"K" LINE
KAWASAKI KISEN KAISHA, LTD.

Blue Seas for the Future

Navigating for Sustainability, Leading to a Brighter Future

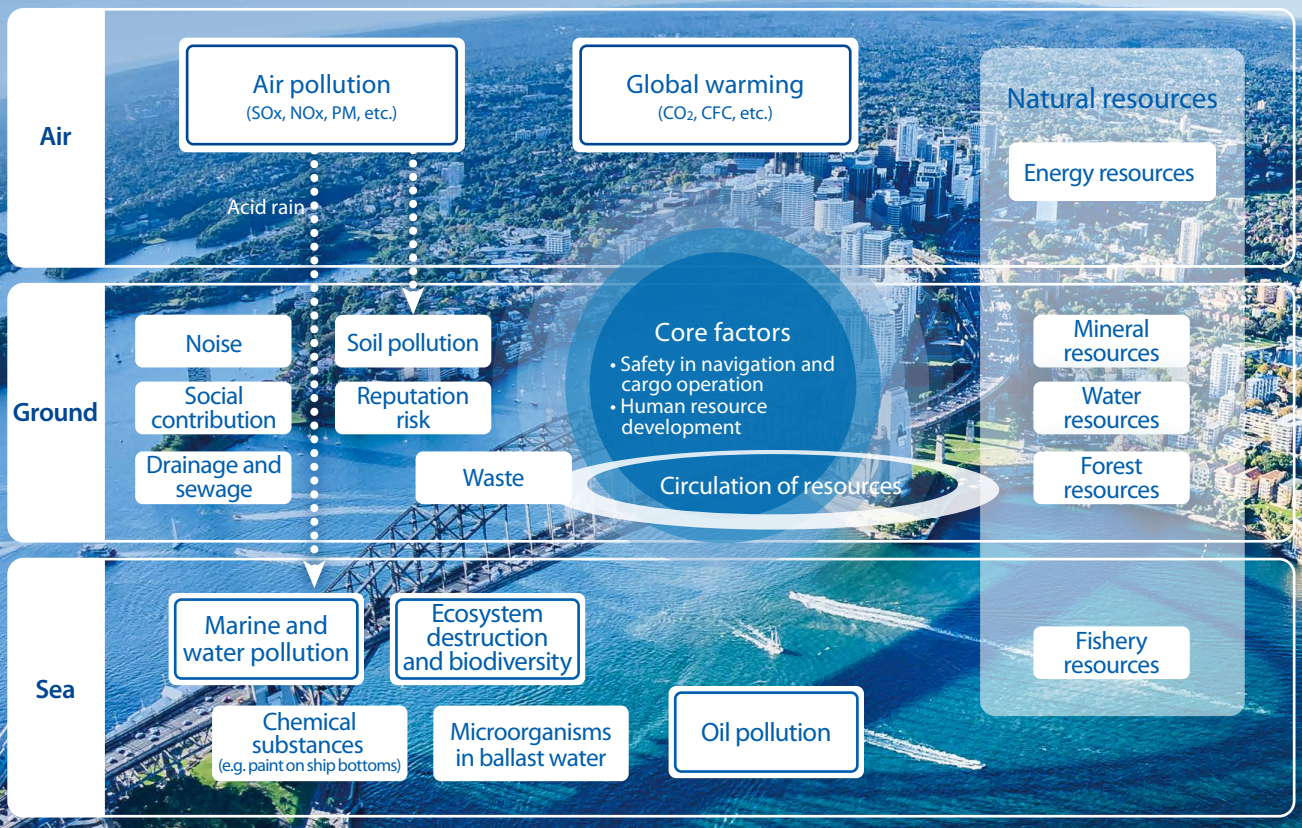
"K" LINE Environmental Vision 2050

Blue Seas for the Future

Navigating for Sustainability, Leading to a Brighter Future

"K" LINE is an international cargo shipping company with a global fleet of ships.
Our mission is to transport goods across oceans supported by our Safe Operation Management System to enrich people's lives around the world and help realize a sustainable future for generations with beautiful blue seas.
When we introduced the "K" Line Environmental Vision 2050 in March 2015, we set specific milestones to reach by 2019, the 100th anniversary of our founding, and we have achieved many of them.
However, the dramatic changes in the environment around the world have made it necessary to reassess some of our goals for 2050 and to set new milestone markers for 2030.
Today, tomorrow, to 2050 and beyond, we will continue our voyage of supporting sustaining and flourishing growth for society and "K" LINE.

The relationship between "K" LINE Group operations and the global environment



“K” LINE Corporate Principle and Vision

The “K” LINE Group’s maritime transport and logistics services are a fundamental part of the worldwide distribution infrastructure for global economic activity, and we have earned customer trust for safety and security.

As an integrated logistics company grown from a shipping business, the “K” LINE Group contributes to society so that people live well and prosperously. We always recognize this principle in our operations.

This principle is the driving force of our efforts to continually enhance the Group’s unique K Value.

Sustainable society and blue and beautiful seas for the next generation

Enriching the lives of people around the world through maritime shipping

Maintain record of zero serious accidents and protect ecosystems

Honesty | Safety in navigation

Overcome global environmental issues and further enhance profitability and competitiveness

Action | Introduce innovative technologies

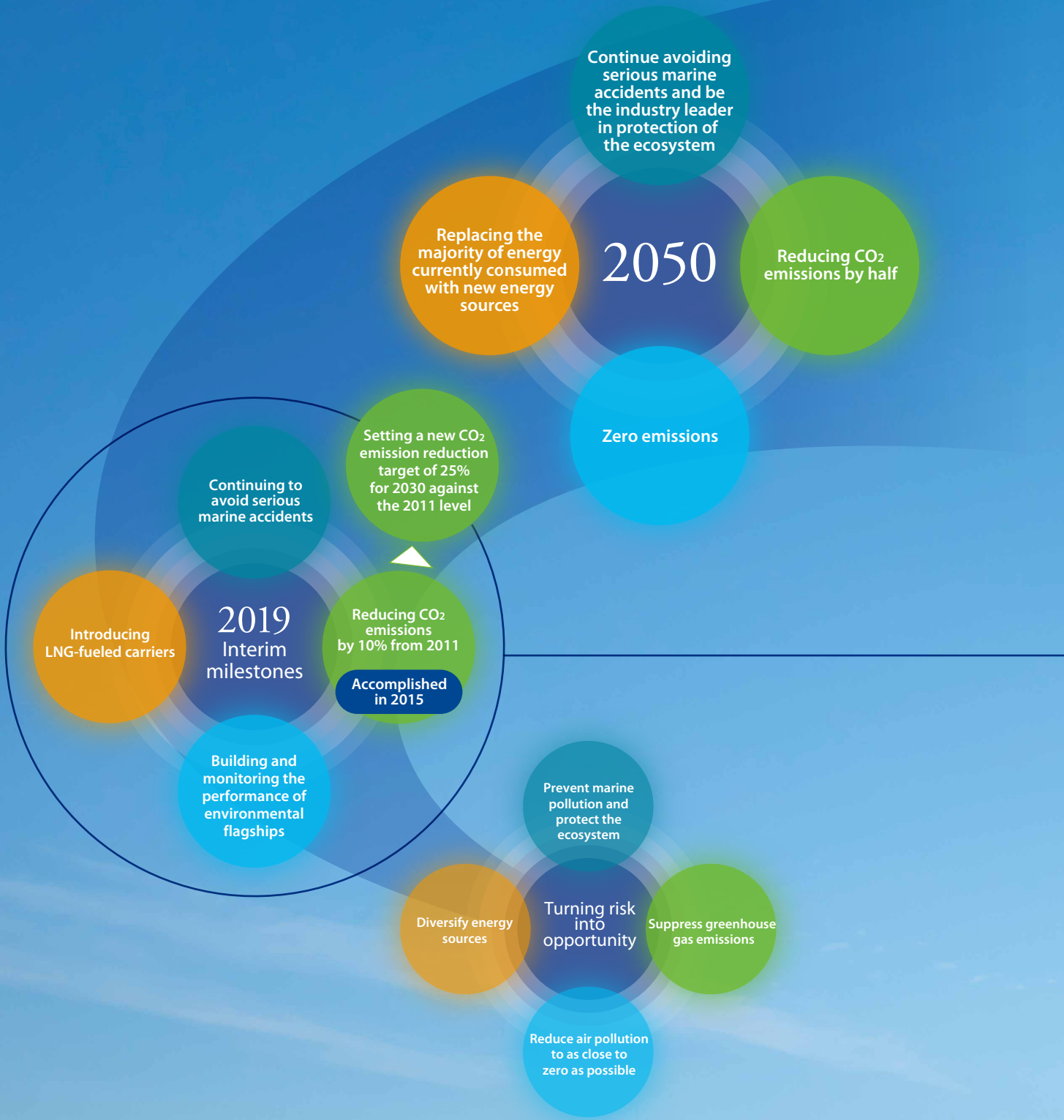
K : trust from all over the world

- **Providing reliable and excellent services** ···Contributing to society
- **Constant drive for innovation** ···Generating new values
- **Fair business activities** ···Fostering trust from society
- **Respecting humanity** ···Corporate culture that respects individuality and diversity

"K" LINE's Progress Toward the 2050 Environmental Targets

"K" LINE set several milestones for 2019 on the way toward its 2050 environmental targets.

In 2015, the "K" LINE Group set specific environmental goals to attain in 2050 aimed at addressing issues related to its business future and the environment. The Group also set milestone targets for the year 2019 marking the 100th anniversary of its founding to verify its progress on the long journey to its destination.



Review of the 2019 Milestones

We successfully attained most of the milestones set for 2019. We remain dedicated to achieving all of the targets while recognizing the need to reassess our expectations due to the Group's changing business environment.

Priority issues	Action	Status
Marine pollution and the ecosystem	Continuing to avoid serious marine accidents	Since 2018, there have been two oil spill incidents, one due to grounding and one due to a collision, but appropriate action minimized the damage. The causes were investigated and all individuals involved carried out thorough improvement measures to prevent recurrence.
Energy resources	Introducing LNG-fueled carriers	We agreed to join with JERA, Toyota Tsusho, and NYK Line to establish an LNG bunkering business. We also ordered a new LNG-fueled car carrier, with delivery expected in fiscal 2020.
Air pollution	Building and monitoring the performance of environmental flagships	Construction of car carrier "DRIVE GREEN HIGHWAY" was completed, and the vessel was awarded "Ship of the Year 2016." We continue to collect of actual navigation data, including related to hybrid SOx scrubbers.
Global warming	Reducing CO_2 emissions by 10% from 2011	The target set for 2019 was achieved in fiscal 2015. A new target was set for 2030.
	Setting a new CO_2 emission reduction target of 25% for 2030 against the 2011 level	We are on track to reach new target with EEOI 9.84g-CO_2/ton-mile in 2019.

Changes in the Environment Since Setting our 2050 Targets

Business conditions and customer expectations are constantly changing and becoming more sophisticated.

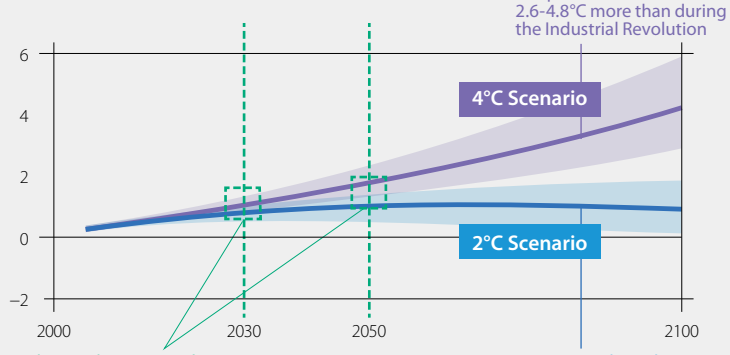
Impact from climate change

Changes in food supply systems, damage to port facilities from increasingly frequent natural disasters, impact on safety in navigation.

Increased demand for decarbonization

Changing environmental regulations and growing demand for environmentally friendly modes of transportation are forcing social systems to evolve, including to find new energy resources and redefine automobile power and ownership needs.

Forecast of Change in the Global Average Surface Temperature (versus 1986-2005 average)



(Sources: AR5 SYR, Figure SPM-6; IEA "Energy Technology Perspectives 2017"; UN Environment Programme "Emissions Gap Report 2015", Ministry of Foreign Affairs Japan homepage, TCFD "The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities")

We analyzed both the negative (risks) and positive (opportunities) aspects of the scenarios to reconfirm the best action the Group should take.

Scenario Analysis

We used our scenario analysis to formulate the strategies needed to reach our future targets and to ensure we are prepared for any eventuality.

Two Scenarios

- The Future We Aim For ····· Below 2°C Warming Scenario
- The Future We Prepare For Just In Case ····· 4°C Warming Scenario

Scenario	Impact on the Company
Below 2°C Warming Scenario ● Stricter regulations, such as a carbon tax ● Customer actions to realize low or zero carbon emissions ● Carbon capture and reuse, hydrogen and other technologies enabling low- and decarbonized energy ● Need for new low- and decarbonized energy supply and transportation	**Need for low-carbon or decarbonized operations** ● Customers and stakeholders requesting low-carbon shipping services ● Increased shipping costs from installing new technologies and carbon taxes **Society needs for low-carbon goods** ● Need to respond to demand for transport of low-carbon materials and products ● Increased opportunities to support offshore businesses, such as offshore wind power generation and on-board carbon capture and storage
4°C Warming Scenario **Natural disasters (acute risk)** ● More typhoons and cyclones ● Intensifying natural disasters **Changes in the natural environment (chronic risk)** ● Rising sea level ● Changes in the land environment ● Changes in the ocean environment	**(Urgent) Need to enhance safety in navigation** ● Increased potential of major accidents ● Increased volatility in voyage and cargo handling schedules ● Increased potential for damage to goods, roadways and ports, and cargo handling equipment due to rough weather ● Increased need for disaster support services **(Constant) Need to enhance safety in navigation** ● Increased need to change shipping routes and calling ports and restructure the logistics systems ● Expanded shipping activities due to expanded ocean surface area and relaxed port regulations
Other Factors ● Exhaust and drainage regulations ● Ship recycling issues ● Marine plastic pollution issues ● Underwater noise issues	● Respond to tighter environmental regulations on maritime shipping ● Demand for clean shipping from customers and stakeholders ● Address social issues • Green ship recycling • Marine plastic pollution • Underwater noise pollution

Climate change is expected to expose humankind to major physical risk, such as serious natural disasters. To prevent this risk, it is widely believed that global warming must be held below a 2°C increase, and achieving this will require worldwide effort, such as environmental regulations to significantly reduce greenhouse gas (GHG) emissions. The "K" LINE Group is taking steps to reduce GHG emissions from the Group's business activities based on the assumption that the below 2°C warming scenario will be realized.

At the same time, we recognize that efforts to reduce GHG emissions may be insufficient, and that the 4°C warming scenario and intensifying physical risk is a possibility. The Group must build the resilience to adapt to those conditions to ensure its business operations will continue. We formulated roadmaps for how the Group should prepare for the anticipated negative (risks) and positive (opportunities) aspects of both the "below 2°C warming scenario" and the "4°C warming scenario."

Negative Aspects (Risks)	Positive Aspects (Opportunities)
● Higher operating costs from a carbon tax and natural resource prices ● Decreased asset value of existing ships ● Operations hampered by insufficient low-carbon ship fuel	● Increased profits from improved ship operating efficiency ● Reduced carbon tax burden from low-carbon and decarbonized operations ● Favorable customers evaluations for low-carbon and decarbonized operations
● Higher R&D and installation costs ● Reduced profits if response to maritime transport demand changes is slow	● Increased profits from addition of new businesses ● Development of leading expertise from early adoption of new technologies
● Increased potential of an oil spill accident ● Higher costs for vessels and cargo damage ● Increased troubleshooting activities	● Safer and more reliable services, protection of customers and Company assets ● Increased shipping demand due to quick disaster response ability
● Higher port fees and insurance rates ● Increased costs caused by reduced efficiency of maritime transport and cargo handling	● Progress with the modal shift (increasing demand) ● Increased transport demand for disaster prevention-related construction machinery and plants
[Neutral] Route changes due to production site relocations, but increased cargo transport demand from economic development	
● Decreased profits from higher operating and capital costs ● Negative impact on marine ecosystems (marine life, mammals)	● A cleaner environment and ecosystem ● Increased stakeholder trust and stakeholder valuation

What We Must Do

Hardware

- Install energy-saving equipment to improve ship operating efficiency
- Launch ships with low-carbon or decarbonized new fuel and propulsion technologies
- Make ships physically stronger

Software

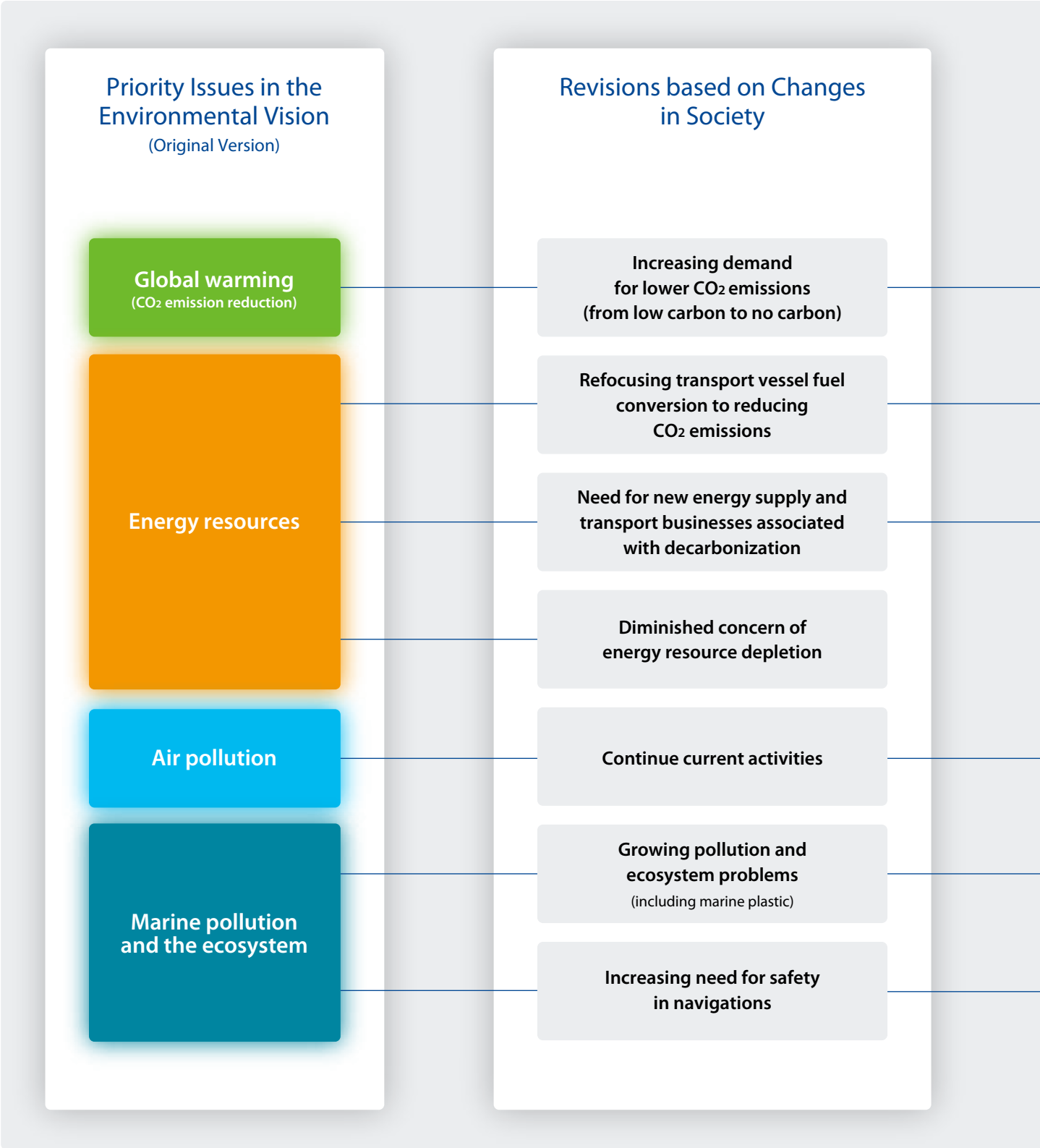
- Enhance digital and automation technologies to make operations safer and more efficient
- Raise employee awareness and provide training in new technologies
- Construct a corporate structure capable of flexibly responding to needs, such as for reconstruction assistance

Business Activities

- Develop and enter new energy supply and transportation businesses
- Prepare fleet for new transportation technologies
- Increase ability for green ship recycling
- Participate in collection and studies of marine plastic pollution
- Increase dialogue with administrators involved in improving port facilities, roads, and other infrastructure
- Increase involvement in policymaking with governments, the United Nations, and NGOs

Updating the 2050 Targets

After completing the scenario analysis, we reviewed some of the targets for 2050 goals.



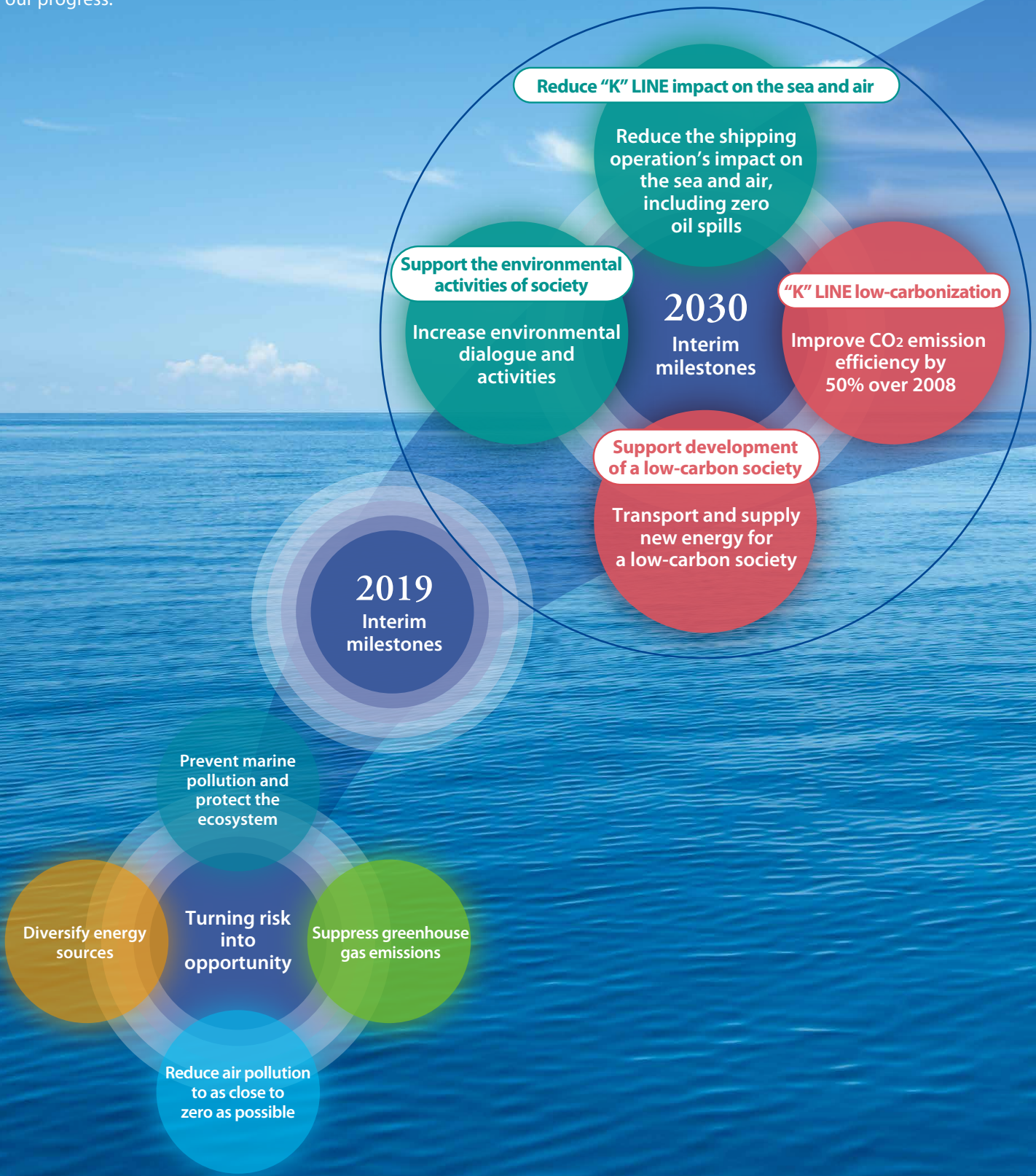
In 2015, the Group identified priority issues that must be addressed based on a vision of future society and the characteristics of the Group's businesses.

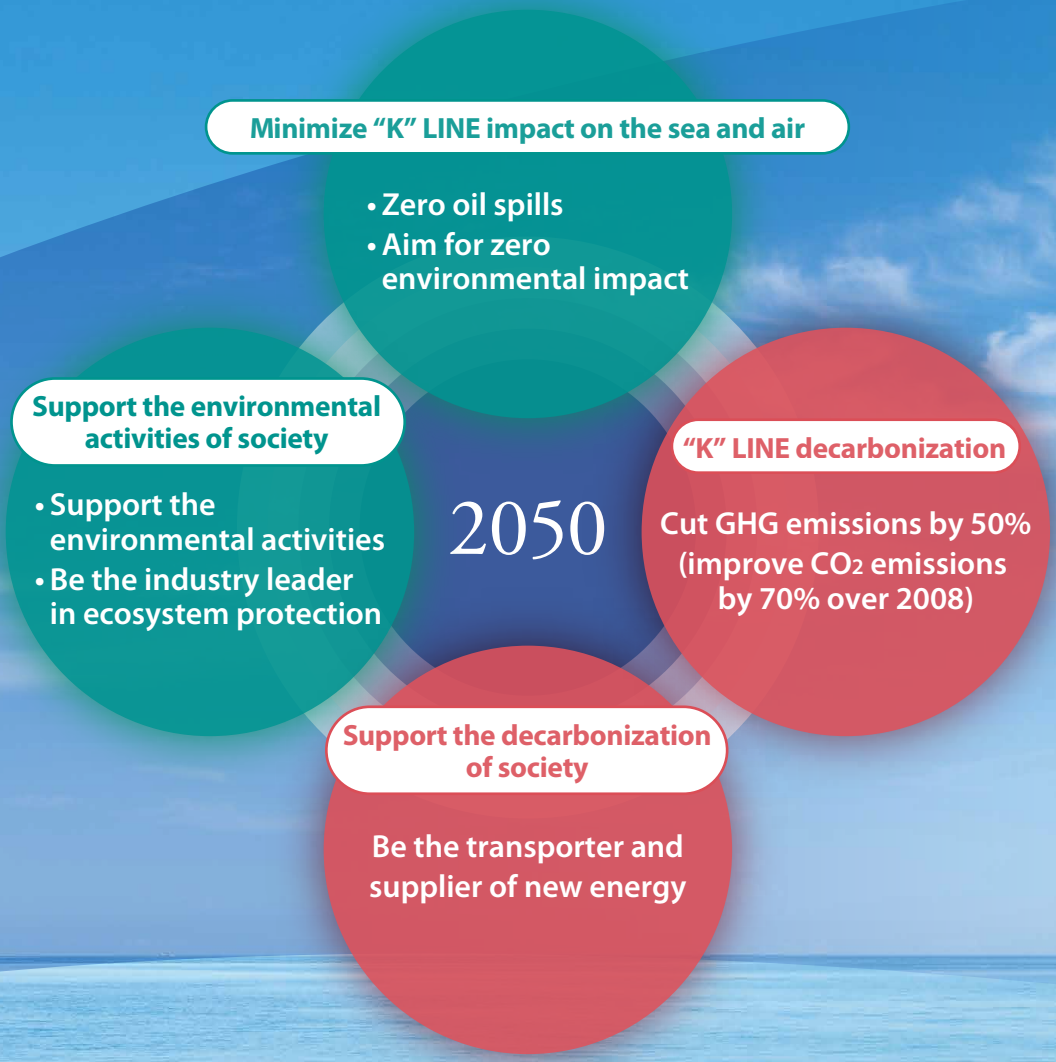
Based on the scenario analysis in 2020, the Group again identified issues it needed to address and revised some specific targets for the next five years that would make its operations more resilient. The two main factors in the revised targets are the needs to decarbonize and to reduce our environmental impact to as close to zero as possible.

“K” LINE’s New Targets

We have set new milestone goals for 2030 on the way to our new 2050 targets.

We are advancing toward our new 2050 targets,and we have set new milestones for 2030 to confirm and guide our progress.

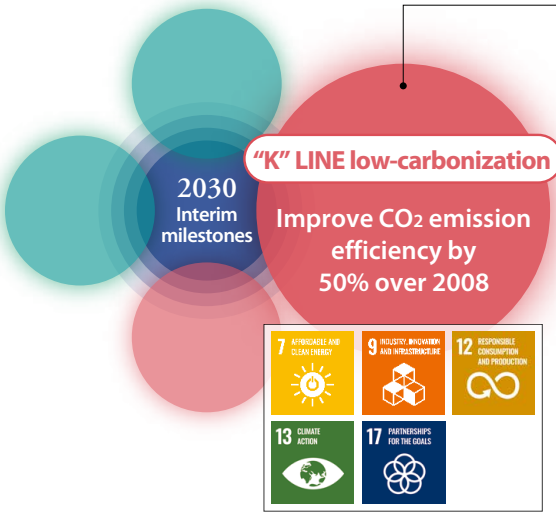




The "K" LINE Group is carrying out various initiatives aimed at achieving its environmental targets for 2050, and through these activities is doing its part to contribute to enriching the lives of people around the world and preserving our beautiful blue oceans for future generations.

2030 Interim Milestones and Action Plan

We have formulated concrete action plans to drive us to the 2030 interim milestones on our way to the 2050 targets and further toward realizing a zero emissions world.



Action Plan to 2030

Fleet-wide initiatives to reach the milestone targets

- Improve CO_2 emission efficiency by 50% over 2008
  ⇒ Surpassing the IMO target of a 40% improvement
- Step up energy efficiency improvements (navigation efficiency, performance analysis, energy-efficient equipment, optimal operational support)
- Step up incorporation of LNG-fueled carriers
- Contribute to the demonstration and proliferation of the Seawing automated kite systems (auxiliary wind propulsion systems)
- Consider and install other new technologies

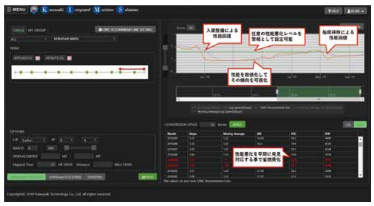
Action to fulfill the 2050 Vision (Launching new flagships)

- Cut GHG emissions by 50%
  (Improve CO_2 emission efficiency by 70% over 2008)
  Step1 Launch flagships with the latest technologies to improve efficiency by 70%
  Step2 Use future technological advances to begin launching zero-emission flagships
- Strengthen ties with shipbuilding sites, customers, governments, investors, and all stakeholders to realize and launch zero-emission vessels

Introduce the Seawing automated kite system

The Seawing system adds natural wind energy to power a ship with a kite mounted on the ship bow. Operated from the bridge, in certain wind conditions the kite can be automatically extended to harness wind power to assist propelling the ship.

Optimal operation with the K-IMS integrated vessel operation and performance management system



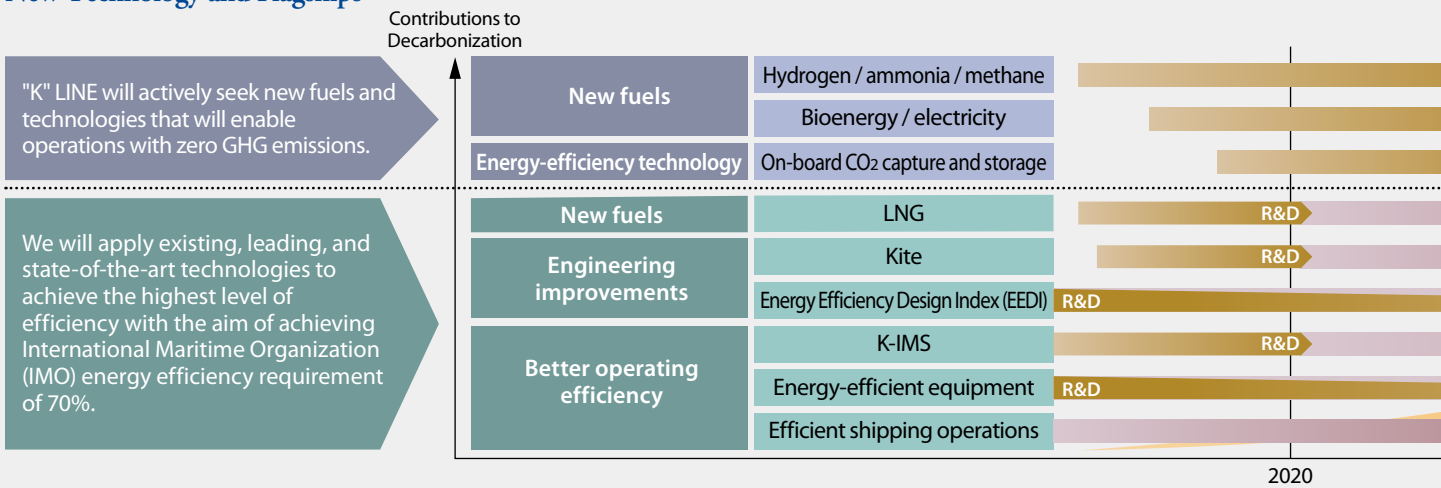
The K-IMS system enables visualization of ship speed, output power, and fuel consumption in the crucial period just before and after docking. The system enables optimal operation by immediately and accurately distinguishing a deterioration in performance and assisting in identifying the cause.

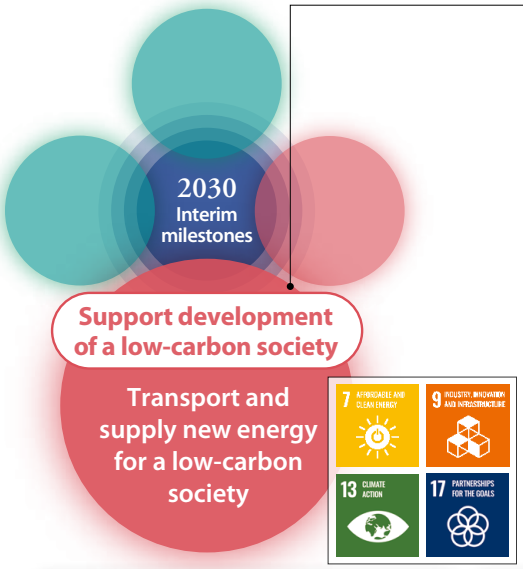
Launch LNG-fueled car carriers

— Completion scheduled for 2020 —

We are strongly focused on improving the environmental performance of our fleet and are taking concrete steps to introduce LNG-fueled ships with support from the Ministry of the Environment and Ministry of Land, Infrastructure, Transport and Tourism as "a model business using alternative fuels to reduce ship CO_2 emissions."

New Technology and Flagships





Action Plan to 2030

Initiatives to reach the milestone targets

▶ Develop and expand new businesses that contribute to a low-carbon society

- Identify customer needs and be an environmental frontrunner with an organizational structure facilitating exploration of new businesses
- Strengthen short-sea renewable energy businesses
- Expand support of LNG transport and supply
- Develop a fleet capable of responding to changes in freight transportation demand
- Train personnel in new fuels and technologies

Action to fulfill the 2050 Vision

▶ Explore and develop new businesses that contribute to achieving a low-carbon society

- Enter the supply chain business of new, zero emission energy
- Contribute to the promotion of carbon capture and reuse
- Reduce CO_2 emissions over vessel lifecycles

Establish the LNG fuel supply business

— Business start scheduled for 2020 —

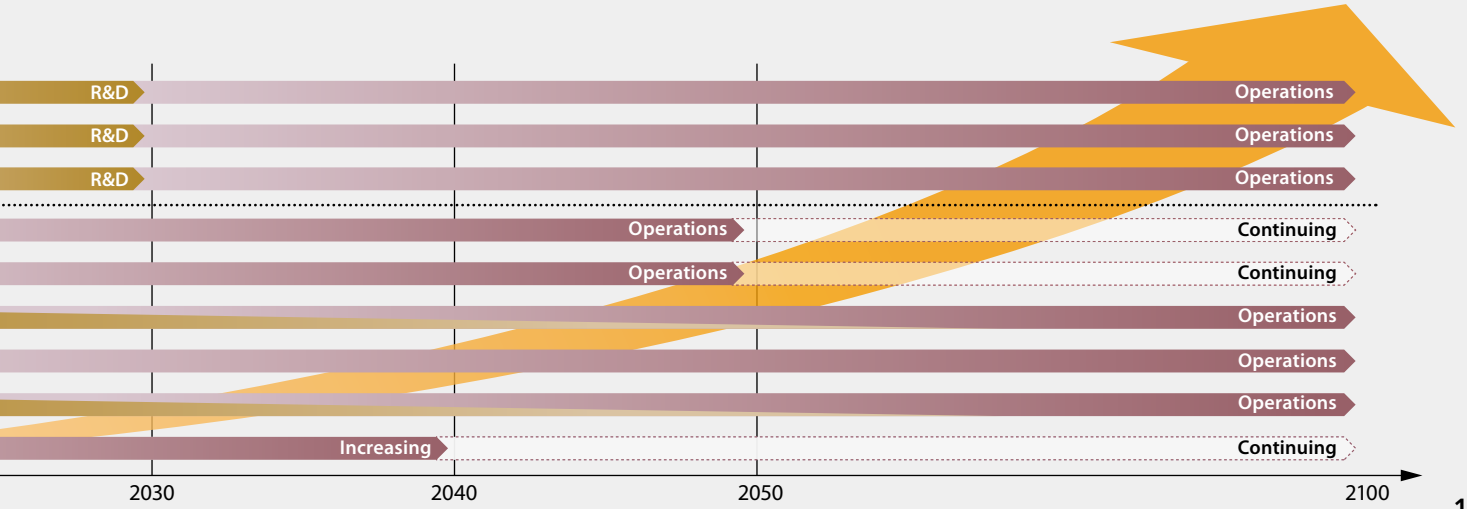
We will establish a business to provide a stable supply of LNG for ship fuel. LNG has strong potential as an alternative to heavy oil, and is an attractive fuel source with the increasingly stringent international regulations on ship emissions.

Participate in HySTRA for a hydrogen society

"K" LINE is participating in the "CO_2-free Hydrogen Energy Supply-chain Technology Research Association (HySTRA)." The group is developing and demonstrating technologies needed to create an efficient supply chain for the production, transport, storage and use for CO_2-free hydrogen produced using brown coal. The group is aiming for the supply chain to support commercialization by around 2030.

Support construction of offshore wind power generation facilities

The offshore wind energy market in Japan is expected to grow in the future, and we will contribute to developing demand by offering ships for towing and other offshore operations.



Reduce "K" LINE impact on the sea and air

Action Plan to 2030

Initiatives to maintain zero oil spills

- Strengthen safety in navigation (use the optimal navigation support system and develop automatic ship navigation for vessel steering and engine plant operation)
- Enhance ship resilience, such as seaworthiness, and maneuverability
- Strengthen all safety measures, including safety training for staff

Reduce the environmental impact of ship operations

- Continue measures to manage ballast water, reduce SOx/NOx emissions, and install equipment to comply with regulations
- Reduce impact of shipping operations on marine mammals
- Increase staff environmental awareness

Safe operations with the K-IMS integrated vessel operation and performance management system

The K-IMS system rolled out across our fleet in March 2016 continues to focus on developing engine plant operation support and failure prediction and diagnosis. Together, these enhance our safety in navigation and environmental protection measures.

The "K" LINE Group Environmental Award

The "K" LINE Group Environmental Award recognizes Group officers and employees who take action to protect the environment and biodiversity and provide a significant contribution to the sustainability of our business operations.

Raising environmental awareness through E-Learning

The "K" LINE Group's Environmental Management system (EMS) provides education and training programs to maintain and raise the environmental awareness of Groups staff.

Projects to Execute the Action Plan

Our Sustainability Management System is a cross-departmental organization administered directly by the president. The system is the backbone of our high-quality logistics services, which includes our strength areas of safety in navigation and environmental response, and is key to continuing to enhance our competitiveness.

President

Safety and Environmental Technology Project Team

Leader: Unit Supervising Executive Officer of the Information System and AI/Digitalization Strategy Unit/Chief Information Officer

Member Groups: AI/Digitalization Strategy, Advanced Technology, Marine Human Resources, Safety and Quality Management, and other related sales and business groups.

- Accelerate the incorporation of environmental equipment and management technologies throughout the Group to enhance the safety of our services and further improve our service quality to meet customer needs
- Actively work to set up and promote collaborative activities inside the Group and with external partners

Alternative Fuel Project Team

Leader: Unit Supervising Executive Officer of the Energy Transportation Business Unit

Member Groups: Fuel Strategy & Procurement, Advanced Technology, Ship Technical, Safety and Quality Management, Environment Management, and other related sales and business groups.

- Consider measures to prepare for wider use LNG-fueled vessels and the global development of the LNG fuel supply business
- Research next-generation fuels, such as ammonia, CCS, and hydrogen
- Work with the Safety and Environmental Technology Project Team to apply and promote new technologies (such as Seawing) to create augmented LNG+ systems to reduce carbon emissions

Action Plan to 2030

- Strengthen green ship recycling
- Participate in the collection and studies of marine plastic pollution
- Promote volunteer environmental protection activities

Communicate in-house environmental volunteer activities

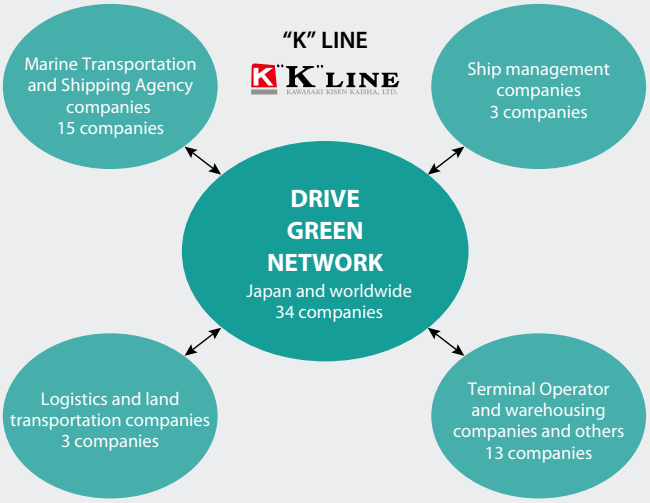
We engage in various activities aimed at further raising the environmental consciousness of our employees, including initiatives to protect biodiversity and form pleasing landscapes. We also are collaborating with the NPO Chiba University Students Committee for Environmental Management System to protect community nature areas and to clean business sites and seashores.

Responsible ship dismantling and resource recovery

Ship dismantling enables the recovery of metals that can be recycled into new products and services and provides work and community economic activity. When disposing of our vessels, we follow our own environmental impact assessment checklist to select dismantling yards in consideration of occupational health and safety and environmental performance.

Participating in the Plastic Smart campaign

"K" LINE participates in the Ministry of the Environment's Plastic Smart campaign promoting intelligent corporate use of plastic. For the campaign, we are collecting and reselling reusable bottle caps from used PET bottles. This eliminates the CO_2 emissions that would be produced when incinerating them, and the funds raised from the sales are presented to charities.



Group Environmental Management Structure

The "K" LINE Group is united behind the "K" LINE Environmental Vision 2050, our long-term environmental protection policy, to protect our environment and has established the Drive Green Network to promote coordinated environmental management throughout the Group.

"K" LINE
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