

As our business is dependent on natural capital, mainly from the ocean, not only climate change issues, but also biodiversity conservation efforts, especially in the ocean, are important themes for our business activities. Therefore, in order to assess and address environmental risks and nature-related economic impacts, we have adopted the LEAP approach based on TNFD guidance. By adopting the LEAP approach, we aim to strengthen our risk and opportunity management based on a more comprehensive understanding of climate change and natural capital related to our business, promote coexistence with nature, and proactively work towards building a sustainable future.

The formal framework of the TNFD was issued in September 2023. These analyses of our biodiversity have been in progress since April 2023. The LEAP approach was conducted based on the beta version of the framework (versions 0.1 to 0.4) prior to the official publication of the TNFD, and the results of our current assessment and analysis, as well as our response measures, were compiled and disclosed as information. The results of the evaluation and analysis at the time of the report and the measures to be taken are summarized and disclosed as information.

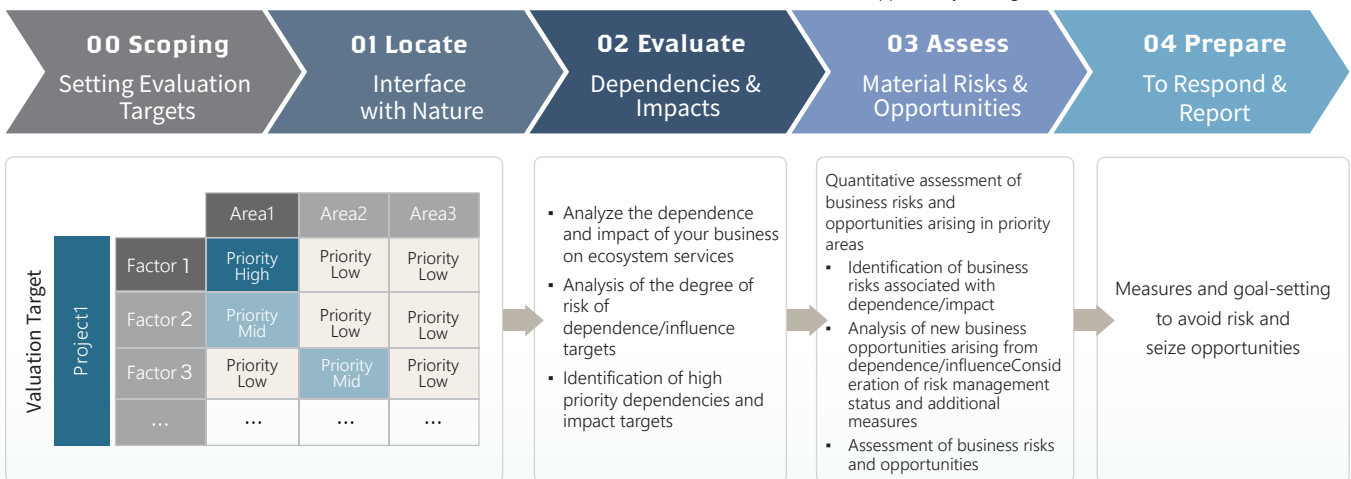
This time, based on the TNFD approach, the analysis is based on the TNFD approach, with an emphasis on "Locate" (region), because the shipping business covers all ocean areas where ships navigate. However, given the nature of the maritime business, which covers all ocean areas where vessels operate, we evaluate that ocean-centered biodiversity measures that do not specify. This information has been verified by Socotec Certification Japan that the LEAP approach has been properly implemented. Ltd. has confirmed that the LEAP approach has been properly implemented.

In order to respond to future changes, we will continue to evaluate and analyze our activities and consider and implement specific measures that contribute to biodiversity conservation. We will continue to evaluate and analyze the results and consider and implement specific measures that will contribute to biodiversity conservation in the future.

■ Steps in the LEAP Approach

Our steps to disclosure in accordance with the LEAP approach are as follows Scoping/Locate, considering the footprint of our operations and their relationship to nature, and identifying priority areas in terms of ecological integrity, biodiversity importance and water stress (mainly the degree of marine pollution). In Evaluate, the "ENCORE" (see upper right box on p. 3) The Evaluate section analyzed how the high dependency and high impact items identified in ENCORE (see upper right box on p. 3) would affect the priority areas identified in Locate. The key dependence/impact items in each priority region identified in the Evaluate section were crosschecked with our business activities, and risks and opportunities were identified and evaluated in the Assess and Prepare sections. We identify and evaluate the risks and opportunities in Assess and Prepare, and then review our goals and strategies.

Source : The TNFD Nature-Related Risk and Opportunity Management and Disclosure Framework Beta0.4



00 Scoping Evaluation Target Setting

The "K" LINE Group has earned the trust of its customers by providing safe and reliable marine transportation and logistics services in the shipping industry, which is the foundation of the logistics infrastructure that supports global economic activities. Of the various businesses that we operate, we decided to focus our analysis on our main business, marine transportation.

Furthermore, as part of the "K" LINE Environmental Vision 2050, we have disclosed our "2030 Mid-term Milestones" and "2050 Goals" to our stakeholders. Based on these goals, we considered the focal points to be analyzed.



01 Locate Interface with Nature

Relationship between our business activities (shipping business) and biodiversity



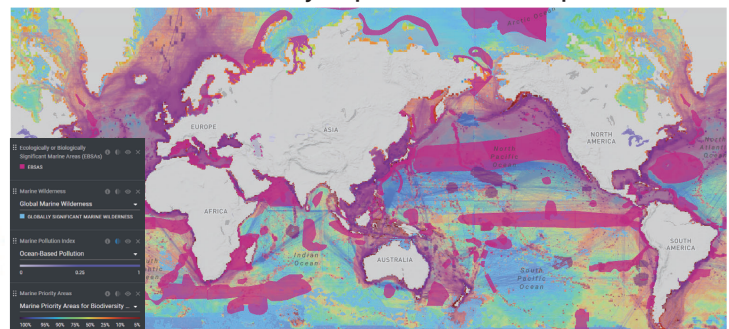
We selected priority areas for each of our business sites and operation locations based on the number of routes and frequency of port calls by our vessels (Left figure below: our business footprint). In addition, we identified areas of high biodiversity importance using the UN Biodiversity Lab . (Right figure below: Biodiversity Importance Heat Map)

We then identified main areas where our business activities have more contact with nature, and identified the following four main areas for analysis.

Our Business Footprint



Biodiversity Importance Heat Map



※Source : UN Biodiversity Lab(details at the end)

UN Biodiversity Lab

Analytical tools to support conservation and sustainable development assessments and impact efforts by the United Nations Biodiversity Laboratory (UNBL)

Main Areas of Analysis

Business Footprint. List of regions prioritized (frequency of routes, number of locations, business activities)



The importance of biodiversity in each region

- A** India
- B** Southeast Asia
- C** Japan
- D** California



02 Evaluate Dependencies & Impacts

In each of the regions selected for Locate, we evaluated the degree of dependence and impact of nature-related aspects of our business.

Analysis of your company's dependence/impact on ecosystem services

The ENCORE tool was used to examine nature-related dependencies and impacts in the analyzed sectors and their potential dependencies and impacts on natural capital, and to analyze and evaluate the scope and degree of each dependency and impact and its details in relation to ecosystem services.

Analysis of the criticality of dependence/impact targets and identification of high priority dependence/impact targets

A detailed analysis of dependencies and impacts on nature in each region was conducted using the ENCORE tool filter for elements closely related to ecosystem services that are highly dependent and impacted by the project. (see figure below) We also developed a list of endangered species in the relevant areas on the IUCN Red List.

ENCORE

A nature-related risk analysis tool developed by the Natural Capital Finance Alliance (NCFA), the international finance industry association for the natural capital sector, in collaboration with the UNEP- WCMC (Natural Capital Conservation Monitoring Center). The tool enables sector-specific assessments of dependence on and impacts on nature.

IUCN Red List

Provides a variety of information on species. It is an important indicator of the health of the world's biodiversity. A tool for informing and informing business decision-making for policies that are essential to biodiversity conservation and the protection of essential natural resources.

Main Areas of Analysis



	Area	Dependencies & Impacts
A	India	The region is highly dependent on marine ecosystems, freshwater ecosystems, and seasonal differences in precipitation, making it highly dependent on flooding events. Since we mainly conduct demolition in this region, it is important to take measures to prevent pollution runoff because of the potential impact on marine and freshwater ecosystems. Thorough environmental measures in the dismantling yards are needed.
B	Southeast Asia	The region has high GHG emissions and a high impact on marine ecosystems. As we often navigate to this region, we need to pay particular attention to measures for discharging hazardous substances from vessels and the impact on marine ecosystems caused by ballast water and oil spillage due to accidents must be paid particular attention.
C	Japan	The region can be said to have a high degree of impact on freshwater ecosystems, marine ecosystems, and water pollution. The marine ecosystems are particularly important for our marine-based business. The region is assessed as having a significant impact on marine ecosystems, especially for our marine-based business. It is necessary to pay attention to countermeasures against marine pollution caused by oil spills in ship accidents.
D	California	High GHG emissions and high impact on marine ecosystems, freshwater ecosystems, and water pollution. As we often sail to this region, we need to pay attention to countermeasures against hazardous substances from ships and marine pollution caused by oil spills in case of ship accidents. We need to pay attention to countermeasures against toxic substances from ships and marine pollution caused by oil spills in the event of ship accidents. In addition, there is a whale sanctuary in the area, and since slow steaming is recommended in the area, it is necessary to pay attention to the disturbance to marine organisms.

03 ASSESS Material Risks & Opportunities / 04 PREPARE To Respond & Report

Consolidated and identified four materialities that apply to all priority areas: oil pollution, atmospheric impacts, prevention of marine organism migration, and impacts on mammals.

The TNFD defines nature-related opportunities as activities that produce positive outcomes for the organization and nature by creating positive impacts on nature or reducing negative impacts on nature. Based on that definition, we evaluated the importance of activities that create nature-related opportunities in the TNFD.

Four materialities of risks and opportunities related to our business

Oil pollution Impacts: Water pollutants, Marine eco system use

It is necessary to provide assurance to fishery-related businesses and neighboring countries due to the occurrence of accidents in marine transportation, which cause oil pollution and affects the marine ecosystem and reduces the catch of fishery resources. And oil pollution associated with the demolishing need to be addressed.

Risk Mitigation Management

Physics: Acute and chronic risk

Ship hull strengthening / Promotion of safe operation through the integrated ship operation and performance management system "K-IMS" / Installation of overflow pipes in fuel tanks / Electricity for deck equipment / Use of indirect cooling system (central cooling system) / Seafarer training / Strengthening of dialogue with port facility managers / Lobbying IMO (International Maritime Organization) on treaty aspects in collaboration with relevant ministries.

※Financial impact is mitigated by marine insurance coverage

Opportunity Management

Ecosystem protection, restoration and regeneration / Reputational capital

Promotion of safe operation through the integrated ship operation and performance management system "K-IMS" / Construction of a fleet compatible with new transport technologies / Environmental protection through enhanced support for green ship recycling

Materiality assessment of risks and opportunities

19 endangered species inhabit Southeast Asia, and oil pollution from ship accidents, etc., is of high importance because of its potentially devastating impact on the ecosystem.

On the flip side of risk, the expansion of safe operation measures and oil pollution prevention measures that take these into account and the insistence on such measures are highly important as they provide an opportunity to contribute to the enhancement of reliability as a ship operator that takes biodiversity conservation into consideration.

Target

Zero oil pollution accidents

Reinforcement of safe operation measures, hull strengthening, human resource development, strengthening of safety measures, strengthening of green ship recycling response, etc.

Atmospheric impacts(GHG,SOx,NOx) Dependence: Climate regulation Impact: Emissions to the atmosphere

Increased GHG and SOx and NOx emissions due to vessel operations and stricter emissions regulations at the operator level will result in increased response costs. Increased emissions of SOx and NOx, which cause photochemical smog and acid rain, will damage social reputation among suppliers and stakeholders

Risk Mitigation Management

Transition: Policy and legal risk / Reputational risk

Initiatives to Develop Next-Generation Technologies to Clear Tier III NOx Emissions Regulations / Expanded Introduction of LNG-Fueled Vessels / Participation in the Port of Bergen, Norway, Initiative to Reduce NOx Emissions from Ships at Berth by Installing Onshore Power Supply Equipment / Awards for the Port of Los Angeles and Port of Long Beach, USA, Slow Navigation Program / Further expansion measures for LNG-fueled vessels / Introduction of LPG-fueled vessels / Introduction of zero-emission vessels such as ammonia- and hydrogen-fueled vessels

Opportunity Management

Sustainable use of natural resources (pollution and waste reduction) / Reputational capital

Proactive biodiversity assessment and information disclosure ahead of competitors in TCFD scenario analysis and TNFD prototypes / Improvement of profitability by enhancing efficient operation through introduction of energy-saving equipment, etc. / Reduction of burden by commercialization of ships with new fuel and propulsion technologies that are low- carbon and decarbon

Materiality assessment of risks and opportunities

Highly important because GHG emission sources are an important aspect of the factors causing climate change and can affect marine ecosystems by increasing sea water temperature, affecting ocean currents, and leading to changes in weather phenomena. SOx and NOx emissions are highly important because they cause photochemical smog and acid rain, which may affect not only marine ecosystems but also human health.

On the flip side of the risks, low-carbon ship operations that take these factors into account, compliance with regulations, and assertion of such are highly important because they provide an opportunity to contribute to the credibility of the ship operator as one that takes biodiversity conservation into account.

Target

Reduction and minimization of impact on the surrounding environment

Promote initiatives to prevent air pollution and reduce GHG emissions: slow steaming, use of low-sulfur fuels, introduction of SOx scrubbers, introduction of NOx reduction equipment, etc.

Prevention of marine organism migration Impact: Marine ecosystem use

The discharge of ballast water and the migration of organisms attached to the bottom of the vessel could affect the aquatic ecosystem of the area, leading to a collapse of the ecosystem of fishery resources and affecting the local fishing industry, which could result in the need for fisheries compensation. It could also create a threat to the conservation of endangered species and could result in lawsuits from the target countries and NGOs.

Risk Mitigation Management

Transition: Policy and legal risk

Use of environmentally friendly paints: When marine organisms adhere to the hull of a ship, they increase the resistance of the hull, which not only increases fuel consumption and CO₂ emissions, but may also affect the ecosystem by bringing the adhered organisms to other waters. In order to reduce fuel consumption and prevent marine organisms from attaching to ships, MHI is actively promoting the use of low-friction paints, especially on new ships, in an effort to reduce CO₂ emissions and preserve biodiversity. In addition to conventional paints, low-friction paints are also being used on vessels in service in consideration of the environment.

Opportunity Management

Ecosystem protection, restoration and regeneration

Marine ecosystem conservation through proper treatment of ballast water.

Materiality assessment of risks and opportunities

26 endangered marine species have been identified in India, 19 in Southeast Asia, 13 in waters around Japan, and 10 in waters around California. The disruption of ecosystems due to ballast water discharge and the movement of organisms attached to ship bottoms could pose a risk to endangered species and have a significant impact on catches. For these reasons, the risks associated with ballast water are of high importance.

On the flip side of the risks, the expansion of ballast water measures that take these factors into account and the use of environmentally friendly paints and their claims are highly important because they provide an opportunity to contribute to the enhancement of reliability as a ship operator that takes biodiversity conservation into consideration.

Target

Reduce and minimize impact on the surrounding environment

Ballast water treatment system installation rate 100% by June 2024, etc.

Impact on mammals Impacts: Marine ecosystem use, Disturbances

Vessel operations may cause collisions with whales and other marine mammals, resulting in physical harm to the creatures. In addition, undersea noise can harm communication between marine organisms, cause stress, and adversely affect the ecosystem. In the worst case scenario, if the noise causes harm or stress to marine organisms, resulting in death, the project may be sued by neighboring countries or NGOs, and public notoriety may be spread.

Risk Mitigation Management

Transition: Reputational risk

Reduce the impact of vessel operations on marine mammals (in the 12-mile area along the California coast, vessels are required to operate at reduced speeds, contributing to reduced collision and noise risks) / Establish noise measurement methods and standards and ensure that they are below standards when built / Engage with governments, UN, NGOs, etc. for policy engagement / Install and research noise reduction devices

Opportunity Management

Ecosystem protection, restoration and regeneration / Reputational capital

Reducing the burden on marine mammals by vessel operations that have contributed to the reduction of impact / Introduced energy-saving hybrid transfer cranes at self-operated container terminals in Japan, which have significantly reduced noise compared to conventional types. Significantly reduced noise compared to conventional types / Ecosystem preservation through more concrete and effective measures to reduce undersea noise, such as that caused by ships to whales and other animals.

Materiality assessment of risks and opportunities

During vessel operations, it may cause collisions with whales and other marine mammals, resulting in physical harm to the creatures. In addition, the degree of impact of noise on whales is high in the Mediterranean and California waters, and is of high importance to stakeholders, especially considering the presence of a whale sanctuary in the California waters.

On the flip side of the risks, the expansion and advocacy of safe navigation measures, oil pollution prevention measures, and operational reviews that take these considerations into account is highly important because it provides an opportunity to contribute to improving the credibility of the company as a ship operator that takes biodiversity conservation into account.

Target

Reduction and minimization of impact on the surrounding environment

Reducing the Impacts of Vessel Operations on Marine Mammals: Participation in California's Slow Travel Program to Protect Whales

Future Biodiversity Conservation Initiatives

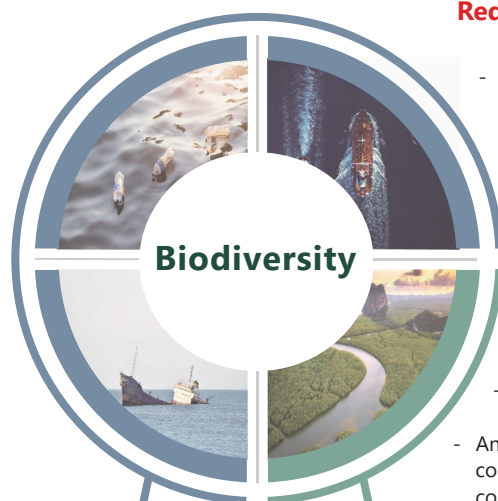
In order to reduce the environmental impact of our ship operations on the oceans and atmosphere to zero, we are already implementing various initiatives in each region from the viewpoint of biodiversity preservation as follows.

Avoidance and minimization of marine pollution

- Promote initiatives to eliminate oil pollution accidents (strengthen safe navigation measures, strengthen hulls)

Reclamation and conversion of resources for recycling

- Dispatch employees to Ship Recycling's dismantling yard to conduct independent assessments, including prevention of pollutant spills
- Minimizing waste and promoting recycling related to marine and land-based operation



Reduction/minimization of load on the surrounding environment

- Introduction of SOx / NOx reduction equipment
- Fuel Use of environmentally friendly low-friction paints
- Appropriate treatment of ballast water
- Participation in the U.S. state of California's slow steaming program to protect whales

Restoring and Preserving the Environment and Ecosystems through Cooperation and Collaboration with Society

- Joint research on plastic waste with Tokyo University of Marine Science and Technology
- An undeveloped woodland near a village conservation and coastal cleanup activities in collaboration with the Chiba University Environmental ISO Student Committee

Bringing the negative to zero

Turning Zero into Positive

By conducting a pilot assessment and disclosure of nature-related risks and opportunities using the LEAP approach, we aim to enhance risk and opportunity management with a comprehensive understanding of natural capital.

※) UN Biodiversity map

Generated by UNBL.

https://map.unbiodiversitylab.org/earth?basemap=grayscale&coordinates=20,0,1&layers=ecologically-or-biologically-significant-marine-areas-ebas_100,marine-wilderness_100,marine-pollution-index_100,marine-priority-areas_100 . (14 September 2023).

■ Ecologically or Biologically Significant Marine Areas (EBSAs)

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■ Marine Pollution Index

Halpern, B. S. et al. Spatial and temporal changes in cumulative human impacts on the world's ocean. *Nat. Commun.* 6:7615 doi: 10.1038/ncomms8615 (2015).

■ Marine Wilderness

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■ Marine Priority Areas

Sala, E., Mayorga, J., Bradley, D., Cabral, R.B., Atwood, T.B., Auber, A., Cheung, W., Costello, C., Ferretti, F., Friedlander, A.M., Gaines, S.D., Garilao, C., Goodell, W., Halpern, B.S., Hinson, A., Kaschner, K., Kesner-Reyes, K., Leprieur, F., McGowan, J., Morgan, L.E., Mouillot, D., Palacios-Abrantes, J., Possingham, H.P., Rechberger, K.D., Worm, B., Lubchenco, J., 2021. Protecting the global ocean for biodiversity, food and climate. *Nature* 1–6.

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