms by using carbonated steel slag products such as Marine Block™ to form shorelines as a base for the adhesion of organisms and assist in improving the marine environment. Immediately after an experiment, we observed an increase in the presence of marine organisms such as starfish and sea cucumbers around the area, and the populations continuing to grow. Moreover, we estimated that 8,400 kl of seawater (equivalent to seventeen 25-meter swimming pools) is filtered per day by filter-feeding marine creatures such as bivalves and sea squirt. We also estimated their impact on the removal of COD and the reduction of CO₂ in comparison to results obtained through water purification at sewage treatment plants.

The findings from the research project were presented at many exhibits and other events, helping to raise local awareness of environmental protection. This public-private research project for improving the marine environment has earned public recognition, with Yokohama City and JFE Steel jointly receiving the FY2021 Environmental Award (Group-2) of the Japan Society of Civil Engineering*¹. In September 2022, JFE Steel won the Minister of Land, Infrastructure, Transport and Tourism Award of the 5th Eco Pro Awards*², sponsored by the Sustainable Management Promotion Organization, a general incorporated association. A signboard commemorating these awards was installed next to the sea-facing balcony in Yamashita Koen Park, displaying research findings to visitors.

*1 The Japan Society of Civil Engineering Award is a prestigious award with a history of over 90 years. The Environmental Award (Group-2) is given to an innovative project that has contributed to any combination of environmental preservation, improvement, and creation activities by developing or operating civil engineering technology or systems.

*2 The award is given to goods, services, technology, solutions, or business models with specific and outstanding eco-friendly attributes that are widely recognized by businesses, consumers, investors, and market players in the Japanese market.

- ▶ [FY2021 Environmental Award of the Japan Society of Civil Engineering](https://www.jsce-int.org/node/780) (https://www.jsce-int.org/node/780)
- ▶ [The 5th Eco Pro Award \(Japanese only\)](https://sumpo.or.jp/seminar/awards/5th_eco-pro_award_results.html) (https://sumpo.or.jp/seminar/awards/5th_eco-pro_award_results.html)



The dotted line indicates the area in which slag products are being used at Yokohama Bay (photo taken by Yokohama City)



Colony of sea squirts on Frontier Rock™



Marine Block™ covered by marine bivalves (Yokohama Bay area)



Signboard commemorating the partnership project (installed in September 2023)

JFE Steel

Advancing Biodiversity Verification of Steel Slag Products in Collaboration with Venture Businesses

JFE Steel keeps a water tank containing the coral-covered steel slag product Marine Block™ at the exhibition area at the reception of the head office, offering visitors the opportunity to enjoy watching coral and tropical fish while learning about our initiative to preserve the ecosystem using steel slag products. We also intend to conduct experiments inside the tank. Innoqua Inc.* is providing technical support for the exhibition, which has been featured by several newspapers and TV programs as an example of business collaboration in the field of the environment.

*A venture company engaged in the development of systems for managing and nurturing corals and fish by combining its aquarist know-how with IoT and AI.



Healthy coral growth on Marine Block™ inside the water tank

JFE Steel

Firefly Festival

JFE Steel has opened its Environment Pond at the Chita Works to the community for a firefly viewing festival every year since 2014. Children at the event have the opportunity to release fireflies. The Company is nurturing an environment that preserves the ecosystem together with the local community by maintaining the watering holes and surrounding environment within the steel-works site and these firefly viewing events.



Releasing firefly larvae



Stream within the Chita Works site where fireflies are released



Firefly viewing party

JFE Steel

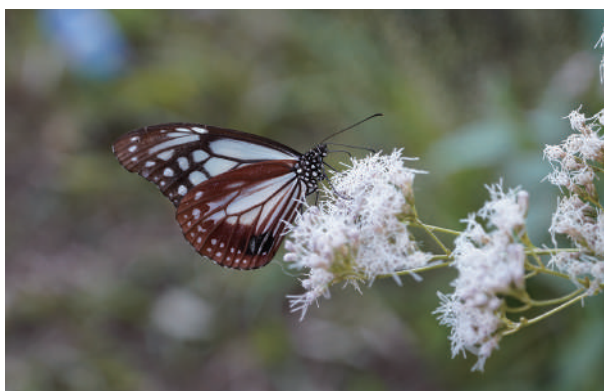
The Chita Works Certified as an Aichi Biodiversity Company

In November 2022, our Chita Works was recognized as a certified enterprise under the Aichi Biodiversity Company Certification Program in its first term launched by Aichi Prefecture based on the Aichi Biodiversity Strategy 2030. The program is intended to encourage more businesses in the prefecture to play a pivotal role in preserving local biodiversity by certifying those that have implemented outstanding initiatives to do so.

The Chita Works is using its Biotope Chita to release firefly larvae and hold firefly viewing festivals in collaboration with the local community and nursery schools/kindergartens. Since FY2022, the Chita Works has also exchanged information about the migration of the chestnut tiger butterfly, a species that travels more than 2,000 kilometers across Japan, with municipalities on the Chita Peninsula in Aichi Prefecture. Moreover, the Chita Works is protecting the Japanese rice fish (*Oryzias latipes*) and Japanese honeybee (*Apis cerana japonica*), both domestic species.



Certified
Aichi Biodiversity Company



Chestnut tiger butterfly



Japanese rice fish

JFE Steel

The “Biotope Chita” Initiative to Reproduce the Local Ecosystem

With the “Biotope Chita” built on the property, the Chita Works is working on reproducing and protecting the ecosystem of plants and animals living on the Chita Peninsula, where the Chita Works is located. Fireflies have been released in the biotope by participant children since 2014, when the Chita Works started holding a firefly viewing festival for local residents.

In 2024, the Chita Works started growing rice in the biotope in collaboration with Aichi Prefectural Handa Agricultural High School. The management of the rice paddy is left in the hands of the high school students who learn the skills in the classroom. The iron-coating powder KONABIJIN™ (iron powder products suitable for direct seeded rice), developed and marketed by JFE Steel, is used to grow rice in the paddy.

Moreover, the Chita Works is using its biotope to protect the Japanese honeybee. The bees of this domestic species build their hives there and work as pollinators for plants in the biotope, supporting its biodiversity.



The biotope in full view



Rice planting



Rice paddy

JFE Engineering

Initiatives in Relation to Construction Works

For large-scale construction or construction work carried out near watersheds or mountainsides, customers and/or the relevant authorities may conduct preliminary investigations depending on the importance of preserving the surrounding environment. Various preservation conditions may then be required, including the protection of living creatures.

JFE Engineering respect the proposed conditions and thoughtfully consider biodiversity preservation by keeping the impact of construction works at a minimum. For example, the company may propose a construction method that minimizes the impact of noise or drainage pollution. For its steelworks, the status of biodiversity on its premises and in surrounding areas are checked, and necessary measures are taken to ensure preservation.

JFE Engineering **JFE Engineering: Biotope for Children’s Learning Experience**

JFE Engineering has conducted some renovation work at the JFE Dragonfly Path in the Tsurumi Works, and since 2009 it has been inviting children in the community to learn about the ecosystem at a biotope, Dragonfly Pond, located along this path.

The JFE Dragonfly Path Fan Club, a group mainly composed of neighborhood residents, has organized a research event that involved capturing dragonflies in order to learn about their ecology and the local environment.

Furthermore, JFE Engineering has been a cosponsor of the How Far Do Dragonflies Fly since FY2020, with the aim of improving the quality of green spaces in the Keihin coastal areas and contributing to biodiversity. The forum brings together companies, residents, governments, and experts and conducts research activities such as capturing dragonflies that fly in 15 green spaces and biotopes scattered throughout the Keihin Coastal Area and inland areas, tagging them, releasing them, and tracking their movements. The JFE Dragonfly Path also serves as one of the research sites.



Dragonfly Pond serving as biotope

JFE Engineering Participation in Kanagawa Prefecture's Reforestation Partner Program

In March 2023, the JFE Engineering Group's J&T Recycling Corporation expressed its support for the Kanagawa Reforestation 50 Year Plan and signed a memorandum of understanding with Kanagawa Prefecture on the Reforestation Partner Program*, an initiative launched by the prefecture.

The company's intent is to use the program as part of its environmental protection and harmony activities while supporting the prefecture's vision. Under the partnership, the company's employees volunteer to help thin trees and take part in other efforts for conserving forests, a valuable source of water for future generations.

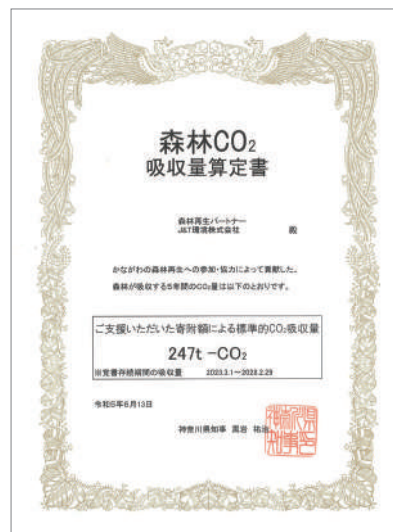
The Reforestation Partner Program grants naming rights to participants for parts of the prefecture-owned forests, one of which is now called the J&T Kankyo Miracle Forest (with the word "miracle" expressed in kanji, meaning the "future is coming"). J&T Recycling Corporation is constantly enhancing its ESG initiatives to improve the environment.



New employees pruned trees in a volunteer activity



J&T Kankyo Miracle Forest



Valuation report on CO₂ absorption by the forest

*For details about the Reforestation Partner Program, please refer to:

▶ [Website for Kanagawa Prefecture \(Japanese Only\)](https://www.pref.kanagawa.jp/docs/pb5/partner.html) (https://www.pref.kanagawa.jp/docs/pb5/partner.html)

Endorsing and Participating in External Initiatives

As a member of the Keidanren Committee on Nature Conservation, the JFE Group endorses the Declaration of Biodiversity by Keidanren and Action Policy and actively engages in the conservation of nature and biodiversity. In addition, the Group took part in the Business for GBF Project, launched by the Ministry of the Environment and Keidanren Committee on Nature Conservation. JFE Steel's steel slag product was selected by the Ministry and Keidanren and introduced as an example of an initiative that contributes to the conservation of biodiversity. Going forward, we will deepen our understanding of and contribute to the Post-2020 Global Biodiversity Framework and other global initiatives committed to preserving nature and biodiversity.

JFE Holdings has joined the 30by30 Alliance for Biodiversity, a platform launched by the Ministry of the Environment, business associations, nature conservation groups, and other organizations. The alliance is committed to effectively protecting at least 30% of Japan's land and sea as healthy ecosystems toward the Nature Positive goal of halting and reversing biodiversity loss by 2030. JFE is going to contribute to the protection of biodiversity by carrying out various activities, including the conservation of its biotope at the Chita Works.



For further details on external initiatives, please refer to:

- ▶ [Business for GBF Project, Ministry of the Environment](https://www.biodic.go.jp/biodiversity/private_participation/business/en/) (https://www.biodic.go.jp/biodiversity/private_participation/business/en/)
- ▶ [Ministry of the Environment's 30by30 Alliance](https://policies.env.go.jp/nature/biodiversity/30by30alliance/) (https://policies.env.go.jp/nature/biodiversity/30by30alliance/)

Products and Technologies (Preserving Biodiversity)

The JFE Group endorses and participates in the Challenge Zero initiative that is being jointly sponsored by Keidanren and the Japanese government. And we are collaborating with Yokohama City on a project that uses steel slag to improve the marine environment while also developing various products aimed at conserving biodiversity.

For more on products and technologies related to environmental protection, please refer to the following information.

- ▶ [Development and Provision of Eco-friendly Processes and Products](#) (P. 135)
- ▶ [Challenge Zero](https://www.challenge-zero.jp/en/member/37) (https://www.challenge-zero.jp/en/member/37)