

PAN OCEAN

2022 ESG Report

Pan Ocean will become a global leading shipping and logistics company by increasing the value of the company and shareholders based on practical and transparent management.



ABOUT THIS REPORT

This report is the inaugural ESG report of Pan Ocean Co., Ltd. (“Pan Ocean”) published for the transparent disclosure of the company’s orientations in sustainable management and accomplishments in economic, environmental, and social aspects to all stakeholders. Pan Ocean will publish annual ESG reports and use them as a channel to share and communicate details on the company’s sustainable management.

Period

This report covers activities and performances from January to December 2021. For certain major activities, it also refers to data up to September 2022.

Scope

The scope of this report includes Pan Ocean’s head office and branch offices in Korea. Some data also cover activities from the company’s overseas subsidiaries and offices and its subsidiary POS SM. Financial results were prepared in accordance with the consolidated financial statements guidelines of the Korean International Financial Reporting Standards (K-IFRS). Any discrepancies in the scope of the report, if any, are clearly annotated. To indicate annual trends, quantitative data from the last three years from 2019 to 2021 were used as standard reference.

Principles

This report follows the Global Reporting Initiative (GRI) Standards 2021. It is also based on the Sustainability Accounting Standards Board(SASB) and Task Force on Climate-related Financial Disclosures (TCFD).

Cycle

Annual (inaugural report).

Reliability

To ensure reliability and fairness, this report underwent third party verification by an independent external organization, Korea Management Register, in accordance with the AA1000AS international verification standards.

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“Powered by change and innovation, our voyage to grow as a global shipping leader will never stop.”

Dear Stakeholders,

First of all, I would like to thank you for supporting and encouraging us.

financial performances such as sales, operating income, and net income have long been considered the supreme values for business management. Still, many business that achieved strong financial results failed to reach their ultimate goal of sustainable management and perished. Many studies have demonstrated that non-financial aspects such as environment, human rights, social norms and values, which are collectively referred to as “ESG,” are increasingly posing greater influence on sustainable business management. Now ESG management has entered the domain of global consensus and agreement. In response to this transition, we set “building foundations for ESG management” as one of our key business orientations, and we ceaselessly pursued that goal throughout the year.

Although we have concentrated on explaining and informing stakeholders of our financial accomplishments up until now, we would like to share our performances and plans with our commitment to ESG management with this report.

Letter to Stakeholders

First, we took the initiative in resolving the climate crisis that is a threat to humanity. In August 2021, we declared the 2050 Net Zero goal and unveiled a detailed roadmap to achieve the goal. We set 2030 as our interim goal toward net zero operations and established concrete action plans. This includes improving operation efficiency and increasing investment in high-efficiency green vessels to lower carbon intensity. In addition, we disclosed our results on environmental targets including GHG emissions, energy consumption, waste disposal, green investment track records/sales. We are expanding environmental training for our onshore and offshore employees elevating their focus and understanding. We will further our efforts to position ourselves as a shipping leader in the decarbonized future.

Second, we built environments to guarantee the rights of employees. We developed a safety and health management policy as comprehensive response to potential safety and health risks, both onshore and offshore, and organized the Safety Management Department. All employees undergo CPR trainings, and we established a system to quickly respond to potential employee risks by providing emergency drugs and healthcare products.

We conduct training with the aim to raise human rights awareness among employees and prevent human rights infringements. We also have a range of grievance system to protect the rights of all our employees and external stakeholders. Efforts to improve employee satisfaction and work efficiency include selective work hours, flexible work hours, staggered work hours, and other flexible working systems, including compensatory leaves, and inhouse clubs. We plan to extend the scope of human rights management to our suppliers, further strengthening our social responsibility activities.

Lastly, we continue to pursue every effort on the transparency of governance. Details on the operations of the key decision-making bodies, including the General Shareholders Meeting, the Board of Directors, and 5 Committees within the Board of Directors and their operation rules are fully disclosed. In particular, four-week notices prior to General Shareholders Meetings allow attendees to have sufficient time to contemplate the agenda, and electronic voting and electronic power of attorney systems are in place to help shareholders exercise their voting rights. At the 2022 Regular Shareholders' Meeting, we welcomed the first female non-executive director in the company's history. It marked the significant first step to foster gender diversity within the management.

In early 2021, we prepared and announced the mid/long-term dividend policy and three-year dividend guidelines to improve the predictability of shareholder returns for both existing and potential shareholders. As we continue investing for our future growth, we will put forth our best efforts to increase return profits to our shareholders.

Pan Ocean has secured its position as a successful company from the conventional point of view. However, we recognize the room for improvement in terms of sustainability. Through your guidance and encouragement, we aspire to anchor ourselves as the leading company in line with ESG. On behalf of all employees at Pan Ocean, I would like to express my heartfelt gratitude to you. Thank you.

December 2022

CEO **Ahn Joong-Ho**





OVERVIEW

Pan Ocean provides differentiated maritime transportation services with its well-established business capabilities and global competitiveness. We will solidify our position as a sustainable shipping logistics and argi-trading company offering safe and high-quality services.

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Company Overview

Pan Ocean has served various stakeholders with industry-leading shipping services since its establishment in 1966. Our business operations encompass all areas of shipping including bulk carriers as our key business and tankers, containers, and LNG carriers. Covering Asia, Europe, Americas, and Oceania, our seaway network is underpinned by solid partnerships with major shippers all across the globe. POS SM, a subsidiary of Pan Ocean, provides comprehensive vessel management solutions ranging from vessel and seafarer management, new shipbuilding supervision, and safety and quality management. By making shipping even safer and more efficient with excellent technologies and rich experience, we are leading the vessel management industry. We aim to grow as a world-leading shipping and agri-trading company that provides second-to-none services powered by outstanding human resources and capabilities.

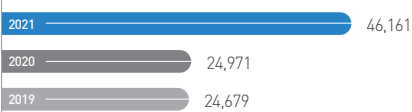
Overview

(As of December 31, 2021)

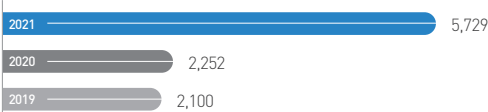
 Company name Pan Ocean Co., Ltd.	 Head Office Tower 8, 7 Jongno5-gil, Jongno-gu, Seoul	 Annual cargo transport 112,140,000 tons
 Date of Establishment May 1966	 Employees 1,135 (Onshore/Offshore employees, as at the end of 2021)	 Fleet 109 vessels
 CEO Kim Hong Kuk Ahn Joong-Ho	 Main business areas Bulk carriers, specialized vessels, containers, LNG carriers, agri-trading	 Website https://www.panocean.com/ko

Key Financial Results (Consolidated financial statements)

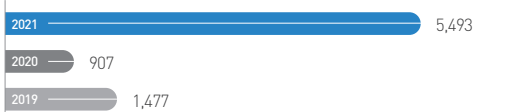
Sales



Operating Profit



Net Profit



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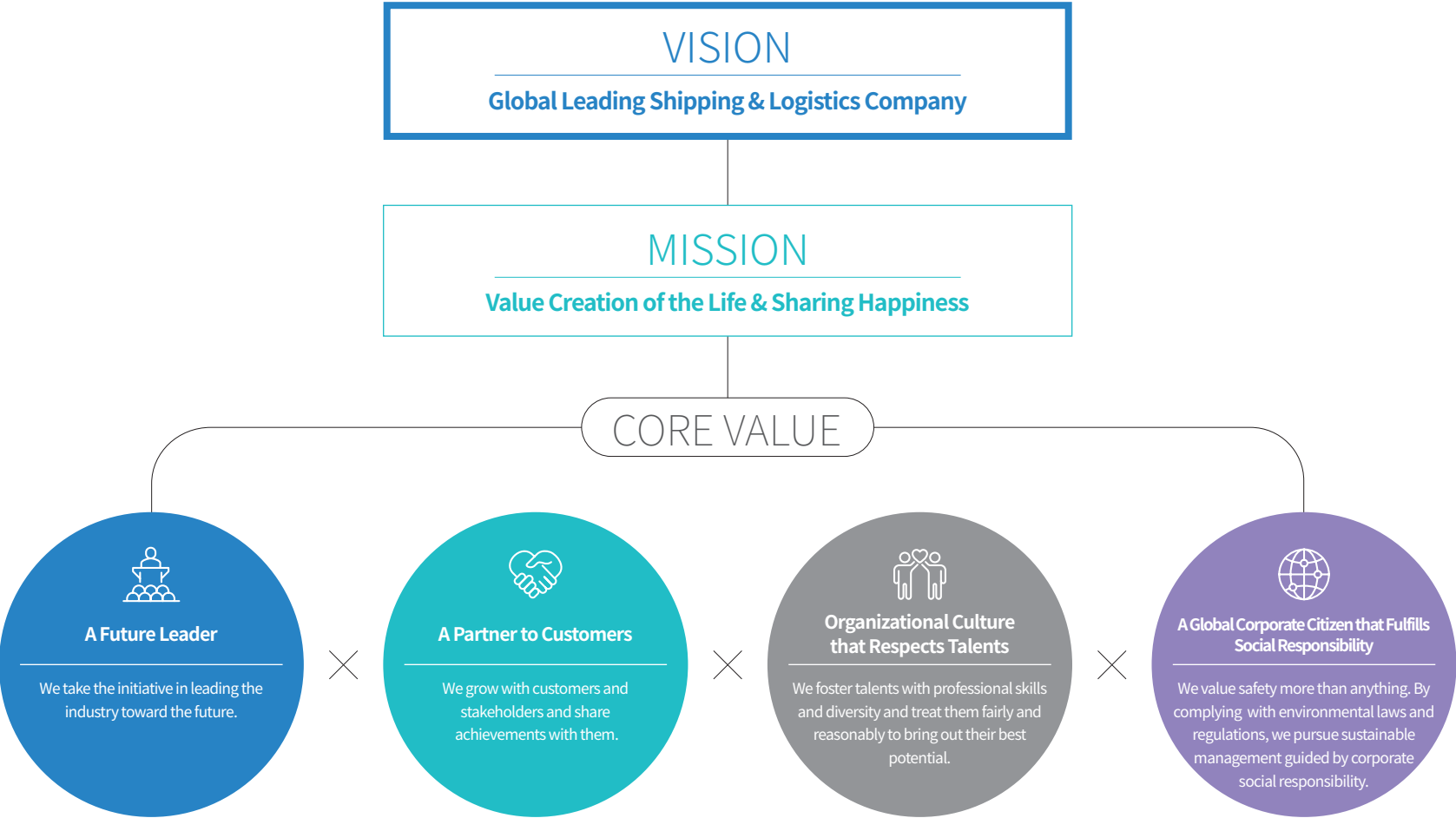
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Vision and Core Values



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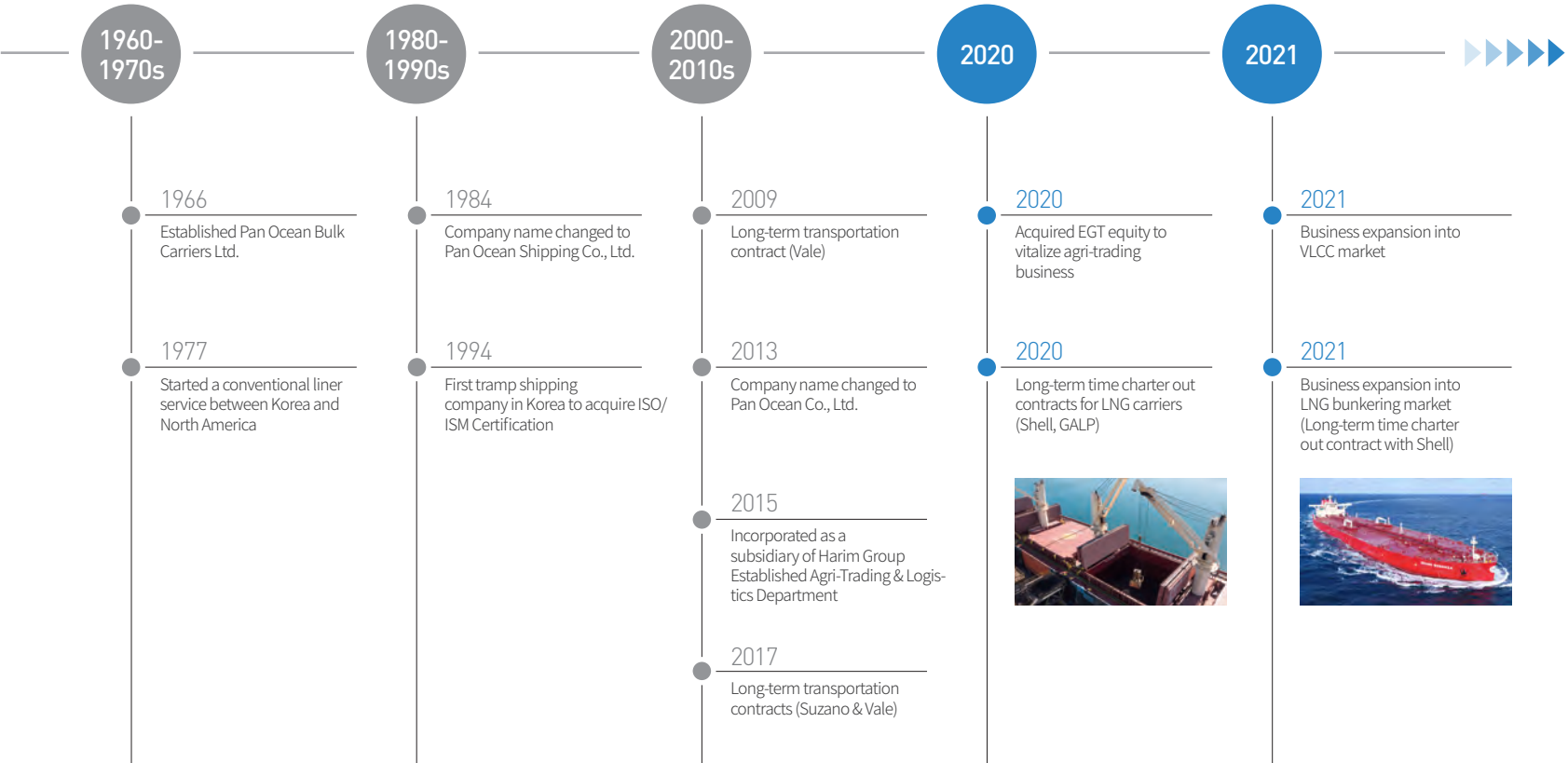
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History



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Global Network

Pan Ocean is headquartered in Korea and has local and overseas subsidiaries and offices across the globe including Asia, Americas, Oceania, and Europe.

Korea

1

Seoul Head Office

2

Pohang Office

3

Busan Office

4

Gwangyang Office

Overseas subsidiaries

1

USA (New Jersey)

2

Singapore

3

China (Shanghai)

4

Japan (Tokyo)

5

Brazil (Sao Paulo)

Overseas Offices

1

Australia (Melbourne)

2

USA (Portland)

3

USA (Houston)

4

UAE (Dubai)

5

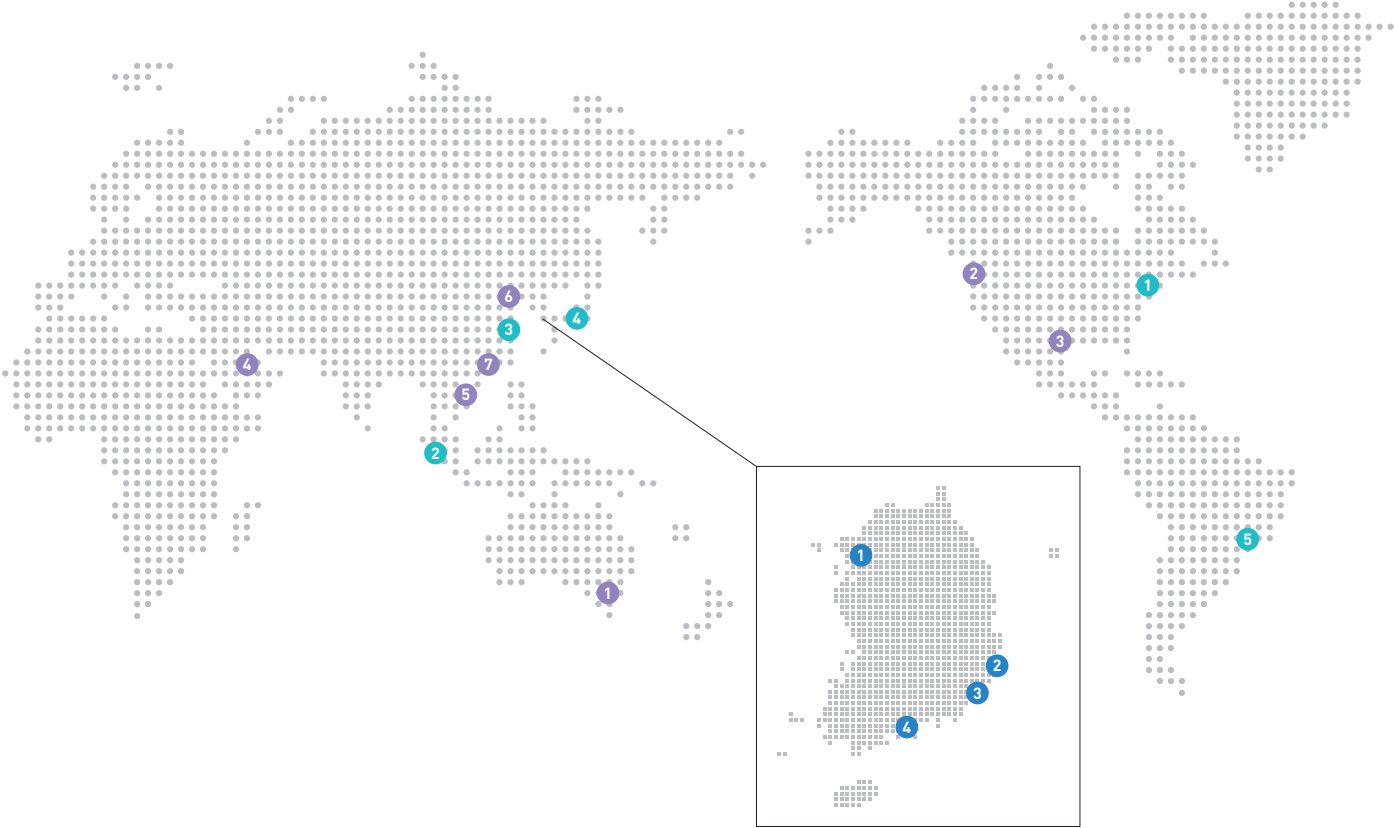
Vietnam (Ho Chi Minh)

6

China (Qingdao)

7

China (Shenzhen)



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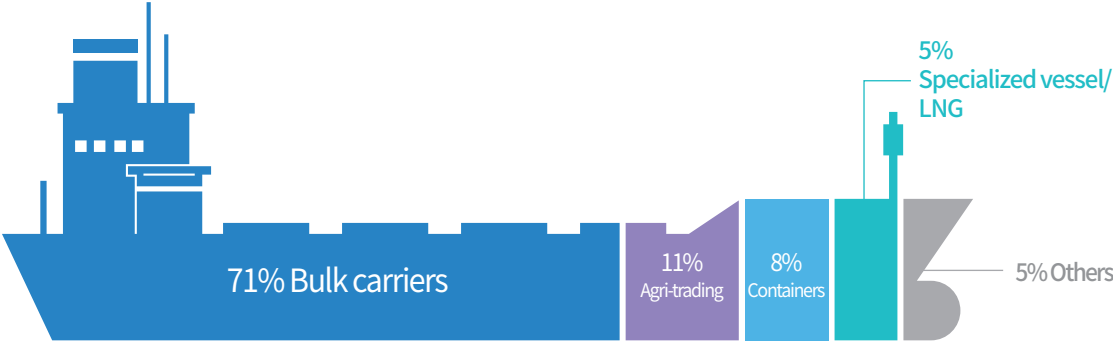
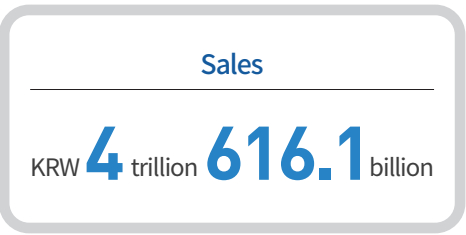
Business Overview





Business Portfolio

As a global leader in shipping, we provide comprehensive shipping services including bulk carriers as our key business and containers, tankers, heavy lift, and LNG carriers. We ensure the efficient operations of our fleet consisting of various types of vessels to provide global shippers with safe and stable maritime transportation services. We capitalize our experience in shipping and business networks spanning the globe to create new business opportunities, such as agri-trading and logistics. We will continue to sail along the path to become top-tier shipping company by maintaining strong results in the existing key business areas and securing new growth drivers.

Sales by business sector

(As of December 31, 2021)



71 %		11 %	8 %	5 %		
						
Bulk carriers		Agri-trading	Containers	Specialized vessel/LNG		
Cape / Panamax	Supramax / Handy	Agri Trading & Logistics	Intra-Asia / Far East	Tanker	Heavy Lift	LNG / LNGBV
<ul style="list-style-type: none">· Iron ore· Coal· Grain	<ul style="list-style-type: none">· Steel/wood products· Machinery and facilities· Grain/fertilizer/sugar· Minerals/wood-pulp	<ul style="list-style-type: none">· Food/feed grain· Grain byproducts	<ul style="list-style-type: none">· All loadable cargo	<ul style="list-style-type: none">· Petroleum products· Oils/fats· Crude oil	<ul style="list-style-type: none">· Machinery/facilities· Tug	<ul style="list-style-type: none">· LNG· LNG bunkering

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Bulk Carriers

Stably Supplies to All Industries Worldwide

Securing long-term shipping contracts with global shippers

With industry-leading fleet, expertise, and latest service systems, we have concluded long-term contracts with major global shippers including steel yards, power companies, and mining companies. We have built foundations for stable growth in North America, Oceania, Latin America, Asia, the Middle East, Africa, and Europe by carrying major cargoes such as iron ore and coal.



Building a global sales network

We transport dry bulk to various consumer markets all over the world by securing major domestic/overseas shippers such as VALE, KEPSCO, POSCO, RIO TINTO, BHP BILLITON, SUZANO, FORTESCUE, BAOSTEEL and CBH.



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Bulk Carriers

Providing Differentiated Shipping Services

Provide all types of dry bulk cargo shipping services

We carry all kinds of dry bulk cargoes around the world and provide tramp services that allow intermittent shipping services in all routes based on various shippers' needs. We meet our customer needs on any waters, whether it be grains, minerals, timber, fertilizers, coal, or sugar.



Stable and distinctive shipping services

We provide liner services that safely deliver breakbulk cargo (steel, timber, machinery, facilities, etc.), via routes encompassing Far East Asia to Americas, Europe, and the Middle East. We also offer complex shipping services that deliver grain, fertilizers, and minerals worldwide from Atlantic waters in Americas and Europe based on open-capacity.



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Containers

Expanding Intra-Asia Routes Based on Korea-China-Japan Services

We run various sea routes primarily connecting Korea, China, and Japan to Southern China and Southeast Asia (Vietnam, Philippines, and Thailand). Meeting various customer needs and ensuring punctuality of container services are our top priorities. We will strengthen advanced integrated logistics IT systems and global network services based on the steady development of new routes and rapid/accurate customer management systems.



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Specialized Vessels

Tanker

Operation of VLCC and small and medium range tankers

We entered VLCC(Very Large Crude-Oil Carrier) market, a high value-added business, and expanded crude-oil transportation capacity with the delivery of two VLCCs in 2021. We carry crude oil and petroleum products with medium range (MR) tankers in the Asia-Pacific and Indian Oceans. We also transport petrochemical products, animal and vegetable oils with small chemical tankers.



Heavy Lift

Operation of heavy lift cargo shipping

We have two heavy lift ships to transport large plants and heavy equipment. Notable track records include the lock gate transport contract for the Panama Canal Expansion Project, the Ichthys LNG Project (2015), the Yamal LNG Project (2016), the Formosa Phase 1 Project (2019), the North Field Qatar / TPC Changhua OWF Project (2020), and the Greater Changhua / Tortue LNG Project (2021).



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LNG Carriers

LNG Business Expansion

Local and international LNG transportation projects

Korea Gas Corporation selected Pan Ocean as its carrier for LNG transportation project at the end of 2005. In 2008, we started LNG business by allocating one of our LNG carriers, the LNG KOLT, to transport approximately 153,000 CBM of LNG. A second-hand LNGBV was added to our fleet in 2021 as part of our LNG bunkering business expansion. In 2022, we have participated in global LNG projects, concluding long-term time charter out contacts with GALP, SHELL, and QATAR ENERGY and ordering 11 LNG carriers (10 LNGCs and 1 LNGBV). We will continue strengthening our LNG transportation capabilities as a key pillar of our shipping business.



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Agri-Trading

Growing as Korea's No. 1 Grain Trader

Establishing foundation for stable agri-trading

In August 2015, Pan Ocean established the subsidiary for grain sales in the United States and entered agri-trading business in earnest. Our shipping capabilities helped us advance into the agri-trading market, where we primarily sell food and feed grains such as corn, soybean, DDGS, PKC, wheat, and soybean meal. In 2020, we acquired a part of EGT(Export Grain Terminal) equity in the USA and further fortified our grain sourcing capabilities. Also, combining Pan Ocean's competitiveness in shipping with our holding company's grain demands, experience and know-how as a buyer will allow us to create greater values and competitiveness. With this, we aims to firmly position ourself in grain trade through smooth operation of the agri-trading business and play a part in overcoming the food crisis to ultimately contribute to the national economy.





ESG IMPACT

We carry out ESG management activities in a systematic manner to secure a sustainable growth factors. We will focus and manage major sustainability issues from a long-term perspective.

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Economy

First shipping company in Korea to issue ESG bonds

(2021.06)

Secured funds and invested in a transition to green vessels



Operation profit increased by 180% YoY

(Accumulative as of 3Q 2022)

Secured robust business foundations for stable sales performances



An "A" credit rating

(Korea Investors Service, Korea Ratings)

Achieved financial stability through smooth business risk management



Environmental

Established the Maritime Environment Team

(2021.01)

Active response to vessel-related environmental regulations and issues



Declaration of 2050 Carbon neutrality

(2022.08)

Declaration to achieve carbon neutrality by 2050 and provide all stakeholders with net zero solutions



Voluntary engagement in CDP* Score "B"

* CDP: Carbon Disclosure Project

Transparent disclosure of climate change response and relevant data



Started a MASS demonstration project

(2022.09)

Engaged in the demonstration project to introduce safe safe maritime autonomous surface ships (MASS)



Social

Set up an organization dedicated to Safety and Health

(2021.11)

Strengthened on/offshore OSH management with the establishment of the Safety Management Department



POS SM designated as Korea's first Authorized Ship Management Company

(2021.12)

Obtained the Authorized Ship Management Company certification by the Ministry of Oceans and Fisheries



POS SM achieved the highest rating in the World Excellence Maritime Transport & Port Industry certification scheme (4 stars)

(2021.09)

First ship management company in Korea to achieve the highest rating in the World Excellence Maritime Transport & Port Industry certification scheme



Governance

Established the ESG Committee

(2022.05)

ESG Committee formed within the Board of Directors for a full-scale, board-level sustainable management



Appointed a female independent director

(2022.03)

Appointed a female independent director and achieved gender diversity among the board of directors



Established of mid to long-term dividend policy

(2021.02)

Established a dividend policy and 3-year dividend guidelines (2021-2023) to ensure stability in dividends and improve predictability.



Introduced the Fair Trade Compliance Program

(2022.06)

Corporate-wide compliance management system for voluntary compliance



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Materiality Assessment

We conducted a materiality assessment to identify important sustainability issues and we will conduct annual materiality assessments to replace, remove, and/or add issues. We identified 13 common likely material topics based on comparison with the GRI Sector Standards(G11, G12, G13) as of November 2022. Our main business area, shipping industry, is not directly applicable to G11(Oil and Gas), G12(Coal), G13(Agriculture, Aquaculture and Fishing). However, common material topics in other industries are likely to be considered as important elements in the upcoming shipping sector standards. Thus we paired the common likely material topics to each of the top nine material topics for which we will take extra prudence in management. Related information is included on the material topic management pages. The process and results of the materiality assessment will be disclosed in our annual ESG reports in a transparent manner.

Materiality Assessment Process

To identify core issues related to sustainable management and incorporate them in this report, we conducted the materiality assessment in the following four steps based on the GRI Standards reporting guidelines.

STEP 1. Issue identification and pooling

Sustainable management issue pooling
① Global initiatives and standards analysis
(GRI, ISO 26000, UN SDGs, DJSI, KCGS, SASB, TCFD, K-ESG, Ecovadis)
② Pan Ocean's standing and internal inputs

STEP 2. Internal/external environment analysis

Media analysis
Analyze media reports related to Pan Ocean
- Period: 2019.01.01-2022.06.30
- 263 valid articles out of 1,424
Benchmarking
Analysis of local and international sustainable management leaders

STEP 3. Collecting opinions from stakeholders

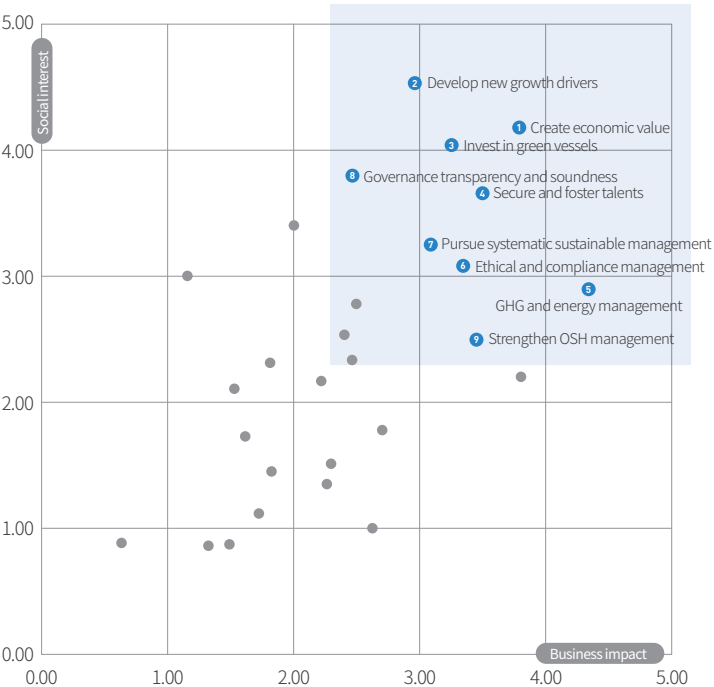
Stakeholder survey
Survey of internal and external stakeholders on Pan Ocean's sustainable management
Period: 2022.08.11-08.29
Method: Online survey
Application of Pan Ocean's mid to long-term strategic directions

STEP 4. Decisions on directions of reporting

① Identify core reporting issues based on the assessment results
② Include sustainable management activities and response measures for nine core issues

Materiality Assessment Results

Based on the results of the materiality assessment, we selected top nine priorities as the material topics to report. This report contains details on our management activities and responses for each of the topics.



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Material Topic Management

Our goal is to identify the actual and the possible impacts the core issues may hold on the economy, the environment, and the society and to manage them in med- to long-term perspective.

☒ Economy ☒ Environmental ☒ Social (including human rights)

* Common likely material topics identified in Sector Standards(G11, G12, G13)

No.	Material issues	Impact in sustainability context	Activity and Performance	ESG indicators	Page	Documents	Likely material topics*																
1	<div></div> <div>Create economic value</div> <div></div>	<p>The fundamental responsibility of a business is to generate economic profits and distribute them to stakeholders. Thus, Pan Ocean should strengthen foundations by attracting quality shippers, improving operation efficiency, and reducing operating costs to ensure stable profit and improved cost efficiency. We constantly face risks, for example fluctuations in charter contracts and fuel prices depending on market conditions, and ever-increasing uncertainties surrounding our business environments both locally and internationally. Amidst the recession driven by COVID-19, we need to explore strategies to thrive and secure competitiveness.</p>	<div>(Consolidated financial statements, unit: KRW 100 million)</div> <table><tr><th>year</th><th>Sales</th><th>Operating profit</th><th>% change in operating profit</th></tr><tr><td>2019</td><td>24,679</td><td>2,100</td><td>3.0%</td></tr><tr><td>2020</td><td>24,972</td><td>2,252</td><td>7.2%</td></tr><tr><td>2021</td><td>46,161</td><td>5,729</td><td>154.4%</td></tr></table>	year	Sales	Operating profit	% change in operating profit	2019	24,679	2,100	3.0%	2020	24,972	2,252	7.2%	2021	46,161	5,729	154.4%	<div>· GRI 201 (Economic Performance)</div>	7, 78-79	<div>· Business Report</div> <div>· IR Report</div>	N/A
year	Sales	Operating profit	% change in operating profit																				
2019	24,679	2,100	3.0%																				
2020	24,972	2,252	7.2%																				
2021	46,161	5,729	154.4%																				
2	<div></div> <div>Develop new growth drivers</div> <div></div>	<p>Pan Ocean's key business areas are primarily in global markets, and we are highly sensitive to shippers' needs. In this sense, expanding the business domain and attracting and retaining customers are directly associated with Pan Ocean's economic profits. To pursue growth and strengthen global competitiveness, we need to explore new growth drivers to keep up with changes in external environments. We need to be agile in catching up with ever-changing and ever-diversified market and customer needs to find new business opportunities. In the era of digital transformation, we must focus on developing new technologies and capabilities such as business automation solutions and green vessels, which are necessities for the growth and development of Pan Ocean.</p>	<table><tr><th>Category</th><th>Details</th></tr><tr><td>Shipping</td><td><div>· 2021 Introduced 2 VLCCs</div><div>· 2021 Introduced an LNGBV</div><div>· 2023- An LNGC (174K CBM) to be introduced</div></td></tr><tr><td>Non-shipping</td><td><div>· 2015 Started agri-trading business</div></td></tr></table>	Category	Details	Shipping	<div>· 2021 Introduced 2 VLCCs</div> <div>· 2021 Introduced an LNGBV</div> <div>· 2023- An LNGC (174K CBM) to be introduced</div>	Non-shipping	<div>· 2015 Started agri-trading business</div>	<div>· Other business issues (non-GRI)</div>	11-17	<div>· Business Report</div> <div>· IR Report</div>	N/A										
Category	Details																						
Shipping	<div>· 2021 Introduced 2 VLCCs</div> <div>· 2021 Introduced an LNGBV</div> <div>· 2023- An LNGC (174K CBM) to be introduced</div>																						
Non-shipping	<div>· 2015 Started agri-trading business</div>																						
3	<div></div> <div>Invest in green vessels</div> <div></div>	<p>Enhanced greenhouse gas regulations and increased demands for high-efficiency green vessels from key stakeholders for high-efficiency green vessels have led to acceleration in the transition toward green vessels. Efforts are underway to reduce carbon emissions from vessels by, for example, using clean and alternative fuels and developing solutions to improve fuel efficiency. As environmental regulations are becoming increasingly stricter, these trends will be likely to further accelerate. We should explore technical alternatives to make a transition from fossil fuels to LNG and apply mixed fuels, ammonia, bio-fuels, and hydrogen fuels. As an industry leader, Pan Ocean has a substantial influence, and we must take action to ensure the continuity of our business and fulfil our commitment to the environment.</p>	<div>(Unit: KRW 100 million)</div> <table><tr><th>Year</th><th>Green investment</th><th>Green sales*</th></tr><tr><td>2019</td><td>411</td><td>-</td></tr><tr><td>2020</td><td>664</td><td>60</td></tr><tr><td>2021</td><td>244</td><td>162.5</td></tr></table> <div>* Sales from shipping services performed with vessels certified for green technology by the Korean Register under the green vessel transition project.</div>	Year	Green investment	Green sales*	2019	411	-	2020	664	60	2021	244	162.5	<div>· GRI 302 (Energy)</div> <div>· GRI 304 (Biodiversity)</div> <div>· GRI 305 (Emissions)</div>	39-41	<div>· Environmental Management Policy</div> <div>· ESG Finance Management System</div>	<div>Climate adaptation, resilience, and transition</div> <div>Biodiversity</div>				
Year	Green investment	Green sales*																					
2019	411	-																					
2020	664	60																					
2021	244	162.5																					

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Material Topic Management

Economy Environmental Social (including human rights)

* Common likely material topics identified in Sector Standards(G11, G12, G13)

No.	Material issues	Impact in sustainability context	Activity and Performance	ESG indicators	Page	Documents	Likely material topics*																
4	<div></div> <div>Secure and foster talents</div> <div></div>	<p>Pan Ocean believes that fostering employee talents and happiness will lead the company grow. Building and managing a talent pool are decisive factors for a company's competitiveness. We offer development opportunities to our people and ensure the quality of their lives. Retaining talents is of paramount importance, and this requires developing mid/long-term workforce plans to provide safe and sound working conditions. Attracting and retaining innovative talents with different capabilities is vital not only for the company's growth, but also for generating positive impact on society by creating new jobs. In this sense, the entire human resources management process ranging from hiring to training, retention, and reemployment support is essential for Pan Ocean to continue growing and fulfill its social responsibility.</p>	<div>(Unit: people, %, KRW 100 million)</div> <table><tr><th>Year</th><th>New hires</th><th>Voluntary resignation</th><th>Training costs</th></tr><tr><td>2019</td><td>161</td><td>(Onshore) 3.4 (Offshore) 8.9</td><td>10.4</td></tr><tr><td>2020</td><td>206</td><td>(Onshore) 2.5 (Offshore) 8.9</td><td>6.9</td></tr><tr><td>2021</td><td>235</td><td>(Onshore) 3.1 (Offshore) 6.8</td><td>8.7</td></tr></table>	Year	New hires	Voluntary resignation	Training costs	2019	161	(Onshore) 3.4 (Offshore) 8.9	10.4	2020	206	(Onshore) 2.5 (Offshore) 8.9	6.9	2021	235	(Onshore) 3.1 (Offshore) 6.8	8.7	<ul style="list-style-type: none">· GRI 401 (Employment)· GRI 404 (Training and Education)	44-48	-	Employment practices
Year	New hires	Voluntary resignation	Training costs																				
2019	161	(Onshore) 3.4 (Offshore) 8.9	10.4																				
2020	206	(Onshore) 2.5 (Offshore) 8.9	6.9																				
2021	235	(Onshore) 3.1 (Offshore) 6.8	8.7																				
5	<div></div> <div>GHG and energy management</div> <div></div>	<p>Driven by rising sea levels and temperature, and the changes in the ecosystem caused by greenhouse gas emissions, the world has gone beyond climate change and is now facing a climate crisis. All businesses emitting greenhouse gases from their operations must develop reductions solutions and energy efficiency management. In particular, vessels have significant impact on climate change, and unpredictable natural phenomenon directly affect their operations. Also, the inclusion of the shipping industry in the EU ETS will result in costs for emission trading, hence financial implications. Furthermore, those not actively engaged in climate change response may be considered as non-contributors to sustainability and is likely to be excluded by investors. Pan Ocean sees greenhouse gas and energy management as important tasks to attract investors and fulfil its environmental responsibility.</p>	<div>(Unit: tCO2eq/KRW 100 million, TOE/KRW 100 million)</div> <table><tr><th>Year</th><th>GHG emission intensity</th><th>Energy intensity</th></tr><tr><td>2019</td><td>100.822</td><td>31.992</td></tr><tr><td>2020</td><td>113.343</td><td>36.070</td></tr><tr><td>2021</td><td>67.776</td><td>21.733</td></tr><tr><td>2021 target</td><td>109</td><td>35</td></tr></table>	Year	GHG emission intensity	Energy intensity	2019	100.822	31.992	2020	113.343	36.070	2021	67.776	21.733	2021 target	109	35	<ul style="list-style-type: none">· GRI 302 (Energy)· GRI 305 (Emissions)	29-35	· Environmental Management Policy	Climate adaptation, resilience, and transition	
Year	GHG emission intensity	Energy intensity																					
2019	100.822	31.992																					
2020	113.343	36.070																					
2021	67.776	21.733																					
2021 target	109	35																					
6	<div></div> <div>Ethical and compliance management</div> <div></div>	<p>Responsible and ethical management and compliance are associated with many risks that may have decisive influence on our survival, such as reputation, market competitiveness, and human rights. The level of responsibility and roles evaluation groups, investors, and customers expect from Pan Ocean is increasingly higher, and laws and regulations are becoming stricter. Failing to meet these expectations incur financial penalties and risks of losing social credibility and creating in-house anxiety. As such, thorough compliance with all relevant laws and regulations on anti-corruption, fair trade, and workplace bullying prevention is a necessity. We need to explore measures to prevent potential risks in advance and respond appropriately to occurrence of unethical conducts.</p>	<table><tr><th>year</th><th>% ethics/ compliance pledge signed</th><th>% voluntary compliance review conducted</th></tr><tr><td>2019</td><td>99.4%</td><td>100%</td></tr><tr><td>2020</td><td>99.4%</td><td>100%</td></tr><tr><td>2021</td><td>99.6%</td><td>100%</td></tr></table>	year	% ethics/ compliance pledge signed	% voluntary compliance review conducted	2019	99.4%	100%	2020	99.4%	100%	2021	99.6%	100%	<ul style="list-style-type: none">· GRI 2-27· GRI 205 (Anti-Corruption)	72-74, 81	<ul style="list-style-type: none">· Charter of Ethics· Code of Ethics· Ethical Management Guidelines	Anti-corruption				
year	% ethics/ compliance pledge signed	% voluntary compliance review conducted																					
2019	99.4%	100%																					
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Material Topic Management

 Economy  Environmental  Social (including human rights)

* Common likely material topics identified in Sector Standards(G11, G12, G13)

No.	Material issues	Impact in sustainability context	Activity and Performance	ESG indicators	Page	Documents	Likely material topics*																		
7	<div></div> <div>Pursue systematic sustainable management</div> <div></div>	Evaluators, shareholders, investors, customers, and many other external stakeholders are expecting substantial ESG activities and achievements. Investment criteria, which previously focused on financial performances, have shifted toward non-financial performances such as environmental, human rights, and supply chain aspects. Thus, ESG management is now an essential task for the survival and growth. To ensure that sustainable management is interconnected with and incorporated in Pan Ocean's management policy, the board of directors should take leading roles within the company's governance structure. What is more important is building consensus with all employees. Sustainable management cannot be conducted if employees are not fully engaged to it. In other words, it requires their engagement and contributions, rather than mere efforts by top management or certain departments. To do so, we will need to build a corporate-wide consensus about the necessity for sustainable management and willingness to practice it. In addition, we will also need to develop an ESG strategic plan interconnected with our mid/long-term strategic orientations.	<div>· ESG Committee organized under the Board of Directors.</div>	<div>· GRI 2-14</div> <div>· GRI 2-22</div>	67	<div>· ESG Committee Operation Rules</div> <div>· ESG Finance Management System</div>	N/A																		
8	<div></div> <div>Governance transparency and soundness</div> <div></div>	The real competitiveness of a business comes from a balanced governance. A sound corporate culture and transparent disclosures bring strong relationship with stakeholders. Right decision-making is ensured when the governance has a democratic and well-organized process. Externally demonstrating the transparency of the governance and the independence of the board will also contribute to protecting shareholders' rights. We make disclosures of our governance standards, board activities, and other information for stakeholders. Now, we need to solidify an advanced board-centered governance where the management makes decisions responsibly.	<div>· Enactment of Corporate Governance Charter</div> <div>· Established a dividend policy and 3-year dividend guidelines.</div> <table><tr><th>Year</th><th>Board meeting attendance</th><th>Board meetings held</th></tr><tr><td>2019</td><td>69%</td><td>8</td></tr><tr><td>2020</td><td>77%</td><td>12</td></tr><tr><td>2021</td><td>87%</td><td>14</td></tr></table>	Year	Board meeting attendance	Board meetings held	2019	69%	8	2020	77%	12	2021	87%	14	<div>· GRI 2 (Governance)</div>	66-68	<div>· Articles of Association</div> <div>· Board Operation Rules</div> <div>· Corporate Governance Charter</div> <div>· Corporate Governance Report</div> <div>· Audit Committee/ Internal Transactions Committee/ Remuneration Committee/ Independent Director Recommendation Committee Operation Rules</div>	N/A						
Year	Board meeting attendance	Board meetings held																							
2019	69%	8																							
2020	77%	12																							
2021	87%	14																							
9	<div></div> <div>Strengthen OSH management</div> <div></div>	The spread of infectious diseases and the enforcement of the Serious Accident Punishment Act highlight the growing concerns about safety and health. Management will be subject to punishment if a serious accident occurs, meaning that all businesses must put safety and health as major issues affecting their overall business management. Providing safety and security is our utmost responsibility to protect employees. In particular, the offshore work environment involves higher risks for injuries, hence even more careful approaches are needed. In addition, marine accidents are associated with potential casualties and pollutions. To ensure the safety of our employees and suppliers and fulfil our environmental responsibility, we need to build a system to eliminate serious accidents by identifying safety and health risks to make improvements accordingly.	<div>(Unit: Lost time incidents per million work hours, people)</div> <table><tr><th>year</th><th>Lost time incident rate</th><th>Deaths</th></tr><tr><td rowspan="2">2019</td><td>(Onshore) 0</td><td>0</td></tr><tr><td>(Offshore) 5.91</td><td>0</td></tr><tr><td rowspan="2">2020</td><td>(Onshore) 1.128</td><td>0</td></tr><tr><td>(Offshore) 5.97</td><td>0</td></tr><tr><td rowspan="2">2021</td><td>(Onshore) 0</td><td>0</td></tr><tr><td>(Offshore) 4.07</td><td>0</td></tr></table>	year	Lost time incident rate	Deaths	2019	(Onshore) 0	0	(Offshore) 5.91	0	2020	(Onshore) 1.128	0	(Offshore) 5.97	0	2021	(Onshore) 0	0	(Offshore) 4.07	0	<div>· GRI 403 (Occupational Health and Safety)</div>	55-62	<div>· Safety and Health Policy for offshore employees</div> <div>· Safety and Health Policy for onshore employees</div>	Occupational health and safety
year	Lost time incident rate	Deaths																							
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Stakeholder Engagement

We define and categorize stakeholders as employees, customers, suppliers, shareholders/investors, and local communities. We use multifaceted channels to listen to each group's voice, which is reflected in the process of the identification of the material topics. We will continue working for streamlined communications with stakeholders by identifying and managing issues they are interested in.

Customers

Communication channels	Topics of interest
<ul style="list-style-type: none">WebsiteHelp Line	<ul style="list-style-type: none">Customer opinions and feedbackHigh-quality services

Employees

Communication channels	Topics of interest
<ul style="list-style-type: none">Labor-Management CouncilGrievance settlement systemEmployee satisfaction surveyIntranet, company messengerCompany newsletter	<ul style="list-style-type: none">Talent attraction and retentionOperation of diverse welfare programsCapacity building and growthWork environment and organization culture improvementHuman rights protection and respect for diversity

Local communities

Communication channels	Topics of interest
<ul style="list-style-type: none">Seoul Senior Welfare CenterSeoul National Cemetery	<ul style="list-style-type: none">Vitalizing the local economySupporting the socially vulnerableFulfilling environmental responsibilityExpanding social infrastructure

Suppliers

Communication channels	Topics of interest
<ul style="list-style-type: none">Purchase portalHelp Line	<ul style="list-style-type: none">Fair selection and evaluationEstablishment of relationships for shared growthCompliance with laws and regulations



Shareholders/investors

Communication channels	Topics of interest
<ul style="list-style-type: none">General shareholders meetingIRDisclosuresMeetings and conferences	<ul style="list-style-type: none">Business performance and financial information disclosuresCommunications with shareholdersTransparent disclosure of the governance systemPursuit of ethical/compliance management



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It is vital that corporates make commitments to the environment and respond to the climate crisis and sustainable future. Pan Ocean takes preemptive measures and actively responds to resolve environmental issues.

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Environmental Management

Environmental Management Policy

We established the Environmental Management Policy in 2012, under which we have endeavored to reinforce our environmental management system. With the aim to build sustainable environments for the generations to come and transform ourselves to a green company, we are guided by this policy to establish and implement detailed annual environmental goals and plans



Pan Ocean Environmental Management Policy

1. We establish measures for all risks identified for environmental protection.
2. We comply with relevant international agreements, guidelines, and flag and port state rules including all requirements of the environmental management system.
3. We have all onshore employees and seafarers trained to acquire qualifications and professional knowledge to perform their duties. We hire physically healthy staffs with qualifications and skills required under local and international regulations.
4. We operate contingency systems both onshore and offshore to effectively respond to emergency accidents and pollutions from vessels and offer training and education to cultivate emergency response capabilities.
5. We define clear responsibilities and authorities for streamlined communications between onshore operations and vessels. We establish a streamlined communication system to maintain the emergency contact system.
6. We continue improving the environmental management system established for environmental protection.

Environmental Management System

We pursue safe vessel operations and environmentally friendly transportation services. For more organized environmental management, we obtained the ISO 14001 certification in 2010 and has maintained it ever since. POS SM also retains the certification. We manage overall environmental impact through the PDCA (Plan-Do-Check-Action) cycle. In order to enhance our environmental management, we conduct improvement activities ranging from planning and implementing environmental goals to environmental education, monitoring, taking corrective measures for noncompliance, and managerial review. The Maritime Environment Team is exclusively responsible for environmental management and dedicated to maintaining the environmental management system.

ISO 14001 certificates



Pan Ocean



POS SM

Environmental Impact Assessment

We conduct annual environmental impact assessments to predict and analyze the impact of Pan Ocean's business activities on environment and prevent environmental pollution in advance. The severity of environmental impact is calculated by combining the likelihood of each environmental risk and potential consequences. Aspects identified to have significant environmental impact based on the level of severity are taken into consideration in establishing the following year's environmental goals.

2021 Environmental impact assessment highlight

Category	Impact	Response
GHG Emission regulation	Installation of engine power limiting device	Install best possible EPL devices in consultation with the Korean Register and makers
	Limitations on low-grade vessel operations	Use vessel performance monitoring systems to achieve the best possible vessel energy efficiency
Climate change	Increased frequency of tropical cyclones	Use real-time navigation monitoring systems to identify weather risks and set routes
Biodiversity	Cross-border ballast water exchange	Install ballast water treatment systems in all vessels
Resource cycling	Waste generated from vessel operations	Landing for recycling waste, conduct thorough maintenance of relevant equipment

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Conducting Environmental Training

We conduct annual environmental training to help employees internalize environmental awareness, share information on environmental laws and regulations and ensure thorough compliance. In particular, we regularly conduct marine pollution prevention education based on the Environment Management System (EMS) manual. Seafarers take onboard OJT and computer-based training programs and drills. Pre-embarkation job training and onshore safety quality meetings form foundations for continued and systemized management to prevent marine pollution. In addition, we offer employees opportunities to take training on GHG and energy regulations, clean fuel, and promising next-generation industries such as green vessels, building corporate-wide consensus on environmental management.

Environmental training for onshore and offshore employees

Onshore employees	
2021	· Trend of vessel GHG reduction regulations
	· Future vessel fuel technology
	· IMO's 76th Marine Environment Protection Committee meeting results
2022	· EU environmental management (ETS, etc.)
	· Alternative fuel and alternative fuel-powered vessel market status
	· Local and international decarbonization trends in shipping
2022	· Impact of IMO/EU Environmental Regulation and Counter-measures
Offshore employees	
2022	· Marine pollution prevention
	· Harmful liquid management

Issuing Green Bonds

We are the first shipping company in Korea to issue green bonds worth KRW 50 billion, which were rated KR G1, the highest level of ESG green bonds. The funds raised through the issuance of the green bonds will be primarily used to introduce vessels to supply fuel (LNG) and ballast water treatment systems. Projects are developed and assessed based on the criteria provided by the ESG Financial Management System. All funds will be put in ESG projects that are expected to produce positive environmental effects such as clean transportation, land and marine biodiversity conservation etc.

Compliance with Environmental Laws and Regulations

We voluntarily evaluate legal and regulatory compliance to ensure that we fully comply with all laws and regulations applicable to the shipping industry. In doing so, we are guided by the IMO MARPOL rules and the latest local and international environmental regulations including vessel GHG reduction regulations. Key compliance response measures and progress are reported to the Risk Management Committee to maintain an efficient compliance management system.

Environmental violations

Unit	2019	2020	2021
Cases	0	0	0

Green Produce Purchase and Use

To minimize environmental impact from vessels, we purchase eco-friendly vessel consumables such as lubricants and paints. We plan to gradually increase the scope of green products for those supplied to vessels.

Green products purchase track records (Unit: KRW million)

Category	2019	2020	2021	Remarks
Green lubricants	130	245	333	Green lubricant product purchases
Green chemicals	77	66	65	Including green cleaners
Green product purchases	207	311	398	-
Total purchases	25,040	35,076	52,204	Consumables, lubricants
% green product purchases	0.83%	0.89%	0.76%	Green product purchases/total purchases

Environmental Management

Targets and Indicators

We established and implemented plans to achieve environmental and climate change response targets. We define indicators for annual performance evaluations, and identify areas for improvement through audit processes including internal and external reviews, thereby proactively operating the environmental management system.

2021				2022		
Target	Detailed plans	Performance	Progress	Target	Detailed plans	KPI
Zero off-spec fuel oil use	Sample tests for every fuel supply	Conducted every fuel supply	COMPLETE	Zero off-spec fuel oil use	· Sample tests for every fuel supply	Zero omissions
	Secure specifications by each supplier	Ongoing implementation			· Obtain product specifications from major suppliers to ensure they meet the specification requirements	6 times quarterly
Lower EEOI than 2019 (bulk 8.5, tanker 22.7)	Fuel-saving paint applied to 1 vessel	Applied to 6 vessels	COMPLETE	GHG unit emissions reduced by 35% compared to 2009	· Update vessel performance data	Twice annually
	Vessel performance updates twice annually	Updated twice (April, October)	COMPLETE		· Operating ships at low-speed	90%
	Development of real-time EEOI monitoring system	A system to be developed reflecting response to IMO CII	COMPLETE & DEVELOPING			
Zero violations	Seminars on key regulations, 2 trend reports	3 reports implemented	COMPLETE	Zero violations	· Seminars on key regulations	Twice annually
					· EPL work in response to IMO EEXI	EPL work done
					· Regulatory trend reporting (IMO, EU)	At least twice annually
					· Establish a GHG emissions monitoring system in response to the IMO CII	Development
Installing environmental equipment in 19 vessels	Ballast water management systems (BWMS) installation	Installed in 34 vessels	COMPLETE	Installing environmental equipment	· BWMS installation	15 vessels
Plastic waste reduction	Avg 12.49 m ³ /vessel	Avg 14.10 m ³ /vessel	INCOMPLETE	Vessel type-specific plastic reductions by 2% YoY	· Identify major plastic waste sources · Ban on unnecessary packaging for vessel supplies and parts · Avoid using plastic bottles and thoroughly maintain water purifiers · Education on recycling and waste disposal	Avg 12.48 m ³ /vessel
Refrigerant usage reduction	Avg 68.05kg/vessel	Avg 67.47kg/vessel	COMPLETE	Vessel type-specific refrigerant reductions by 2% YoY	· Measure refrigerant usage and keep a refrigerant register · Complete pumping down during idling/repair	Avg 69.89kg/vessel
Sludge generation rate reduction	Ave 10.92%/vessel	Ave 17.19%/vessel	INCOMPLETE	Vessel type-specific sludge reductions by 2% YoY	· Keep purifiers and other oil equipment in good working order · Use fuel additives	Avg 12.52 m ³ /vessel
Engine room bilge generation	Avg 185.60 m ³ /vessel	Avg 163.02 m ³ /vessel	COMPLETE	Vessel type-specific engine room bilge reductions by 2% YoY	· Thorough leak checks in every patrol · Complete leakage control/immediate repairs for leaks	Avg 178.42 m ³ /vessel
Food waste generation	Avg 2.96 m ³ /vessel	Avg 3.37 m ³ /vessel	INCOMPLETE	-	-	-
Zero oil spill	Zero oil spill	0	COMPLETE	Zero marine pollution incidents	· ECP remind campaigns · Complete leakage control	Zero oil spills from vessels

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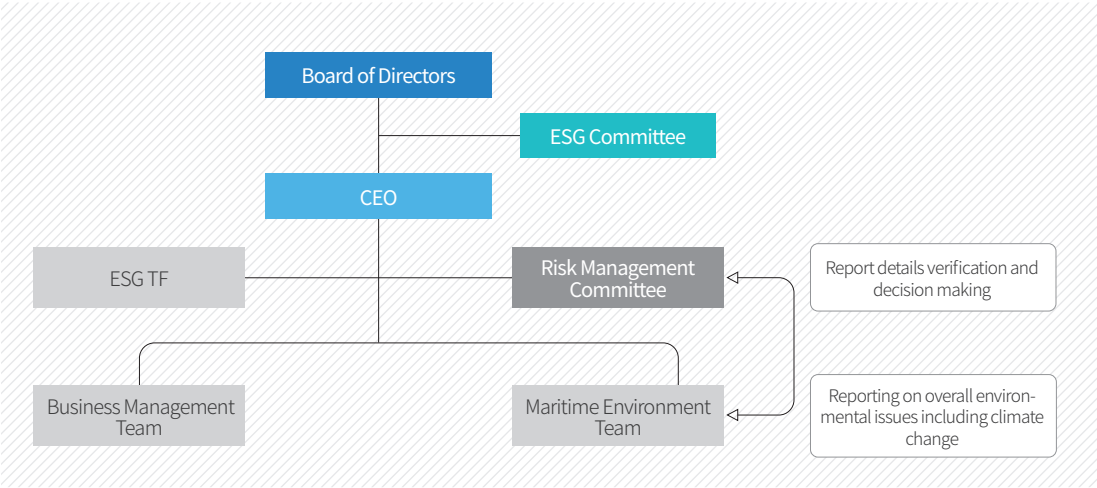
Climate Change Response

We are fully conscious of the impact of climate change risks on the shipping industry. We endeavor to report relevant details in accordance with the recommendations from the Task Force on Climate-related Financial Disclosures (TCFD).

Governance

Board Activities and Management's Roles

As the final decision maker, Pan Ocean's CEO is an inside director and the chairperson of the Board of Directors responsible for the company's response to climate change issues. The CEO reviews the environmental management system more than once annually and set goals and action plans for climate change response. The CEO also evaluates action plans and investment plans to achieve environmental goals and their progress as part of overall climate change response monitoring. Established in May 2022, the ESG Committee holds half-year regular meetings to make decisions on and approve climate change and ESG tasks. It also manages, supervises, evaluates, and reviews relevant activities. The committee takes charge in reviewing climate risks' impact and response plan. The Risk Management Committee deliberates and make decisions on key agenda related to climate change risks and opportunities and monitors the outcomes and their impact. It also proactively inspects environmental regulations to identify and review all potential environmental issues.



Risk Management

To pinpoint climate change risks and opportunities that may have material financial or strategic impact on Pan Ocean and understand how to best manage them, we address climate change issues in accordance with the Risk Management Committee's operation process. The Chief Risk Officer (CRO) convenes quarterly regular committee meetings and has the authority to convene extraordinary meetings as needed depending on the urgency of the issue to ensure organized and swift response to climate change risks.

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Strategy

Climate Change Risks and Opportunities

The climate change impact assessment process is proceduralized to identify key climate change issues for Pan Ocean’s value chains. Through this procedure, we identify climate change risks and opportunities, examine their likelihood and impact, and manage them accordingly.

Connections with Business and Financial Plans

Changes in maritime cargo volume driven by climate change have overarching impact on Pan Ocean’s business operations and financial plans. In this regard, we are recouping investment by selling off low-efficiency dry-bulks and tankers and aggressively investing in LNG carriers and LNG bunkering vessels. Environmental regulations also incur direct and indirect costs.

Climate Change Scenario

We are working on the transition plan as specified in the 2030 carbon reduction strategy. In the long term, we are going to develop detailed plans in order to have our targets validated by the SBTi in line with 1.5-degree scenario.

Financial impact of climate change risks and opportunities

Risk		
Transition risks		
Policy/regulation	Vessel operation suspension if failing to meet EEXI* requirements	Short-term
	Low-rating in CII**	Short-term
	Risk from inclusion of shipping in EU ETS	Short-term
Reputation	Reputational deterioration due to GHG emissions from vessel introduction and selling	Mid-term
Physical risks		
Acute	Seafarers and cargo safety risks from sea temperature and sea level rising due to global warming	Short-term
Chronic	Impact on vessel navigation patterns (routes, speed, fuel consumption) due to continued changes in marine environments (current, wave height, wind, etc.)	Long-term

(Short-term: in 2 years, mid-term: in 3-5 years, and long-term: in 6-10 years)

Opportunity	
Energy resources	Transition to high-efficiency, low-carbon vessels
	Greater fleet competitiveness achieved by optimized fleet operations
	Profits generated from trading carbon reduction credits
Resource efficiency	Fleet reorganization toward green/high-efficiency vessels
	Portfolio expansion of green vessel and fuel related businesses
Market	Green bonds to raise funds for green transformation
	Increased capital accessibility by meeting market demands for environmentally friendliness

Financial Impacts
Costs to introduce environmentally-friendly systems and technologies for regulatory compliance
Loss from drastic value decreases of non-compliant vessels forced out of market
Investment in green vessels and fuels
Emissions trading costs
Reductions in fuel consumption through high-efficiency vessel operations
Sales from increases in demands for environmentally-friendly vessels
Decreases in sales due to delays in operations

* EEXI: Energy Existing Ship Index, ex-ante CO₂ emission estimates per transport work (ton-nautical mile).

** CII: Carbon Intensity Indicator, ex-post CO₂ emission calculations per transport work (ton-nautical mile) based on fuel consumption, distance travelled, etc.

Climate Change Response

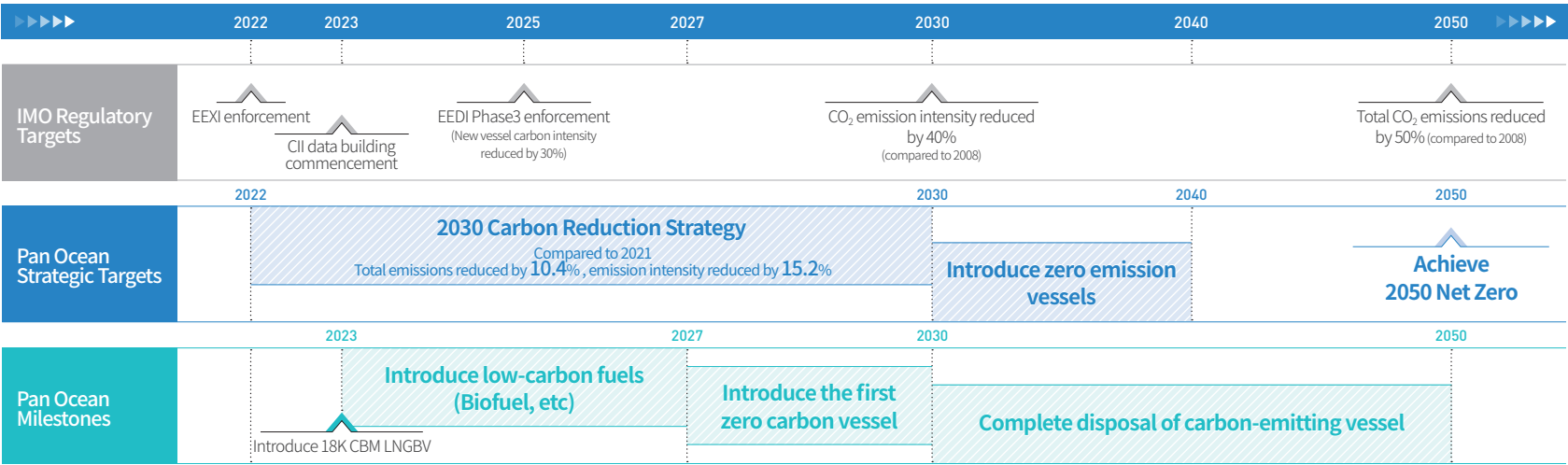
2050 Carbon Neutrality

Pan Ocean aspires to take the initiative in responding to and overcoming the global challenge of climate change. To this end, we declared 2050 Carbon Neutrality in 2022 and established the 2030 Carbon Reduction Strategy as a concrete action plan.

Target	Decarbonising Pan Ocean by 2050	
	We declared Net Zero by 2050 as an environmental goal for ESG management.	
Commitments	A leader in the decarbonisation of the bulk shipping	
	We take the initiative in decarbonisation and to lead the future of the industry. We establish and implement sustainable decarbonisation policies and aim to grow with all customers/stakeholders and share the outcomes with them.	
Strategic Targets	By 2030__Implement the 2030 Carbon Reduction Strategy	By 2050__Achieve Net Zero
	<ul style="list-style-type: none">· Reduce total emissions by 10.4% and emission intensity by 15.2% (base year: 2021)· Pursue external validation by SBTi (Science Based Targets initiative) in line with the 1.5°C target	<ul style="list-style-type: none">· Achieve Net Zero in all business areas· Provide all customers and stakeholders with Net Zero solutions

Road to Decarbonisation

* Zero carbon vessels: Vessels that can completely eliminate carbon emissions (WTW), for example methanol/ammonia-powered vessels and vessels with CCUS equipment

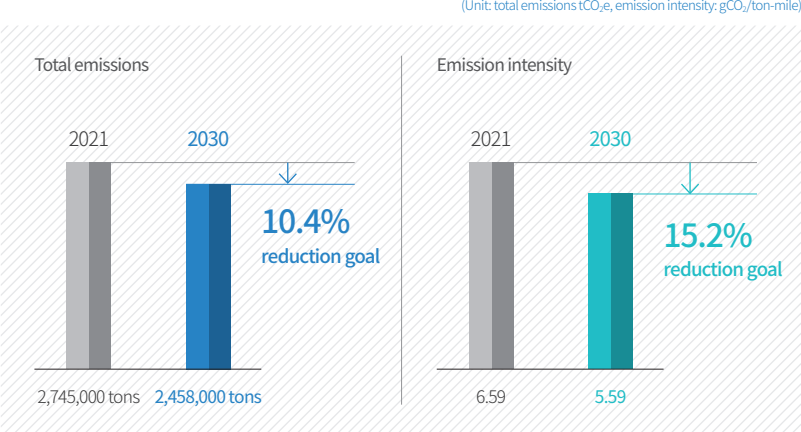


Climate Change Response

2030 Carbon Reduction Strategy

While the quantitative targets of the 2030 Carbon Reduction Strategy are established only in Scope 1, we address Scope 2 and Scope 3 emissions in our detailed action plans. We aim to verify the actual route of carbon reductions and technical development/infrastructural expansion by 2030 and develop organizational net zero strategies for all business areas by 2050.

2030 carbon reduction goal



2030 carbon reduction details

(Unit: total emissions tCO₂e, emission intensity: gCO₂/ton-mile)

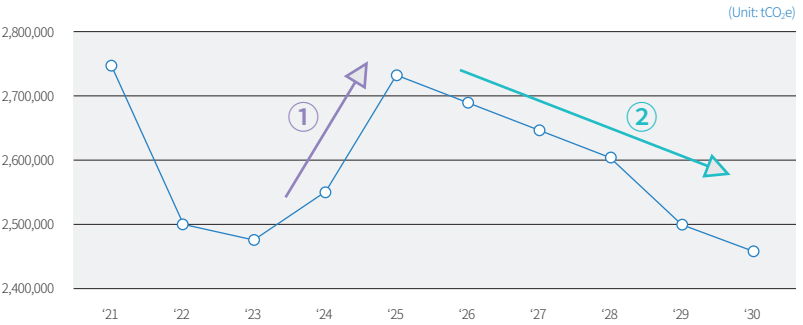
Category	Total emissions		Emission intensity	
	Reductions	% reduction**	Reductions	% reductions**
Efficiency in operation patterns	216,000 tons	10.5%	0.62	9.6%
High-efficiency fleet replacement and ESD introduction*	(93,000 tons)	(18.9%)	1.26	16.7%
Transition to zero-carbon vessels	163,000 tons	85.5%	3.51	100%

* Replacement vessels are larger, hence more total emissions but reduced emission intensity.
**2030 emission amount compared to 2021 emission amount of applied fleet by appropriate plan

Carbon reduction pathway by 2030

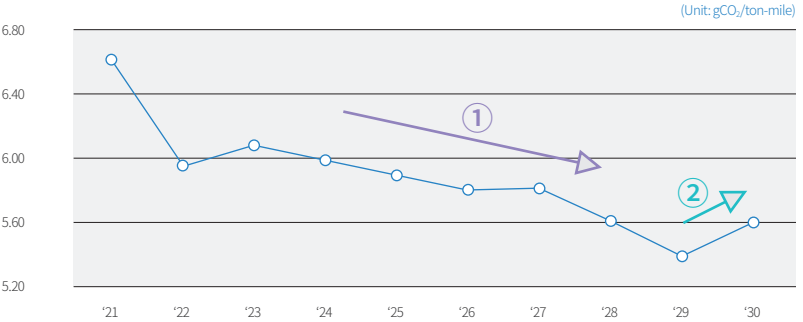
Total emissions trend

- ① Transitory increases due to fleet replacement focusing on larger vessels including seven 174K CBM LNGC vessels
- ② Continued reductions by selling off low-efficiency vessels and acquiring zero-carbon vessels



Emission intensity trend

- ① Continued decreases through efficient operation patterns, high-efficiency fleet replacement, ESG introduction, etc. since 2021
- ② Transitory increases in 2030 due to the sale of small-size carbon-emitting vessels.



Climate Change Response

2030 Carbon Reduction Plans We identified immediate carbon reduction tasks in Scopes 1, 2, and 3 and have accelerated implementation. We will continue to identify and execute carbon reduction activities.

Scope 1

Response to shipping regulations

- IMO EEXI: EPL (Engine Power Limitation) to be fitted in approximately 50 vessels in 2022 and 2023
- IMO CII: Introduce high-efficiency vessels, increasing efficiency in operation patterns, etc.
- Market-based regulations such as EU ETS and FuelEU Maritime : Trials to apply low-carbon bio-fuels produced from biomass and considerations and introduce zero-carbon vessels

Increase efficiency in operation patterns

- Vessel speed reduction and cruising to maximize reductions: increases in power output of an internal combustion engine result in exponential increase in emissions
- Develop a route monitoring system that uses data for long-term efficiency in operation patterns

Replace with high-efficiency fleet and introduce ESD equipment (2022-2026)

- Sell off low-efficiency vessels: (26)
- Eco-spec (hull design, PBCF, etc.) new vessel orders (24)
- Effective ESD equipment applications including existing vessels, rotor sails, and air lubrication systems

Transition to zero-carbon vessels(2027-2030)

- Sell off carbon-emitting vessels (10)
- Discontinue ordering carbon-emitting vessels
- Introduce zero-carbon vessels (6)

Scope 2

Active considerations to take part in Korean RE100

- Actively consider participating in the campaign to procure 100% renewables for power consumption in onshore establishments
- Renewable Energy Certificate (REC) purchases or third-party Power Purchase Agreements (PPAs) is under review

Scope 3

Reductions in emissions from capital goods such as vessels

- Continue cooperating with shipyards by increasing eco-friendly products to reduce carbon emissions during the construction of vessels
- Negotiate with manufacturers and service providers to reduce carbon emissions from the production and transportation of parts for the existing fleet

Reductions of fuel consumption in chartered vessels

- Select high-efficiency vessels to reduce carbon emissions from operation of chartered-vessels

Reductions in waste

- Increase recycling rates and minimize the amount of waste when treating general waste and sludge from vessels
- Continue corporate-wide campaigns to minimize office waste, for example a coffee mug giveaway campaign (2022)

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Greenhouse Gas and Energy Management

Vessel GHG Reductions

GHG Inventory Management

We developed a GHG inventory system by identifying and listing emission sources to statistically manage and monitor GHG emissions. This system allows us to collect data on each vessel's fuel oil consumption and GHG emissions, including CO₂, CH₄, and N₂O in real time and manage them by vessel, vessel type, and year. Taking advantage of the infrastructure and ample data to systematically manage GHG emissions, we will actively respond to heightened GHG regulations applicable to the shipping industry.

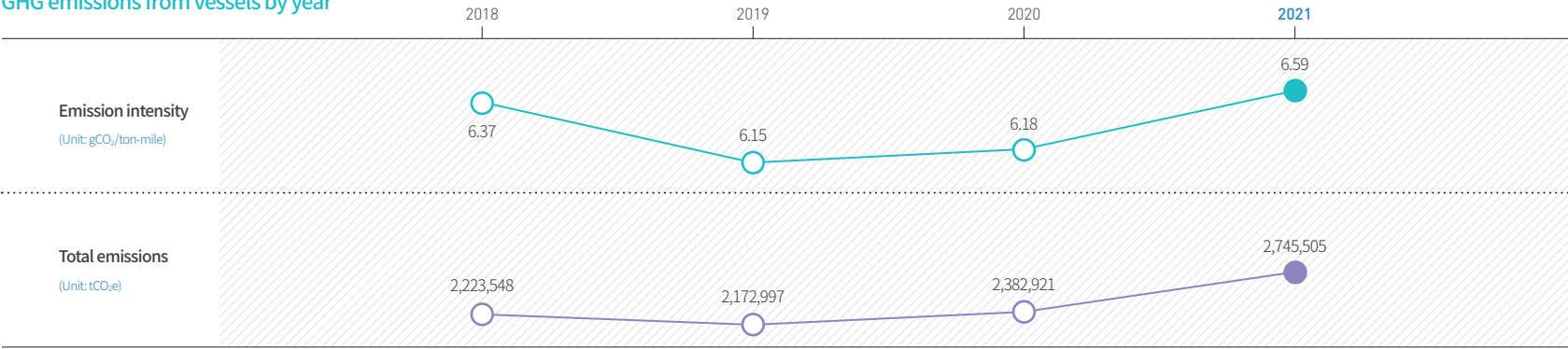
GHG Emissions Verification

Since 2009, we have been voluntarily collecting data and managing GHG emissions from our onshore and offshore operations. CO₂ emissions are monitored for each vessel, and we have the results verified by a third-party institution to ensure the objectivity of the emissions calculation. This verification process is based on the analysis and data collection system built by Pan Ocean, which has been certified by DNV GL based on the principles provided in the ISO GHG Protocol and the IMO Guidelines. We also use the verified data for preferential tax treatments for green vessels.

Regulatory Response to IMO DCS and EU MRV

We submit data collected from our fleet to the IMO annually and have them certified under the IMO DCS, a system that reports fuel oil usage and greenhouse gas emissions for vessels navigating internationally. Subject to the EU MRV regulation applicable to vessels calling at ports in EU member countries for cargo operations, we also report annual data on these vessels for verification. To this end, we built our own IMO DCS and EU MRV reporting systems. We also have the data and capabilities to swiftly and systemically respond to ever-changing GHG regulations.

GHG emissions from vessels by year



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Greenhouse Gas and Energy Management

Energy Efficiency

Ship Energy Efficiency Management Plan (SEEMP)

With a strong awareness on the energy issue, we are acting to save energy used by our vessels. We introduced an energy management system based on the PDCA (Plan-Do-Check-Act) approach. The energy policy is posted on all vessels to keep ourselves reminded of our commitment. In particular, all of owned vessels are furnished with the SEEMP (Ship Energy Efficiency Management Plan) and have duty-specific managers to continue improving energy efficiency. The SEEMP also contains details about ballast water management, hull resistance reduction, as well as analysis of their effectiveness.

Hull Resistance Reduction

To reduce hull frictional resistance that is the biggest obstacle to vessel operation efficiency, we apply antifouling paints to minimize the impact of hull fouling. We also conduct hull examinations and performance analysis on a regular basis to constantly monitor vessel conditions.

Ballast Water Management

We support individual vessels' trim optimization for energy efficiency. Efforts are made to reduce fuel consumption and keep the vessel operating with the best possible efficiency.

Energy Efficiency Design Index Management_EEDI/EEI

In accordance with the regulations of the IMO's Energy Efficiency Design Index (EEDI), we have been measuring the energy efficiency of new building vessels since 2013 and have been specifying them in their SEEMP. We built an inhouse system to calculate and collect vessel-specific EEI data in response to the Energy Efficiency Existing Ship Index (EEI) to be applied to existing vessels from 2023. Based on the data, we started sequentially implementing EPL systems in owned vessels from 2022.

Vessel Energy Efficiency Index Management_CII

To manage both vessels' innate energy efficiency and variable energy efficiency depending on their operations, we built a system to calculate and analyze vessel-specific Carbon Intensity Indicator (CII). By using this system, we estimated all of owned vessels' CII and grade changes until 2030. We will use these data to flexibly and swiftly respond to the IMO CII regulations to be enforced in 2023.

Environmental Impact Management

Harmful Chemicals Management

Identifying Harmful Chemicals

In accordance with the IMDG Code* and the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code), we define and handle explosive, flammable, toxic, corrosive, or marine polluting substances as harmful chemicals (hazardous substances) that may have direct impact on people, cargoes onboard, and marine environment. In particular, for chemicals and cleaners that may have negative impact on the marine environment, we buy and use green products certified by the IMO as part of our diverse efforts for harmful chemicals control.

* IMDG Code: International Maritime Dangerous Goods Code adopted by the IMO and applicable to dangerous substances packed and shipped via the sea.

Handling of Harmful Chemicals

We conduct preliminary screening for all chemicals we use (their characteristics, danger, emergency response, etc.). Depending on their packing conditions, we categorize packaged harmful chemicals into nine classes and bulk chemicals into five classes and apply isolation and separation measures accordingly. We also thoroughly check for restricted and prohibited items. There is a PPE matrix in place to ensure situation-specific PPE are worn for safety. Harmful chemicals are appropriately handled based on Material Safety Data Sheets (MSDS) under the Occupational Safety and Health Act.

Inspection and Management of Harmful Chemicals

Extra care is taken to prevent accidents in transporting and storing harmful chemicals. For bulk harmful chemicals, we follow strict procedures to check cargo temperature, use inhibitors, measure oxygen levels in the tank, and monitor void space for thorough management. Daily checkups and documentation are conducted for transportation and storage. The harmful chemicals management processes are subject to internal and external validity reviews conducted twice annually.

Air Pollutants Management

Using Low Sulfur Fuel Oil

Bunker-C oil that is used as vessel fuels emits sulfur oxides. This is one of the three major sources of air pollution, a major cause of respiratory diseases and PM2.5. In this regard, the IMO enforced regulations on the sulfur content in vessel fuels, and we started using low-sulfur fuel oil with less than 0.5% sulfur content since January 2020.

Scrubber (Desulfurizer) Installation

We have installed scrubbers in 74% of Capesize vessels that consume the largest amount of fuel in our fleet. This system allows us to monitor sulfur oxides emissions from the vessels in real time. By applying procedure-based control, we strive to reduce sulfur oxide emissions.

Alternative Maritime Power (AMP)

To reduce fine dust from vessels at anchor, we installed Alternative Maritime Power (AMP) system in two vessels. The AMP supplies power from land to the vessel while anchored in the port. This system is used to reduce air pollutant emissions from power generation using vessel fuel.

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Waste Management

We established a waste management manual to minimize waste generation and facilitate recycling. We also ask waste disposal services to apply the same standards to ensure waste management in accordance with international rules including the International Safety Management Code (ISM Code) and the MARPOL's and Pan Ocean's requirements. We ensure thorough management and monitoring with the ultimate goal of preventing pollution by minimizing waste disposal.

General Waste

For general waste from vessels, the entire waste treatment process from documentation, collection, separation, storage, and disposal is monitored to ensure proper treatment in compliance with international agreements. We also established waste disposal targets and review if the targets are met. We encourage that onboard incinerators are used to minimize waste discharged to the land and waters and supply plastic shredders and presses to facilitate waste recycling.

Packing Material Waste

To reduce packing material waste from goods loaded on-board, we encourage businesses to minimize packing materials unless necessary to prevent damage. As part of our waste management process, we work with suppliers to ensure that recollectable packing materials are immediately collected or recycled.

Oil Waste

We apply regular monitoring and documentation processes to the generation and treatment of oil waste (bilge, oily bilge, and sludge) to ensure the appropriateness of the process in compliance with the international standards. In particular, Pan Ocean's fleet have an autonomous Environment Tag System (ETS) to document the operation of environmental facilities and the treatment of oil waste. This system allows us to monitor whether the waste is managed properly.

Vessel Recycling

We adopted the IMO's vessel recycling agreement and the EU vessel recycling policies for the lifecycle management of green vessels. This aims to minimize risks of offshores' health and workers' safety from the delivery to the demolition and prevent potential pollutions from vessel recycling.

Green Recycling Policy

Pan Ocean complies with the vessel recycling rules. Our fleet have the Inventory of Hazardous Materials (IHM) furnished on-board. The IHM helps ensure the safety and health of workers in the dismantling process and prevent pollution.

To prevent vessels from being recycled under poor environment conditions, we established the Green Recycling Policy by which we only use yards accredited by the Korean Register in accordance with the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.

We consider and implement the safest and most environmentally-friendly vessel recycling policies to protect the marine environment and the rights of workers.

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Marine Environment Protection

BWMS Installation

Ballast water is stored in the ballast tank of a vessel to ensure the safe operation of the vessel. In this process, microorganisms contained in the ballast water may cause disruptions in the marine ecosystem. The IMO obligated Ballast Water Management System (BWMS) that sterilize and remove microorganisms in ballast water in September 2017. We started installing BWMS in owned vessel in 2016 even before the enforcement of the regulation, and now we monitor the ballast water sterilization process and results in real time. As of the end of 2021, we have installed BWMS on 83 vessels and aim to have the system installed on all owned vessels by 2024.

Fouling Prevention

We use a range of measures to keep marine biodiversity and protect the ecosystem. To prevent the ecosystem from being disrupted by foreign species attached to the hull of internationally operating vessels, we clean the vessel surface and apply anti-fouling paints whenever vessels enter the dock. Vessels at sea also follow procedures to check contaminations and damages to the hull surface on a regular basis. Other efforts to prevent fouling include installing marine growth preventing systems (MGPS) in seawater inlets and appointing anti-fouling managers.

Water Resource Management

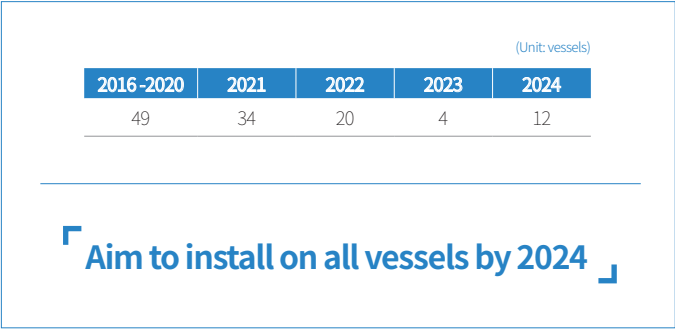
Vessel Drainwater Management

To minimize the impact of vessel operations on the marine environment, we use organized management and control measures for vessel drainwater. For washwater that goes through the scrubber, a system to reduce sulfur oxides in exhaust gas, its pH, turbidity, PAH, nitrate content, etc., are measured and monitored in real time before being discharged. We also accumulate data from these monitoring activities for comprehensive management. Gray water and wastewater from vessels pass through vessel wastewater treatment systems for sterilization before discharge, otherwise, they are stored in separate holding tanks. We actively participate in marine water resource management in compliance with international agreements and regulations.

Environmental impact of ballast water discharge

Scope of impact	All ports around the world depending on vessel operation routes
Key impact	Introduction of alien species, dissemination of harmful marine organism/pathogens
Level of impact	More than 10 billion tons of ballast water transported annually, leading to more than 7,000 marine species moving globally
Response	Installing BWMS to sterilize eliminate organisms and microorganisms in ballast water in all vessels

BWMS installation track records and plans



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Introducing Advanced Green Systems

Applying Rotor Sail Systems

We actively employ vessel energy saving technologies to improve the efficiency of vessel operations and environmental impact management. We were the first in Korea to introduce a Rotor Sail System (RTS) to VLOC(very large ore carrier). The RTS is an environmentally-friendly auxiliary propulsion system that is powered by the winds to spin vertical cylinders to supply auxiliary thrust. This helps save fuel and reduce carbon dioxide emissions.



SEA-ZHOUSHAN applied with the RTS

In addition to the RTS, POS SM signed a joint research agreement to develop new technologies in response to environmental regulations with the Korean Register, under which we are developing air lubrication systems to reduce hull frictional resistance and save energy. With this research project, we plan to analyze actual vessel operation data to verify the effectiveness of energy saving systems and establish measures to maximize them.



Joint research signing ceremony for new technology development for response to environmental regulations

System for Optimization of Vessel Operations

We have own IT system to collect and manage vessel-specific basic data including vessel location, speed, route, and fuel oil consumption. We monitor these data through onboard data collection devices and reports and use them to define an economic speed and operate vessels accordingly. We also monitor key factors that influence the operational efficiency of vessels such as travel speed, fuel oil consumption, and weather conditions to optimize energy consumption and routes. We develop and use advanced information technologies to manage and analyse big data from vessels, efficiently preparing for the Fourth Industrial Revolution.

Investment in Green Vessels

Building Foundations for Green Vessels

Developing MASS Technologies

MASS (Maritime Autonomous Surface Ships) are the latest, high-value-added vessels that are powered by artificial intelligence, the Internet of Things, big data, and other digital technologies to optimize route setting and navigation. Introducing MASS will help reduce travel time, save fuel, and accidents caused by human errors. We take the lead in MASS technology development as a new growth driver and endeavor to achieve a transition in the shipping service toward greater stability and efficiency. In recognition of such efforts, Pan Ocean and POS SM were selected by the Ministry of Oceans and Fisheries and the Ministry of Trade, Industry and Energy for a MASS project in October 2020. In September 2022, the parties signed an agreement to facilitate offshore demonstrations. Under this agreement, they aim to develop core technologies for MASS and pursue phased demonstrations to build foundations for commercialization. The signing ceremony was concurrently held with the opening ceremony of Fleet Operation e-Center. The e-Center provides real-time visibility about vessel locations, fuel consumption, and cargo loading loading as well as support for improving ship efficiency and operational stability, such as pre-screening risk factors and remote inspection, etc. We plan to use big data collected by the center to improve vessel efficiency and demonstrate MASS.

We plan to load the autonomous navigation system in an actual container ship to demonstrate its effectiveness and validity in 2024. Pan Ocean's MASS technology is considered Level 3, a high level in the IMO's four-level autonomous navigation system classification. Level 3 ships are controllable remotely without onboard operators, meaning that Pan Ocean's MASS

technology is far more advanced than its competitors. We will continue developing green digital shipping technologies and prepare for the successful employment of this technology in real-world settings.



MASS demonstration project agreement ceremony

Expected effects of MASS



Investment in Green Vessels

Building Foundations for Green Vessels

Research on Green Smart Bulk Carriers

In October 2021, Pan Ocean signed a memorandum of understanding for research on next-generation green smart bulk carriers. This agreement had overarching importance as the world's first private-led cooperative framework engaging all those involved in the shipping process from vessel ordering to operations including shipping companies, shipbuilding companies, shippers, and the Korean Register. To achieve the ultimate goal of 70% reduction in GHG emissions from vessels, we are participating in a research project for the use of next-generation green fuels such as LNG, ammonia, hydrogen, methanol, and ethanol, as well as validating their economic feasibility and efficiency.



MOU for research on next-generation green smart bulk carriers

Participating in State Projects for Environment

We are deeply involved in many state projects related to the environment, contributing to the development of EEOI*/EEDI** system, hull management optimization for efficiency improvement, and measures for vessel fuel efficiency management. Furthermore, by acquiring and applying these technologies in advance, we are paving ways to internalize and apply relevant technologies. In particular, we signed an agreement with the MacNet Cluster (an integrated consultative body of marine industries), under which we endeavor for the development of industry, research, and academia by organizing strategic seminars.

* EEOI: Energy Efficiency Operational Indicator, an indicator showing vessels' energy efficiency at sea.

** EEDI: Energy Efficient Design Index, an indicator applicable to new vessel design and building from 2013.

Increasing Investment in Green Facilities

Based on the SEEMP, we identified various green facilities available and analyzed their effectiveness. Using these findings, we are making aggressive investment in equipment for hull resistance reduction, propulsion efficiency improvement, and engine efficiency improvement, among others. We plan to gradually increase investment in green facilities to actively respond to heightened environmental regulations and contribute to vessel energy efficiency improvement and GHG reductions.

Green facility investment track records and plans

(Unit: KRW million)

Category	2019	2020	2021	2022 plan
BWMS	8,183	17,325	23,814	30,436
Scrubber	32,924	48,518	-	-
AMP	-	569	573	-
EPL	-	-	-	3,657
Total	41,107	66,412	24,387	34,093



SOCIAL

Pan Ocean believes the value of respect for human rights and diversity to be realized throughout entire business activities. Our ambition is to ensure a safe work environment for employees and to develop human capital in the interest of human-centered management.

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Respect for Employees

Human Rights Protection

Pan Ocean has procedures to guarantee and protect the rights of employees. The employment rules and human resources management manual include expressive provisions on anti-bullying, anti-discrimination, child labor prohibition, and other provisions for human rights protection that must be followed. We will continue to advance our human rights protection system.

Human Rights Education

We offer education designed to promote employees' awareness of human rights and internalize respect for human rights as a corporate culture. Our onshore employees and seafarers receive workplace bullying prevention, sexual harassment prevention, and disability awareness training. In 2021, whole employees have completed these courses.

Human rights education in 2021

(Unit: persons)

Category		2021
Workplace disability awareness	Onshore	
	Subjects to education	374
	Completed	374
	Seafarers	
	Subjects to education	783
Workplace sexual harassment prevention	Completed	783
	Onshore	
	Subjects to education	374
	Completed	374
	Seafarers	
Workplace bullying prevention	Subjects to education	783
	Completed	783
	Onshore	
	Subjects to education	374
	Completed	374

Grievance Settlement System

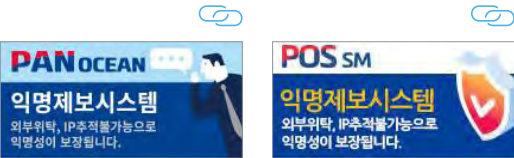
We provide a grievance handling system where the employers and employees can share their conflicts or concerns and receive feedback. We also have an anonymous whistle-blowing system (Help Line) in place for not only employees, but also third parties to access and file reports. If a seafarer finds his/her legitimate rights infringed by, for example, working condition violations, insufficient medical treatment, overdue wage etc., he/she can rely on the onboard grievance handling system (Open Reporting). At least one grievance/complaint handling officer is appointed by voting on vessel and at the same time an Grievance committee of Designated Person Ashore and HR manager of offshore employees help address their grievance.

Bullying and discrimination cases received within the reporting period

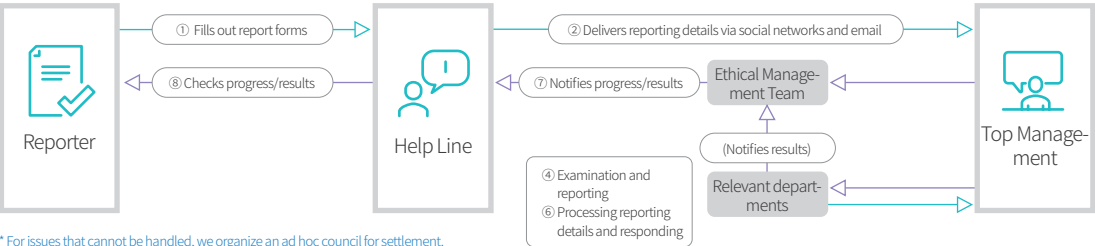
(Unit: cases)

Category	2019	2020	2021
Onshore*	0	0	0
Seafarer**	1	3	5

* Excluding reports received but found not to constitute workplace bullying.
** Number of cases handled as discrimination or bullying in the Open Reporting and grievance settlement system.



Anonymous reporting (Help Line) process



* For issues that cannot be handled, we organize an ad hoc council for settlement.

Respect for Employees

Attracting and Fostering Talents

Talents Recruitment

Our hiring process is designed to secure top-notch talents that fit Pan Ocean at the right time. We use various online channels including YouTube and online communities to expand our on-line presence. We conduct blind interviews to ensure the fairness and transparency of the hiring process. In order to meet the enthusiasm and sincerity of the applicants, we make sure to develop our internal interviewers' skills and qualities. We develop annual hiring strategies and plans and run an efficient hiring process.

Pan Ocean's model talent

Innovator with creative thinking
Creative thinkers ushering new changes
Practical leader to pioneer global markets
Highly engaged leaders ready to seize the global markets
Experts aiming to be the best
Industry-leading experts fostering strong performance
Team player with an open attitude
A team player with mutual respect

Fostering Talents in Shipping

Providing Recruiting/Job Information

We find ourselves responsible for fostering professional talents for the shipping industry. We participate in annual job fairs at Korea Maritime and Ocean University and Mokpo National Maritime University, where we deliver basic business information such as Pan Ocean's financial highlights, business areas, and fleet, as well as seafarers hiring processes and welfares.

Industry-Academia Scholarship

To foster and attract outstanding ship officers, we collaborate with two maritime universities to run scholarship programs. We awards scholarship for approximately 20 senior students. And we hire graduates every year, and the scholarship holders are provided with priority in the hiring process. Furthermore, we fully support their learning and developing, so that they can thrive as senior officers. We will continue fostering global shipping talents that will grow with us.

Mentoring Programs

We offer senior students at maritime universities opportunities to meet alumni through mentor and mentee relationships. The mentors provide guidance to the students about career paths sharing their practical experiences and know-hows and a better understanding of the overall shipping industry. Through this procedure, we build opportunities for industry-academia cooperation.



2022 Industry-Academia Scholarship Ceremony



2022 Recruitment Fair at Korea Maritime and Ocean University

Onshore employees training system

Respect for Employees

Attracting and Fostering Talents

Education and Training

Offshore employees

We have a tailored training system Onboarding capacity building. We support offshore employees by providing various training courses such as master/chief candidate training, chief officer/First Engineer training, newly hired seafarer training, newbuild/second-hand vessel takeover training, etc. In addition to these job training courses, we also offer pre- and post-boarding safety training including marine accident response drills, rescue training, and health and disaster prevention training.

Offshore employees training system



New officer orientation



Pre-boarding training



Familiarization training for PAN MAJESTY seafarers

Respect for Employees

Attracting and Fostering Talents

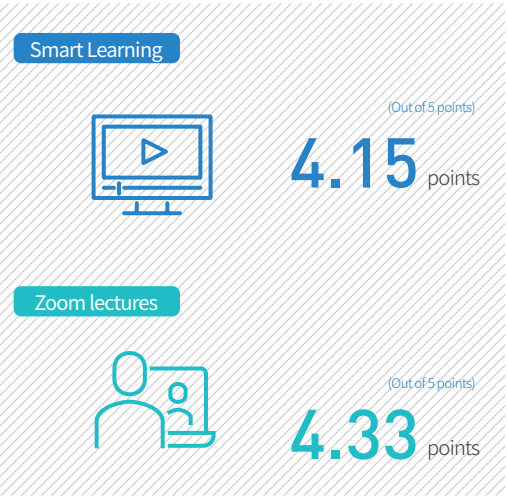
Expanding Online Training

Online Training Platforms

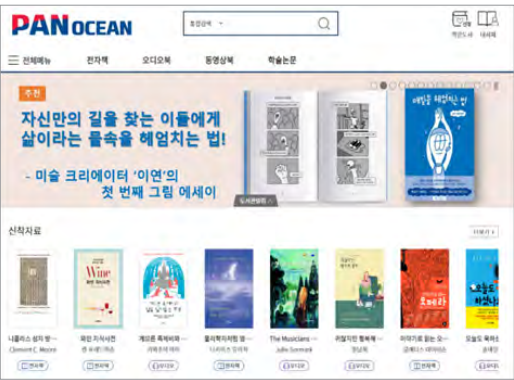
Facing the ever-increasing demands for advanced professional training, we actively use online platforms as a way to improve accessibility and efficiency. Online training programs include E-learning for long-term learning and Smart Learning with short, 'learn-as-you-go' content, which help create a constant learning culture. E-Learning is an online training platform for all employees designed to help them develop job skills, foreign language skills, and to pursue self-development. Smart Learning is a level-specific platform for the executives, team leaders, and team members. It arms them with insights and flexibility to respond to rapidly-changing trends. The platform provides simple microlearning content in various areas including business management, economy, industry, leadership, communication, humanities, and trends. It can be used to encourage self-led learning during employees' commuting. We also organize three or four special lectures on Zoom each year, helping all employees sharpen their insights to the economy, organizational culture, humanities, etc., in the era of "New Normal." On request from departments or teams, we also organize and provide training programs to meet their learning needs.

In 2022, we opened an e-library providing e-books, audio books, and academic paper collections to contribute to employees' welfare and ensure access to self-development. We ceaselessly think of ways to meet employees' learning needs and help with their capacity building.

Online training satisfaction survey results



Smart Learning



e-Library

Respect for Employees

Attracting and Fostering Talents

Expanding Online Training

Introducing Online Training for Seafarers

Due to the prolonged COVID-19 pandemic, training for international seafarers was mostly substituted by online training. In this regard, we introduced the ‘Seagull’, an online training program for seafarers, in 2021. This makes e-learning available on the web and from personal mobile devices, hence increasing accessibility. Aside from workstations, we also equipped vessels with computer-based training (CBT) learning materials. CBT is used as training material for fire extinguishing, evacuation drills, and onboard safety training.



Online training program ‘Seagull’

Rehiring Retirees

We rehire retirees as part-timers in consideration of their health conditions and job capabilities. For retirees aged between 60 and 70, we comprehensively assess their willingness, skills and health checkup results to determine re-employment and take them onboard. For those aged 65 or older, we conduct additional exams for cardiovascular diseases to regular employee health examinations for a thorough assessment, and consider the results in our boarding plans. By rehiring retirees, we encourage the employment of seniors with expertise and experience and contribute to job creation for their age group.

Retirees rehired in 2021

(Unit: persons)

Category		No. of people rehired
Master		29
Chief engineer		38
Ratings	Deckhand	18
	Steward	13
	Engineer	19
Total		117

[3-year data details](#)

Kim Wang-sik (60), Captain, Sea Tubarao



I have been a sailor for a long time and considered being a captain as my life-long profession. My passion for my job and Pan Ocean, and my professional skills and expertise built upon my experiences were what sustained my life and motivated me. Finding retirement

coming around the corner, however, I was deeply concerned about the interruption of my career, my finance, and family support, and I was sad to let go of my job and life. Then I was offered by the reemployment opportunity in recognition of my capabilities and skills. I was physically healthy and determined. I also found it a good opportunity as this would provide a relatively higher salary than others of my age, so I accepted the offer. Reengaging myself onboard, I was determined that I would dedicate myself to my job as if I am a rookie. As duties onboard are becoming increasingly diverse and complicated, I feel a greater responsibility and I'm fully committed to my duties. I am continuously working out onboard to keep myself physically fit and exerting my utmost efforts to take care of seafarers' mental health and create a good atmosphere onboard through communication and conversing. Actively participating in Pan Ocean's job continuity programs including wider communication channels, officer workshops, and other training programs help me fulfil my duties and roles as a member of this organization and society. With Pan Ocean, I plan to continue devoting myself to the career development of highly-skilled workers in our generation (Baby Boom Generation), leading best practices and making social and economic contributions.

Respect for Employees

Healthy Company Culture

Master, Chief Engineer and Officers Workshop

We organize quarterly master/officer workshops for their safety and health onboard. As part of the workshop, off-the-job training covers topics such as safety and health, job skills, organizational culture, and mental health for seafarers. It aims not only to help them develop their job skills and a sense of belonging but also to take care of their mental health and establish a sound culture onboard. We also organize conferences and business briefings for both onshore employees and seafarers for open discussions and communications between labor and management.

Although COVID-19 forced us to significantly downsize these gatherings until the first half of 2022, we resumed holding our workshops in July 2022.

Pre-boarding Consultation

Pre-boarding consultations are where the master, chief engineer, and officers can discuss their roles to be taken onboard before embarking. As they would live a communal life for a long time once they embark, having opportunities to share their thoughts with each other and reach an agreement in advance facilitates safety and health onboard. Pre-boarding consultation meetings for masters and chief engineers that are scheduled to go on board are held every two weeks. Officers and engineers also have pre-boarding consultation meetings. From 2021 to the first half of 2022, these meetings were held online due to COVID-19, however, in-person meetings resumed as the disease control regulations eased.

Track records

Category	Workshop	Pre-boarding consultation for masters	
Interval	5 times a year	Every 2 weeks	
Training hours	1.5 hours	1 hour	
Year	2022	2021	2022
Number	1	15	20
Attendees	64	170	213
Remarks	First workshop held in July 2022 due to COVID-19	-	

The first master and chief engineer/officers workshop in 2022



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Healthy Company Culture

Mental Health Programs for Seafarers

As seafarers spend a long time onboard, we offer them mental health programs. These programs are conducted as part of pre-boarding consultation meetings and workshops and aim to teach them effective communication skills to manage stressful situations and resolve disputes. In a survey of seafarers regarding their satisfaction with these programs by Korea Seafarer’s Welfare&Employment Center, 110 out of 115 respondents, or 95.6%, answered positively to the question “Do you find the programs helpful?”

Topics covered by the mental health programs for seafarers

Category	Subjects	Content and objectives
Stress management		
Smart life onboard	2nd/3rd Officer and Engineer	Stress management, adaptability to new environment, work ethics
Smart leaders’ life	Master and Chief engineer, Chief officer and First engineer	Right leadership types for one-self, how to understand and exercise leadership to minimize stress onboard
Self-esteem		
Happi-ness-tech	Master and Chief engineer	Understanding and finding meanings of happiness and how to apply the learnings to real-life settings

Highlights of the program satisfaction survey results

Q. From what you learned, what did you find the most impressive?

- “I was able to expand my understanding about the millennials’ and Gen Z’s thoughts, how to deal with them, and how to resolve issues. I learned about ways to resolve conflicts between the different generations and facilitate communications.”
- “The lessons were delivered from seafarers’ perspectives, so I could easily concentrate and relate myself to them.”
- “I found it impressive that messages are best-delivered through good relationships.”
- “I found all lessons amazing. I wish to have more programs like this.”

Q. What are your expectations from junior (or other) officers?

- “I want them to be professional and responsible at work.”
- “We need an attitude that respects and understands conflicts between different generations.”
- “We should give way, be selfless, and act thoughtfully to others.”
- “We should develop a long-lasting fellowship to weather our tough life onboard.”
- “We all should contribute to our organization and company as much as we possibly can.”
- “Let’s let go of our authority and make a virtuous culture onboard (compliments, encouragement, kind words).”

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Performance Management and Evaluation System

Onshore employee evaluations consist of performance evaluations, competency evaluations, and multi-dimensional evaluations. Performance evaluations involve strategic indicator, growth indicator, and tasks review, while competence evaluations are designed to evaluate their common, leadership, and job competency. We have a process in place to allow subjects to have meetings with evaluators for feedback to better understand the evaluation results and raise an objection if needed. Multi-dimensional evaluations consist of peer and upward evaluations. The results are not disclosed and used for internal management and employee satisfaction.

Offshore employee evaluations are categorized into master/chief engineer evaluations and evaluations for other staff. Masters and chief engineers are evaluated by the ship managers for their competency (half-annually) and performance (annually). The evaluators look into masters' and chiefs' overall leadership and provide feedback, including additional training support, if room for improvement is found. Evaluations for other staff are conducted by two senior officers and consist of job evaluations and character evaluations. They are evaluated for their job capabilities and adaptability as seafarers. In particular, in character evaluations considerations are given not only to their work attitude but also to other factors that influence life at sea, for example ethics, drinking habits, and diligence. Subjects are provided with full details about their weakness and strength and given opportunities to discuss the results.

Satisfaction Surveys

We conduct annual satisfaction surveys of both onshore and offshore employees and the results are incorporated in recommendations for improvement and the following year's action plans. For onshore employees, we use an external agency to carry out the satisfaction survey to ensure independence. Survey items include the corporate vision, organizational efficiency and effectiveness, corporate culture, and human resources management. We conduct indicator-specific review of the results to develop improvement measures and have each organization implement action plans. Doing so allows us to objectively analyze requests from all fields in our organizational management and continue making improvements for problems, thereby ultimately better satisfying employees. In addition, we conduct inhouse job satisfaction surveys twice a year.

To understand offshore employees' needs and satisfaction, we conduct an internal customer survey of masters, chief engineers, officers and engineers. Survey items are segregated to many different dimensions including management, communications, training, operation management, and safety and quality management, as well as into different levels by position, nationality, and fleet. These are intended to identify factors that have the biggest impact on local and international seafarers' satisfaction and find room for improvement.

In 2021, the overall score of the internal customer satisfaction survey of offshore employees was 68.7, a 3.9-point increase from the previous year. We thoroughly analyze the survey results and use them as basic information to understand the workplace atmosphere onboard.

Satisfaction survey results

Employee	Unit	2019	2020	2021
Onshore	Points	4.21	4.23	4.16
Offshore	Points	63.2	64.8	68.7
POS SM	Points	3.59	3.58	3.69

(Onshore, POS SM: out of 5 points, Offshore out of 100 points)

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Mentoring Program

We have a mentoring program to facilitate entry level employees and newly hired experienced employees. The scope of the program was extended from entry-level to experienced positions to help those newly joining Pan Ocean better adapt themselves to the new environment. We organize various monthly programs for mentors and mentees. At the end of each round of the mentoring program, we conduct an anonymous survey of the mentors and mentees. Findings from the survey, for example suggestions for activities and other thoughts, are reflected in the following year's program planning. The mentoring program helps facilitate communications between colleagues and build a positive corporate culture.

Overview of the mentoring program operations

Category	Graduate new hires	New hires (experienced position)
Mentees	Graduate new hires	New hires (experienced position)
Mentors	Deputy section chiefs/section chiefs	Deputy heads/team heads
Duration	6 months	3 months
Type	Mentee/mentor 1:1 matching Min. 2 monthly activities + @	Mentee/mentor 1:1 (or 2:2) matching
Programs	<Common>	
	1. Work-related topic selection and studies	-
	2. Networking with colleagues (including team leaders)	
Programs	<Monthly themes>	
	1st: Ice breaking	<Monthly themes>
	2nd: Mentee/mentor MBTI tests	1st: Ice breaking
	3rd: Monthly goal setting and achievement	2nd: Mentee/mentor MBTI tests
	4th: IDP (roadmap) development	3rd: Networking with colleagues, understanding other departments' work
	5th: Mentor/mentee's work-life balance	
	6th: Wrap-up	
Reporting	Mentees and mentors to file monthly reports (no fixed reporting templates for mentees)	

* The programs above are based on 2021 and we operate different programs every year according to the external environment.

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Improving Productivity at Work

Implementing Flexible Working Systems

We are improving our working conditions in response to changes in the external environment such as the 52-hour workweek system and the COVID-19 pandemic. We have flexible working systems such as selective working hours, flexible working hours, and staggered office hours that fit individual employees' duties and situations. We endeavor to allow employees to have greater control over their work arrangements.

Flexible working systems in place

Arrange-ment	Details	Applicable situations
Selective working hours	Core time and selective working hours	Where there are difficulties in predicting workload peaks and extended working hours for certain times are expected (e.g., staggered operations, long-term projects leading to irregularities in extended working hours)
Flexible working hours	Pre-defined daily work hours depending on fluctuations in workload	Where workload peaks are predictable (e.g., monthly closing, short-term projects, etc.)
Staggered office hours	Flexibility in attending the office without changes in daily work hours	Avoiding congestion during rush hours, personal circumstances, etc.

Offering Benefits and Welfare Programs

We have a range of welfare programs to ensure employees' work-life balance, including statutory parental leaves and family care leaves. We also have a range of benefits as shown below, which aim to improve the quality of employees' lives.



Livelihood support/work support	
Child tuition support	Support for kindergarten and college tuition fees for all employees
Housing support	Home loan support to help with employees' residential stability and welfare
Communication fee support	Support for employees' monthly mobile phone bills
Meal support	Work-related meals offered at 80 restaurants near the office
Hobby/leisure/learning	
Recreational facilities	Partnerships with condominiums, hotels, etc. for reasonable accommodation costs
Club activities	Support for company club activities such as football, baseball, ski, tennis, theaters, etc.
Language learning	Support for tuitions at external language academies of employees' choice
Fitness	Support through partnerships with fitness centers for employees' health
Shipping-specific welfare programs	
Family boarding	Families invited to vessels with safe shipping service distance
Family visit (into the ships)	Through prior applications, families visit employees during port calls
Recreation allowances	Support provided for individuals and group leisure activities (Book, music, workout, etc.)
Others	
Welfare card	Pre-charged welfare cards (KRW 1,000,000 ~ 2,500,000 depending on position) offered annually.
Health examinations	Comprehensive health examinations with optional extras added to basic examinations
Birthday voucher	Birthday vouchers worth KRW 50,000
Family events	Congratulatory/condolence money, leaves, goods/wreaths for all employees and their spouses

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Improving Productivity at Work

Motivation for Employees

Long-term onshore employees are offered rewards to celebrate their 10th, 20th, and 30th anniversaries. We also have award programs for outstanding performers (teams, individuals, STAR MBA, digital innovation awards, etc.). Also, we have awards and rewards for long-term offshore employees, outstanding performers, and top-performing vessels. Rewards for long-term employees include additional paid leaves and long-term service allowances. On disembarkation after a certain period of service onboard, we provide employees with vacation bonuses and paid leaves to allow them to be fully refreshed. We also award those that retire at the regular retirement age, increasing satisfaction on long-term employment. We dedicate ourselves to improve employees' work efficiency and help them better thrive at work.



Awards for long-term employees at the 2022 founding anniversary event

Developing Labor-Management Relationship

Hosting the Labor-Management Council

We endeavor to establish a mutually beneficial labor-management relationship and achieve shared goals based on mutual trust and cooperation. To weather challenges in market conditions, we declared labor-management conciliation in 2013. Since then, we have exerted our utmost efforts for shared growth with zero labor disputes. Pursuant to Article 12 of the Act on the Promotion of Employees' Participation and Cooperation and Chapter 12 of the Pan Ocean Collective Agreement, we organize quarterly Labor-Management Council meetings to negotiate wage and discuss benefits and welfare programs. We will continue communicating to improve employees' welfare and develop a sound corporate culture.

Vitalizing Labor-Management Communications

In the case of seafarers, we hold regularly business briefings and group meetings for each level to communicate. Also position-specific promotion training and new officers/ratings training are actively used as communication channels. While on board, we listen to employees' opinions and receive proposals through regular Review Reports from masters, improvement suggestion programs, and non-compliance reporting. Through these various communication channels, Pan Ocean strives to listen to seafarers' opinions and improve Labor-Management Relations

Safe Work Environment

System for Safety and Health Promotion

Safety and Health Management Policy

Ensuring employees' safety and health is a duty and responsibility of a business. We declared the Safety and Health Management Policy, taking employees' and stakeholders' safety and health as a top priority.

Pan Ocean Safety and Health Management Policy

1. We consider employees' and stakeholders' lives and safety as top priorities in our business activities.
2. We establish a safety and health management system and ensure compliance with relevant laws and regulations.
3. We establish safety goals and conduct education, training and inspections in an organized manner.
4. We continue working to prevent safety failures preemptively and proactively.
5. We strengthen shared growth systems with stakeholders in contracting, outsourcing and entrustment and fulfill our roles and responsibilities in reducing industrial accidents for employees and stakeholders.
6. We ensure employees' voice and engagement for safety and accident prevention.

Establishment of the Safety and Health Management System

To comply with international standards on safety and health management and build an integrated safety and health system, POS SM obtained the ISO 45001 certification on ship management and safety management services. Pan Ocean aims to be certified in 2023 and is carrying out internalization of accident prevention, damage minimization, and safety awareness by developing a safety and health management system. We have also developed basic policies for marine safety and seafarers' health, for example safety and quality, environmental, health and welfare, social responsibility, cybersecurity, drug and alcohol policies, which are disclosed as a public declaration to indicate management's interest and our willingness for safety and health.

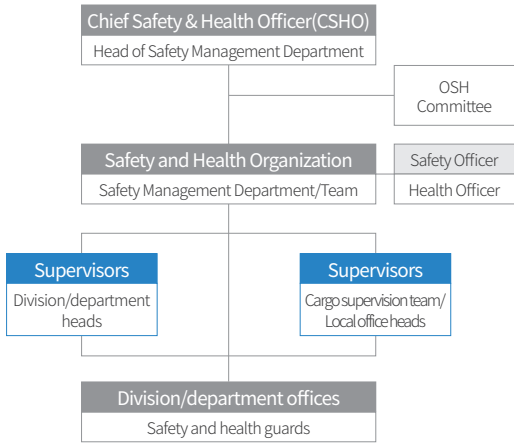


POS SM ISO 45001 certificate

Safety and Health Management Organization

To comply with the Occupational Safety and Health Act and the Serious Accident Punishment Act and respond to potential risks both offshore and onshore, we established the Safety Management Department directly reporting to the CEO. We also granted the Head of Safety Management Department as Chief Safety & Health Officer (CSHO) to build a decision-making system for safety and health management. The board has approved annual safety and health planning by cooperate work with POS SM's safety and quality team. We strive to ensure on-shore/offshore safe environment by constant monitoring.

Safety and health management organization structure



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Internalizing Safety and Health Culture

Safety and Health Goal and Performance Management

In our journey to grow as a global leader in the shipping industry, we prioritize safety and health. We declared “zero serious industrial accident” as our safety and health goal and established a safety and health goal management system by developing key tasks and detailed action plans to achieve the goal. To hold the CSHO, supervisors, and Safety Management Team accountable for safety and health, we defined key performance indicators (KPIs) and targets, which we track and manage progress and plans.

Corporate safety and health goal

Safety and Health goal
· Zero serious occupational accidents

Key tasks
· Build a safety and health management system
· Ensure integrated management of serious accidents
· Systemize monitoring activities

Detailed action plans
· Establish safety and health management rules
· Develop serious occupational accident contingency plans and manuals
· Ensure instant response to accidents and develop measures to prevent recurrence
· Check the progress of safety and health obligations and take improvement measures
· Identify, eliminate, substitute and control risk factors
· Establish a system to hear to workers' opinions
· Establish criteria to assess their safety and health standards in contracting, outsourcing and entrustment
· Conduct safety and health education

Safety and Health KPIs

KPI	Target
Serious accidents (deaths) on/offshore	0
Serious accidents (injuries) offshore	5% decrease
Serious accidents (injuries) onshore	0
Establish/revise safety and health management rules	4
OSH committee meetings (onshore)	4
Safety and health education completion	100%
Establish safety and health management plans (board approval)	Approval
Establish a system to hear to workers' opinions	System building
Serious accidents of contractors	0
Safety management countermeasure meetings (offshore)	2
Cooperation between responsible organizations (offshore)	6

Safety and Health Suggestion Program

We have a safety and health suggestion program in place to allow employees to make suggestions concerning safety and health improvement at any time. Suggestions received are reviewed internally, and relevant departments are consulted to take appropriate corrective measures. This helps us actively explore ways to improve work environments for employees and internalize a safe corporate culture.

Conducting Safety and Health Education

Onshore employees

In 2022, we officialized regular safety and health training for onshore employees (including supervisors) pursuant to the provisions in the Occupational Safety and Health Act. We also conducted on-the-job training for CSHO and safety/health officers.

Offshore employees

Safety management is included in workshops for masters and chief engineers, officers, job training for ratings, and training for new officers. We also have a safety and health manager training course, and an ISO 45001 internal auditor training course, among others.

Safety and health education for offshore employees

Category	Unit	2019	2020	2021
Time	Hours	13,306	9,260	17,110
Trainees	persons	1,135	794	1,339

· Offshore employees are not subject to statutory education under the Occupational Safety and Health Act.

· Training time and trainees decreased in 2020 due to COVID-19.

Safe Work Environment

Internalizing Safety and Health Culture

Safety Accidents Prevention and Health Management Programs

Onshore employees

Health service room <ul style="list-style-type: none">· First aids, self-testing kits(COVID-19), health consultation· High-risk group management including those with symptoms and those who need attention· Automatic blood pressure and glucose meter· Goods and equipment for musculoskeletal disease prevention	Building fire and disaster response <ul style="list-style-type: none">· Building management's safety and health policy incorporated in the safety and health plans and disaster prevention and damage alleviation plans
Health examinations <ul style="list-style-type: none">· Annual health examinations conducted pursuant to Article 129 of the Occupational Safety and Health Act	Stretching posters and safety and health signs <ul style="list-style-type: none">· Stretching in offices encouraged for health management in daily lives· Warning signs for dangerous places/substances
Brain/cardiovascular disease prevention <ul style="list-style-type: none">· Brain/cardiovascular disease risk assessment, plans to offer smoking cessation and responsible drinking programs in cooperation with public health centers	Security cameras in offices and emergency stairs <ul style="list-style-type: none">· Cameras installed in emergency stairs found as disaster-prone blind spots
CPR & AED operations and training <ul style="list-style-type: none">· Monthly self-inspections and reporting to the public health center, two first-aid training sessions for employees	Outsourced mental health counselling service <ul style="list-style-type: none">· Work stress prevention for employees' mental health
Safety management notice board <ul style="list-style-type: none">· For all employees and supplier employees	Mental health care <ul style="list-style-type: none">· Plans to offer work stress assessments and psychological counselling programs
OSH Committee <ul style="list-style-type: none">· Meetings held at least quarterly	Incentives for safety accident prevention <ul style="list-style-type: none">· Rewards for safety accident prevention goal setting and achievements
	System to hear to workers' opinions <ul style="list-style-type: none">· Suppliers: Customer service on the website· Employees: Safety management notice board on the intranet



Ceragem therapy



First-aid training



Automatic blood pressure gauge



Automated external defibrillator (AED)

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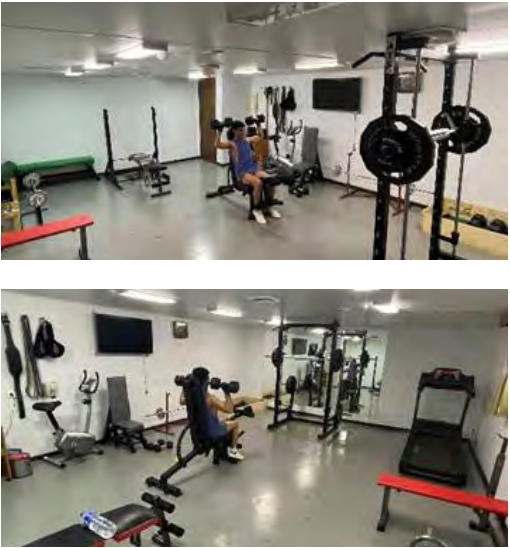
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Internalizing Safety and Health Culture

Safety Accidents Prevention and Health Management Programs

Offshore employees

Maritime emergency medical center
· Connections to the 119 medical center and remote consultation for seafarers
Health examinations
· Annual health examinations pursuant to Article 53 of the Enforcement Rules of the Seafarers' Act.
Psychological counselling for seafarers
· Sound organizational culture and mental health
Fitness facilities in vessels
· Encouraging seafarers' physical training and health
Safety management countermeasure meetings
· Held at least half-yearly
Safety and health response for individual vessels
· Seafarers' and vessel managers' safety and health policies incorporated in safety and health plans and manuals
Inspections and audits by management
· Conducted at least once half-yearly
PPE supply
· Essential PPE including a safety helmet, safety shoes, work clothes, and winter jackets



OSH Committee

The Pan Ocean OSH (Occupational Safety and Health) Committee holds quarterly meetings to facilitate safety and health management. The committee is chaired by the CSHO and has five employee members and five employer members. Its roles include deliberating and making decisions on key matters concerning safety and health such as revising safety and health management rules, developing safety and health plans, conducting safety and health education for employees, health examinations, serious accident investigations, and preventive actions, etc.

Onshore Safety and Quality Meeting

The onshore safety and quality meeting is organized by POS SM's safety and quality team with the aim to review and identify imperfections in the results of onshore safety activities and the appropriateness of business activities and procedures and to identify imperfections. Key agenda considered at the meeting include accident statistics, safety management system monitoring (quarterly), and amendments to manuals, held in the form of discussions over safety and quality issues. To facilitate communications between onshore employees and seafarers, we started asking masters and chief engineers off-duty to attend pre-boarding consultation meetings from 2021. Listening to the voices from the field helps us promote exchange of opinions.



Onshore safety and quality meeting in November 2021

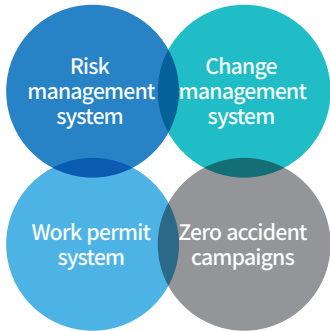
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Onboard Safety and Health Management

Onboard Safety and Health Management System

We pursue to establish a robust safety culture by preparing and sharing safety and health manuals. Onboard safety and health environment committee meetings are held regularly, and safety management countermeasure meetings are held in the head of-office to discuss vessel safety and health issues and to develop and implement preventive actions.

Onboard safety management system



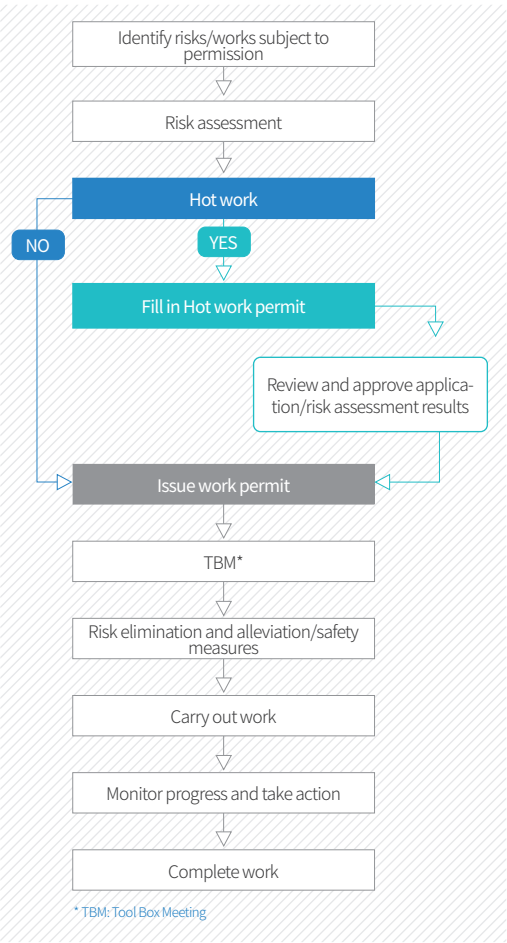
Onboard health management system

- Cleaning, space organization, and personal hygiene onboard
- Onboard vector management and AGM
- Onboard smoking regulations and quit-smoking campaigns
- Onboard noise and vibration measurements and management
- Seafarer mental health management

Operating the Safe Work Permit System

The safe work permit system aims to clarify work details and relevant safety instructions prior to the commencement of the work, thereby eliminating potential risk factors. The system must be applied to hazardous works conducted in enclosed space, hot work, electrical works, works on piping and pressure vessels, or handling asbestos, other non-regular works, and works designated by the master or the onboard safety officer. For all works subject to the safe work permit system, advance risk assessments must be conducted, and the assessment results and work permit must be posted at the work site. All those involved must attend an onboard safety and health environment committee meeting prior to the commencement of the work.

Operating process of the safe work permit system



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Onboard Safety and Health Management

Zero Accident Campaign (POS-4P)

We launched a zero accident campaign, entitled POS-4P, with the aim to promote safety culture and risk awareness onboard. POS-4P was introduced following the declaration of the corporate-wide Total Quality Control (TQC) movement on July 1 1992 to eliminate maritime disasters and accidents involving seafarers. We award prizes for vessels operating for 600 and 4,200 days without accidents. The PAN VIVA and PAN JASMINE reached the 4,200-day zero accident milestone in April and June 2022, respectively, which we offered prize money and special meals for individual seafarers and the teams.

Zero accident campaign details

Tool Box Meeting (TBM)	Daily safety roster
Work details, PPE, health conditions double-checked before starting/resuming work	Inspections for potential risk factors and daily safety logs
Safety instruction cards	Pointing and confirmation
Safety instruction cards posted in designated locations to remind workers of safety instructions	Clearly pointing at and calling out objects to prevent involuntary human errors
Accident cases posted and used	Risk prediction drill
Key accident cases from the accident case booklet supplied on board posted and used for training	Monthly drills for task groups to improve risk sensitivity and risk identification skills

Risk Assessment and Management

We conduct risk assessments to proactively identify potential risk factors in all work processes onboard and effectively eliminate or alleviate them. All routine and non-routine works carried out by seafarers and repairmen are subject to risk assessments. The results are reflected in existing risk assessment sheets or used to prepare new risk assessment sheets to prevent vessel/personnel accidents and minimize risks. If serious risks are identified, we develop and implement countermeasures and commence relevant works only after the risks have been alleviated.

Stop Work Procedure

All work must be immediately suspended whenever a condition or behavior that has grave influence on people, facilities, or environment is found. All seafarers and suppliers' personnel working onboard have the responsibility and authority to prevent imminent risks and hazardous situations. No activities take precedence over their safety and health. All employees of Pan Ocean have the right and obligation not to perform duties and activities that may cause serious risks. We ensure that the lockout-tagout procedure be practiced and workers freely exercise their authority to cease works whenever they perceive risks.



PAN JASMINE zero accident 4,200 days



Tool Box Meeting (TBM)

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Onboard Safety and Health Management

Publication of POS VIEW

POS VIEW is a quarterly newsletter distributed to vessels, containing details on key business issues, safety management activities, health, diseases, etc. It also includes comprehensive content on vessel-related news, risks and accidents, and tips for mental health and resolving conflicts between different generations, thereby serving as a bridge between onshore and offshore employees. To promote safety awareness, we list vessels that achieved accident-free milestones on POS VIEW. We also receive reports on cases of near-miss and non-conformity and provide rewards for best practices, for which the onboard safety and health environment committee offers award certificates and prize money. The award-winners are also featured in POS VIEW. We pursue a range of activities to establish a safety culture onboard and disseminate it throughout the fleet, clearly highlighting that we value safety more than anything.

POS SM designated as Korea's first Authorized Ship Management Company by the Ministry of Oceans and Fisheries



The Ministry of Oceans and Fisheries certifies ship management companies that have outstanding ship management capabilities and track records as Authorized Ship Management Companies and offers them incentives to grow as internationally-competitive ship management services. The scheme was introduced in 2021, and POS SM was the first to obtain the certification, hence eligible for 30% port facility charge exemptions for foreign ships. As the first Authorized Ship Management Company in Korea, POS SM will continue working to attract foreign ships, strengthen the global competitiveness of its ship management business, and create more jobs for seafarers.

POS SM named as Korea's first 4-Star Ship Management Company by WeBusan



POS SM achieved 4 stars, the highest level in the World Excellence Maritime Transport and Port Industry certification scheme run by Busan Metropolitan City (WeBusan) in 2021. 'WeBusan' aims to strengthen the competitiveness of companies in ship management, ship supplies, and ship repairs in Busan, under which companies are assessed for their financial soundness, professional workforce, management service quality, and overseas market development and are rated from 1 to 4 stars. POS SM was the first ship management company to achieve the 4-star certification, which is especially meaningful that it was recognized for its efforts to provide quality services and optimized solutions. We will continue taking the initiative in the development of the shipping and port industries and raising competitiveness within the nation's shipping industry.

Safe Work Environment

Emergency Response System

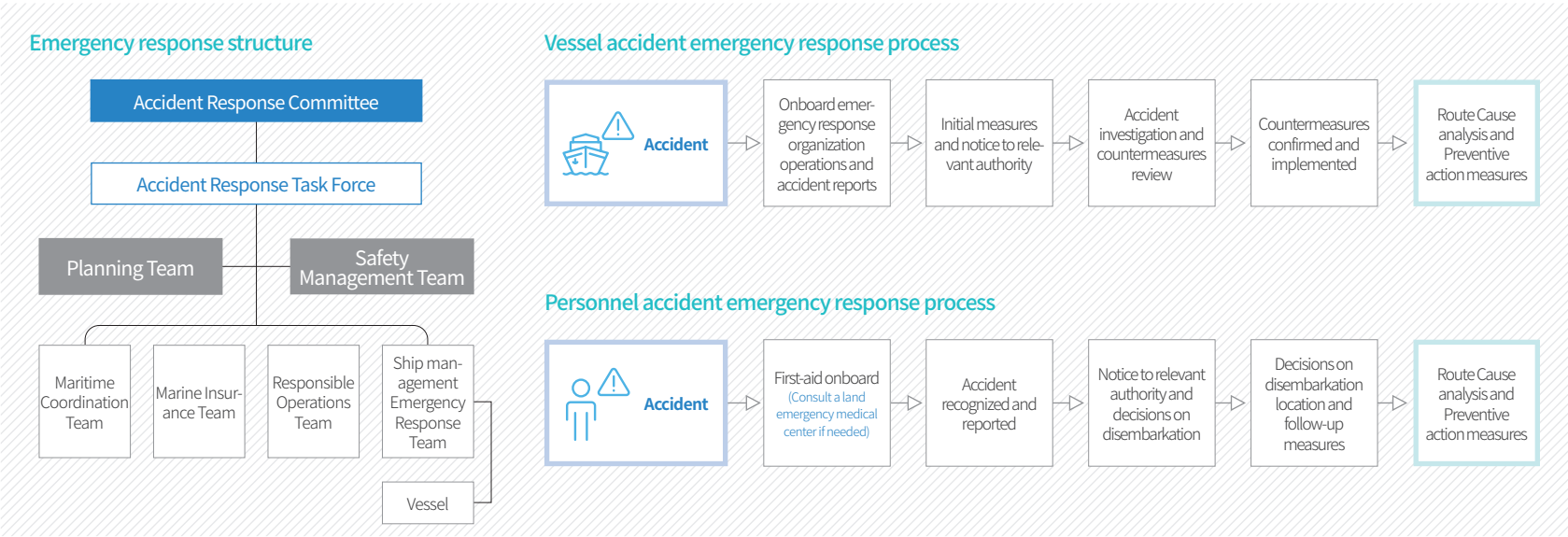
Emergency Response Structure and Procedure

In the event of a vessel accident or injury, the Accident Response Committee chaired by the CSHO is organized, which serves as the control tower for emergency response. Under the committee is the Accident Response Task Force consisting of heads of relevant departments and ship management to ensure continued communications with the vessel and conduct field-level response. We have BCP manuals and marine accident emergency response manuals for swift response and efficient history management.

We are guided by these manuals to run an instant and stream-lined emergency response system to minimize damage in emergency situations. First-aid measures are taken in the event of personal injuries. As for vessel accidents, we take initial response measures, which are followed by thorough investigations to find out route cause and develop preventive actions. This helps us prevent similar accidents and reduce risks for accidents.

COVID-19 Response Structure

We developed a COVID-19 prevention, management and response manual and applied intensive disease control measures to vessels. These include supplying items for disease control such as facial masks, sanitizers, and thermometers and providing instructions and precautions as part of training for seafarers before/during/after embarkation and pilots and other visitors on/off-boarding. If someone onboard shows signs of symptoms or is suspected as an infectee, we follow the manuals to take responsive measures and strictly comply with the basic principles to minimize infections.

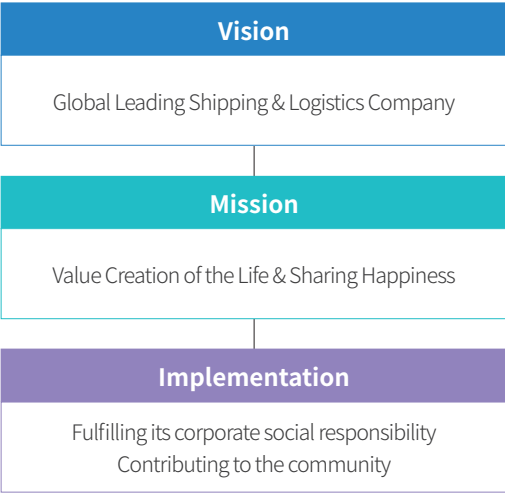


Social Responsibility

Social Responsibility Strategy System

To realize its vision to be a global leading shipping and logistics company, Pan Ocean set the mission of “Value creation of the life and sharing happiness.” We implemented detailed measures on expanding our corporate social responsibility and contributing to the community.

Social responsibility strategy



Social Responsibility Programs

We regularly offer flowers to the Seoul National Cemetery and provide meals at the Seoul Senior Welfare Center with the socially vulnerable in mind. While we continue to expand these activities, we will actively pursue ways to fulfil our social responsibility that suit our identity as a shipping company.

Lunch at the Seoul Senior Welfare Center

About 35 employees from Pan Ocean visit the Seoul Senior Welfare Center on the last Friday of each month to distribute meals and clean dishes. We also provide special meals and carry out volunteer activities for the elderly people.



Flower offering to the Seoul National Cemetery

We offer flowers to graves and clean graveyards in the Seoul National Cemetery twice annually (Memorial Day and Armed Forces Day), paying tribute to the patriots who dedicated their lives.



Encouraging Employees' Social Responsibility Activities

To encourage our employees to voluntarily take part in social responsibility activities, we launched a social responsibility mileage program, where employees earn mileages for their social responsibility activities and use them to receive cash or in-kind rewards. All types of social responsibility activities including blood donation/donor card offerings, cash donations, cleaning, talent donations, funding, and other voluntary activities (including internal volunteer activities) are recognized. With the adoption of this program, we are hoping to increase employees' social responsibility activities and contribute to creating social values.

Supply Chain Management

Supplier Management

We recognize that transparent and stable supply network management is essential for sustainable growth. We categorize and manage suppliers into shipping agents, tug services, materials suppliers, and lashing services. We define core suppliers in accordance to their shares, price competitiveness, financial soundness, and other factors. Currently Pan Ocean has 45 core suppliers.

POS SM encourages that suppliers comply with Pan Ocean's environmental and ethical management rules and policies. They are asked to familiarize themselves with SHEQ through meetings and sign a written confirmation prior to commencing works onboard.

Suppliers

(Unit: companies)

Category		2019	2020	2021
Shipping	Core suppliers	10	12	11
	Regular suppliers	110	101	101
Cargo	Core suppliers	24	24	26
	Regular suppliers	47	76	65
Fuel	Core suppliers	6	7	8
	Regular suppliers	25	19	12

Supplier Selection and Evaluation

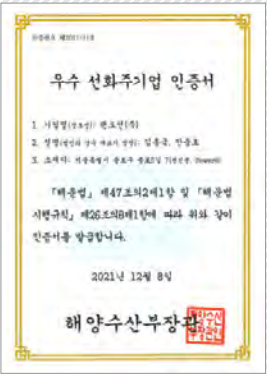
For supplier selection and evaluation, we use both quantitative and qualitative evaluation methods. To strengthen sustainable management in our supply chain, we endeavor to include both financial and non-financial elements in these evaluations. We see safety and health compliance as major considerations for supplier evaluations as much as sales, credit ratings, and other financial stability indicators.

POS SM has its own criteria to select suppliers, and tenders are open to the selected suppliers on the company's IT system. Suppliers trading with the company are subject to renewal evaluations at least twice a year, based on which we adjust trade volume and issue warnings as needed.

To promote suppliers' sustainability management, we plan to develop measures to help them comply with international standards and regulations concerning environment, safety, human rights, and ethics. In addition, we plan to provide incentives to encourage their active engagement and support for environmental management.

Certified Excellent Shipping Company and Shipper

The Ministry of Oceans and Fisheries introduced the Certified Excellent Shipping Company and Shipper scheme to eradicate unfair trade practices between shipping companies and shippers and facilitate shared growth between them by establishing mutually beneficial and cooperative relationships. In recognition for our fair and stable shipping service quality and willingness to pursue shared growth with shippers, we obtained the Excellent Shipping Company certification.





GOVERNANCE

A transparent and healthy corporate culture is a steppingstone for us to thrive and earn stakeholders' trust. Pan Ocean pursues transparency based on due process in governance and ethical decision making.

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Governance

Corporate Governance Charter

Envisioning advanced governance, we established and declared the Corporate Governance Charter in February 2022. Based on this charter, we will pursue the protection of the rights and interest of all stakeholders including shareholders and the development of a robust governance structure.



Corporate Governance Charter Preamble

Pan Ocean Co., Ltd., a global shipping company representing Korea, aims to become a global leading shipping logistics company by maximizing business capabilities accumulated in the shipping sector and revitalizing grain distribution and logistics businesses.

Pan Ocean Co., Ltd. has established the Corporate Governance Charter, recognizing that it is essential in corporate governance to enhance shareholder value, form trust with various stakeholders, and promote rights and interests all together.

Board of Directors

As the supreme decision maker at Pan Ocean, the Board of Directors consists of three inside directors and four independent directors as of May 2022, hence meeting the requirement provided in the Commercial Act. To ensure the Board runs efficiently based on checks and balances, the Articles of Association provide that the total number of the directors shall be at least four but not more than nine with independent directors being the majority. The recent appointment of a female independent director represents our resolution to promote diversity in the board composition.

Board composition


(As of the end of Sep, 2022)

Category	Name	Gender	Tenure	Expertise	Position	Professional experience
Inside	Kim Hong Kuk	Male	2015.07.18 - 2025.03.28	Business management	CEO	CEO, Harim Holdings Co., Ltd.
Inside	Ahn Joong Ho	Male	2020.03.30 - 2023.03.29	Shipping	CEO, Chairperson of BoD	CEO, Pan Ocean Co. Ltd.
Inside	Cheon Se Gi	Male	2015.07.18 - 2025.03.28	Business management	Head, Ethical Management Department	Head of Management Support Team on Harim Holdings Co., Ltd.
Independent	Hong Soon Jick	Male	2022.03.29 - 2025.03.28	Accounting	Chairperson of Audit Committee	Chairperson of Audit Committee, Pan Ocean
Independent	Jeong Hak Soo	Male	2021.03.30 - 2024.03.29	Agriculture/ grain	Chairperson of International Transaction Committee Chairperson of ESG Committee	Chairperson of the East Asia Agri. Association
Independent	Oh Kwang Soo	Male	2019.03.27 - 2025.03.28	Law	Chairperson of Independent Director Recommendation Committee Chairperson of Remuneration Committee	Lawyer of DR & AJU Law Firm
Independent	Jang Ji Young	Female	2022.03.29 - 2025.03.28	Law	-	Lawyer of WOO SUNG Law Firm

Governance

Board Operations

The operation rules clearly provide that the chair of the Board of Directors shall be appointed from the board members. To ensure strategic and efficient board operations, the Board of Directors is chaired by the CEO that has a thorough understanding of and expertise in the shipping industry. The Board of Directors holds regular meetings and extraordinary meetings as needed. In 2021, 14 board meetings were held to discuss 46 agenda. The overall attendance rate was 87%, and the attendance rates for inside and independent directors were 83% and 89%, respectively. Details about board operations are disclosed in the Business Report and on the company website.

 Board operation rules

Board operations

Category	Unit	2019	2020	2021
Attendance, inside directors	%	75	69	83
Attendance, independent directors	%	66	85	89
Attendance, overall	%	69	77	87
Board meetings held	Meetings	8	12	14
No. of agenda discussed	Agenda	32	44	46
Key ESG issues reported to BoD	Cases	0	0	0

Committees within the Board

Pan Ocean's board committees include the Independent Director Recommendation Committee, the Audit Committee, the Internal Transactions Committee, the Remuneration Committee, and the ESG Committee. In all committees independent directors hold a majority to ensure independent and objective operations. We voluntarily decided to establish the ESG Committee in May 2022 to pursue sustainable management in a more comprehensive and well-organized manner. The committee will take active roles in reviewing and supervising Pan Ocean's overall ESG strategies and action plans.

 Board committee operation rules

Committees within the Board

(As of the end of Nov. 2022)

Committee	Composition				Roles
	Position	Category	Name	Gender	
Independent Director Recommendation Committee (4 members)	Chair	Independent director	Oh Kwang Soo	Male	To select and consider candidates for the independent directors to be elected at the general meeting of shareholders
	Member	Independent director	Jeong Hak Soo	Male	
	Member	Independent director	Hong Soon Jick	Male	
	Member	Independent director	Jang Ji Young	Female	
Audit Committee (4 members)	Chair	Independent director	Hong Soon Jick	Male	To conduct audits of overall business management including finance
	Member	Independent director	Jeong Hak Soo	Male	
	Member	Independent director	Oh Kwang Soo	Male	
	Member	Independent director	Jang Ji Young	Female	
Internal Transactions Committee (5 members)	Chair	Independent director	Jeong Hak Soo	Male	To conduct preliminary reviews of large-scale internal transactions under the Monopoly Regulation and Fair Trade Act and internal transactions subject to board approval under the Commercial Act
	Member	Inside director	Ahn Joong Ho	Male	
	Member	Independent director	Hong Soon Jick	Male	
	Member	Independent director	Oh Kwang Soo	Male	
Remuneration Committee (4 members)	Member	Independent director	Jang Ji Young	Female	Pre-deliberations on annual remunerations for directors, pre-deliberations on performance evaluations and performance pay, suggestions on the company's remuneration system and payment
	Chair	Independent director	Oh Kwang Soo	Male	
	Member	Independent director	Hong Soon Jick	Male	
	Member	Independent director	Jeong Hak Soo	Male	
ESG Committee (4 members)	Member	Independent director	Jang Ji Young	Female	To manage, supervise, evaluate, and review strategies and key issues related to the company's ESG management (environmental, social, and governance)
	Chair	Independent director	Jeong Hak Soo	Male	
	Member	Independent director	Hong Soon Jick	Male	
	Member	Independent director	Oh Kwang Soo	Male	

Governance

Expertise and Diversity of the Board

Pan Ocean’s independent directors are experts in accounting, law, and agriculture/grain, hence promoting expertise and diversity of the Board of Directors. The Independent Director Recommendation Committee recommends candidates that have ample knowledge and experience in the fields of business management, economics, accounting, law, and relevant technologies. It takes a multi-angular view to candidate selection without putting restrictions in terms of ethnicity, nationality, gender, region, religion, and expertise.

Independence of the Board

The roles and functions of independent directors are clearly defined to ensure that they independently participate in major decision making and check management’s activities. Independent directors hold a majority in the Board of Directors, and board committees also are comprised primarily of independent directors for objective and independent decisions. Consisting entirely of independent directors, the Independent Director Recommendation Committee verifies independent director candidates, followed by board deliberations and approval and appointment at the general shareholders meeting.

Board Evaluations and Remuneration

For the reappointment of independent directors, we evaluate them for their attendance, contributions, independence, and other activities during their tenure. We will continue working to further refine the evaluation system and develop more concrete evaluation methodologies. In accordance with the Articles of Association, directors’ remuneration is determined by a resolution at the generation shareholders’ meeting. The Remuneration Committee conducts pre-deliberations on the maximum remuneration for directors to be discussed at the general shareholders meeting, and directors’ remuneration is paid within the limit approved at the generation shareholders meeting. Directors’ remuneration is transparently disclosed in annual Business Reports.

(As of December 31 2021, unit: KRW million)

Category	No. of people	Total remuneration	Avg. remuneration per person
Inside directors	3	1,713	571
Independent directors	4	185	46
Total	7	1,898	271

· No. of people and total remuneration include registered directors, independent directors, and audit committee members whose tenure ended in the business year and remuneration paid to them.

· Average remuneration per person calculated for the seven directors holding their positions as at December 31 2021.

Shareholder Value Improvement

Encouraging active execution of shareholders’ rights

We have a range of methods to allow shareholders to actively express their opinions and exercise their rights. In 2019, we introduced and employed an electronic voting system to the general shareholders meeting, and to encourage shareholders to exercise their voting rights, we introduced an electronic power of attorney system. General shareholders meeting notices are sent at least four weeks prior to the meeting with details about the venue, time, and agenda to allow shareholders to have sufficient time to familiarize themselves with the agenda.

Dividend policy and guidelines

In February 2021, we established and announced a dividend policy and three-year dividend guidelines. Shareholders will be informed of any decisions on and amendments to shareholder return policies including the dividend policy with full details without delay. Also, we endeavor to ensure that our shareholders are fully aware of various activities we pursue to raise the rights and interest of shareholders. We will do our utmost to further expand shareholder returns.

Dividend policy

We allocate the year’s profits to investment funding, financial stability, and shareholder returns in a reasonable and balanced manner within the extent of the dividable profit limit and provide cash dividends.

Dividend guidelines (2021-2023)

We aim at 10-20% of the net income (excluding one-off non-recurring losses and earnings) based on the K-IFRS separate financial statements.

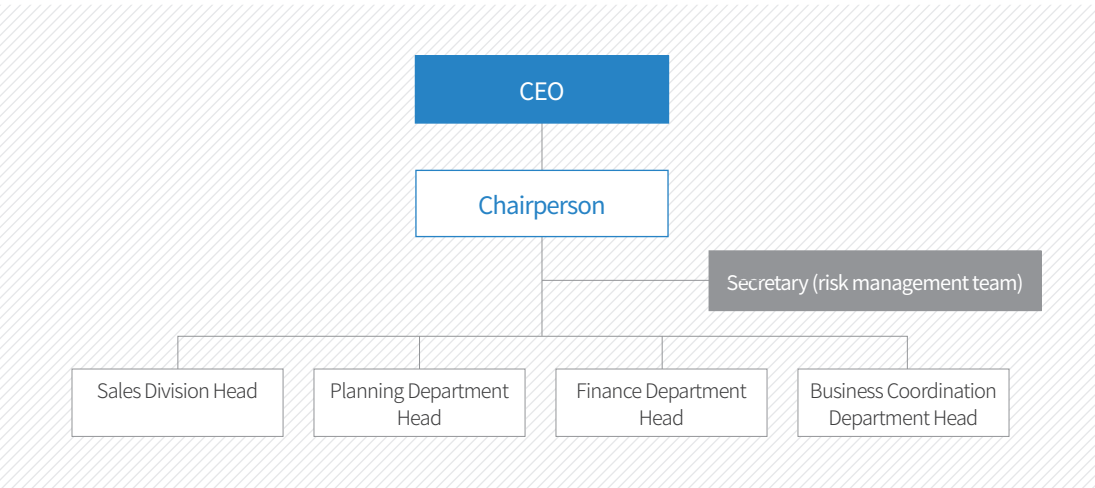
Risk Management

Corporate Risk Management System

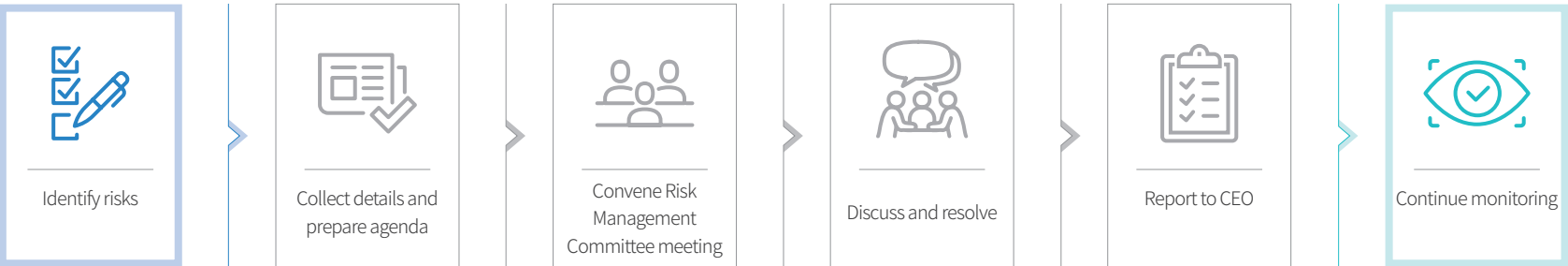
Risk Management Organization

At Pan Ocean, we operate a corporate-level risk management committee to respond risks associated with business activities. The committee is consisted of the chair, the vice chair, area-specific representatives, and the secretary. The meetings may also be attended by heads of relevant departments and teams as needed. The committee holds regular quarterly meetings and extraordinary meetings whenever necessary. It identifies and evaluates risks in the company's overall business management and develops countermeasures and concrete action plans in response to the identified risks, thereby proactively responding to challenges the company may face.

Risk Management Committee



Risk Management Process



GOVERNANCE

Risk Management

Corporate Risk Management System

Risk Types and Response Activities

Type	Topic	Response
Account risk	Customer relationship management (CRM)	Strengthen data- and system-based customer risk management
	Regular credit rating	Prevent customer risks based on organized customer rating management and information sharing
Financial risk	Internal accounting	Check internal accounting operations and key issues
	Receivables management	Monitor and take action on receivables
Legal risk	Contractual issues concerning COVID-19	Share key contractual issues concerning COVID-19 and strengthen response thereto
Shipping industry risk	Market conditions	Check and manage the fleet position
	Oil price	Monitor and respond to oil price fluctuations
	Derivatives	Manage regulations on forward freight agreements and fuel oil hedge deals
Marine/ environmental risk	COVID-19	Monitor and respond to safety risks concerning COVID-19 and country-specific regulations
	IMO environmental regulations	Continue monitoring developments surrounding the IMO environmental regulations and developing countermeasures
	Fuel oil supply	Check the fuel oil supply process
Others	Major climate risk	Monitor and respond to major climate risks such as typhoons, hurricanes, and monsoons
	Cybersecurity risk	Monitor cybersecurity risks and check the internal response system
	Disclosure rules	Monitor and respond to amendments in disclosure rules

Account Risk Management

Given that there are constant risks concerning accounts, we frequently check for and monitor them. If a critical account risk is identified, we take immediate action including lowering credit rating or breaking off deals.

Account credit rating assessment

New accounts and existing accounts with no deals in the last 12 months are subject to be assessed six-grade credit rating. We conduct the credit rating before signing contracts, based on which we establish credit limits for each account.

Category	2019	2020	2021
No. of accounts	407	522	489

Account credit rating adjustment

For accounts with transaction records in the last 12 months, we adjust credit rating through regular credit assessments twice a year. The primary evaluation is followed by team/division evaluations and comprehensive evaluations to confirm their final credit ratings.

Category		2019	2020	2021
No. of accounts	First half	833	851	940
	Second half	785	876	907

GOVERNANCE

- Governance
- Risk Management
- Ethical and Legally
Compliant Business
Management
- Information Security

Risk Management

Corporate Risk Management System

On/Offshore Risk Management

We face a variety of complex risks that threaten stable business operations. We strive to establish a risk management system to prevent these risks from causing down time and ensure swift recovery. POS SM obtained the ISO 22301 (Business Continuity Management Certification, BCMS) and responds to risks it faces onshore and offshore based on the BCMS' manual.

Scope of the BCMS

Onshore	Vessel management for safe cargo transport and seafarer management service activities and personnel
Offshore	Safe vessel operations and cargo transport activities and personnel



POS SM ISO 22301 certificate

Potential Risks and Response Activities

Category	Details	Response
Account risk	Increases in customers due to market fluctuations and increases in business activity, and other internal and external factors leading to constant exposure to account risks	<ul style="list-style-type: none">· Continue account risk management by establishing organized management and foundations for the CRM, constant account monitoring and rating, and developing databases of customer details.· Prevent and respond to risks by adjusting account rating and scope through CRM by internal reporting, Risk Management Committee, sharing internal information, notifying the changes, and assessing additional monitoring activities.
Environmental risk	IMO set to gradually introduce carbon emissions regulations to achieve the GHG reduction goals in shipping	<ul style="list-style-type: none">· Establish a fleet management system to proactively and systematically respond to regulations and develop operational/technical solutions.· Improve fleet performance and establish well-organized operating plans to maximize operating efficiency in response to the vessel rating system slated in 2024.

Ethical and Legally Compliant Business Management

Strengthening the Ethical Management System

Establishing an Ethical Management Vision

We set the ethical management vision as our blueprint for the future to guide us and stipulate principles. In the pursuit of the vision, “clean and healthy hands carrying our clients’ dream,” we practice corporate-wide ethical management.

Organization and Structure

Pan Ocean’s Ethical Management Department directly reports to the CEO, and the Ethical Management Team thereunder takes responsibility for ethical management. The ethical management organization establishes and implements audit plans and checks the fulfilment of corrective and improvement measures based on the audit results. It also establishes corporate ethical management policies and carries out ethical management activities accordingly. We are continuously monitoring internal policies and rules and making improvements as needed.

Ethical management vision

* HANDS : inspired by the concept from Italian “mani Pulite”

Clean and healthy HANDS carrying our clients’ dream



Integrity/Management



Health/Soft Power



Customer/Value Creation

We make our HANDS clean, we make our HANDS stronger, and create value for our customers with our HANDS

Build an Ethical Management System

- Substantialize an ethical management system
- Build an effective audit system
- Establish anonymous reporting systems
- Evaluate and improve of ethical management activities
- Inspect of management transparency

Establish an Ethical Culture

- CEO communication
- Vitalize campaigns and community activities
- Educate appropriate ethics in accordance to duty/position
- Promote social contribution activities

Practice Self-Regulation Systems in the Field

- Improve client service quality
- Take preventive measures against unfairness
- Establish self-compliance programs
- Link with CRM activities
- Utilize Company IR

Client satisfaction survey, employee ethics diagnosis, self-diagnosis of practice of ethical management

Ethical and Legally Compliant Business Management

Strengthening the Ethical Management System

Establishing Basic Rules of Ethics

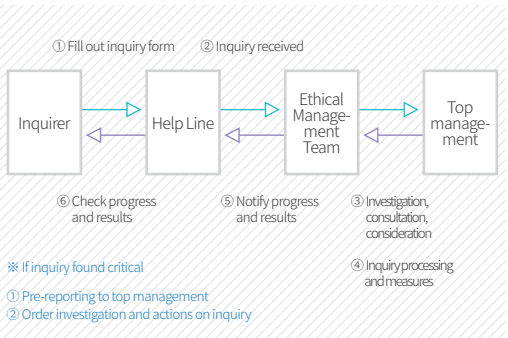
We established the Charter of Ethics, the Code of Ethics, and the Ethical Management Guidelines to define our ethical values to share them with all employees. The Charter of Ethics is our supreme standard and guiding principle for ethical management to realize the corporate vision. The Code of Ethics is an elaboration of the Charter of Ethics to help all employees inscribe the philosophy in their hearts. The Ethical Management Guidelines help employees make the right call about ethical issues they may face in their daily work activities. All these principles are shared with employees and disclosed on our website as an open representation of Pan Ocean's determination for ethical management.

Charter of Ethics	Supreme ethical value and standards	
Code of Ethics	Area-specific elaboration of the Charter of Ethics as guides to valuation and behavior	
Ethical Management Guidelines	Concrete guidelines for the implementation of the Code of Ethics at work	

Reporting and Enquiry System

We have an anonymous reporting system in place to allow all stakeholders to freely express their thoughts about ethics and compliance. The system is comprised of the Help Line for reporting and whistle-blowing and the Compliance Q&A System for questions and consultation. The Help Line receives reports about unfair conduct at work, undue profit-taking, behaviors against sound corporate culture, and other acts detrimental to the basic ethical value. The Compliance Q&A System is designed to help our employees address their concerns and find answers about ethical dilemmas and corruptions they may face at work. These channels are readily accessible through the company website and run by an external service to ensure that all reporters' identity is kept strictly confidential.

Compliance Q&A process



Raising Employees' Ethical Awareness

We conduct internal campaigns to practice ethical management every year. To internalize ethical awareness, these campaigns include year-end/new year ethical practices, refraining from taking gifts on national holidays such as New Year and Chuseok. Since 2022, we have been conducting an online training course for all employees to prevent unethical behaviors such as anti-corruption. This regular training is expected to help build ethical and compliance awareness among employees. POS SM has also been implementing ethics/compliance training since 2020 and plans to continue expanding the number of trainees and training hours.

Pan Ocean Ethical management campaigns implemented

Category	Unit	2019	2020	2021
Year-end/new year ethical practices	Cases	1	1	1
Refraining from taking gifts on New Year	Cases	1	1	1
Refraining from taking gifts on Chuseok	Cases	1	1	1
Total	Cases	3	3	3

POS SM ethical/compliance training track records

Category	Unit	2019	2020	2021
No. of trainees	People	-	109	136
Training hours	Hours	-	576	1,185
Completion rate*	%	-	88.6	100.0

* Completion rate = no. of trainees / total employees (excluding part-timers and PJT contract workers)

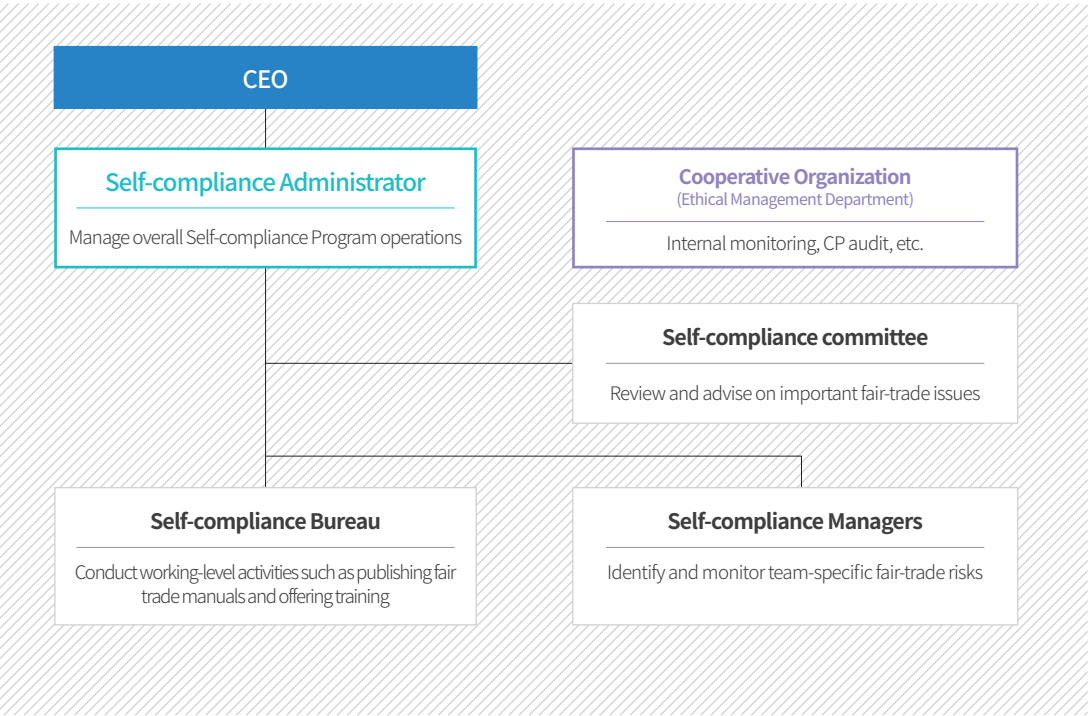
Ethical and Legally Compliant Business Management

Establishing a Compliance Culture

Self-compliance Program (CP)

We pursue practical implementation of a fair trade culture under the CEO's determination. To ensure compliance with fair trade laws and regulations, we introduced the Self-compliance program (CP) as an internal control measure. The Self-compliance Administrator takes responsibility for activities that aim to prevent violations of provisions in relevant laws. We will make the most of the Self-compliance Program to promote compliance awareness among employees and internalize integrity as a corporate culture.

CP operation structure



Supervision and Monitoring

The Compliance Officer, legally qualified, is the person in charge of the compliance matters. The Compliance Officer supervises and monitors the conducts of our company, the management, and our employees, and provides various assistances and supports to ensure that all of our affairs strictly comply with the law. The Compliance Officer also approves the results from the compliance checklist survey, which is updated regularly and conducted on an annual basis on every employee. The overall results of the compliance activities are directly reported to the Board of Directors and subsequently published in the Business Report.

Pledge to abide by ethics and law

We believe that responsible business management can only be obtained when every one of us shares the same vision that it is of the utmost priority that we abide by ethics and law. This is why all Pan Ocean employees pledge to familiarize our management policy and act accordingly. We shall persistently continue to pursue our goal to build and fortify the common understanding among our people.

Information Security

Information Security Promotion Measures

Information Security Policy and Organization

Pan Ocean's information security organization is responsible for creating and reporting security plans, checking and monitoring information security activities, and overall security operations of the company. The Chief Information Security Officer (CISO) and the Chief Privacy Officer (CPO) are responsible for stable security system operations. We are a member of the CISO Council, and we have inhouse staff dedicated to information technology and information protection. Recently, we have introduced a range of solutions for privacy and established a stable information security system by taking advantage of professional maintenance services.

Building the Information Security Infrastructure

Technical security

We employ a range of technical security solutions to protect ourselves from external attacks such as hacking, malware, and ransomware and prevent information leaks from our internal networks and systems, including firewalls and web firewalls, document encryption, and database access control. We have upgraded security patches for our servers and workstations regularly in order to further strengthen the security system.

Administrative security

We systemically manage and monitor the security policy and regulations. This involves establishing and revising detailed guidelines and updating them regularly for improvements. We also conduct user security drills (participate in KISA simulation tests) to improve employees' ability to respond to cybersecurity breaches and to raise security awareness.

Privacy Protection Activities

In response to ever-increasing risks for privacy breach and information leakage, we conduct the following activities to improve the level of privacy protection.

- Establish and report privacy protection activity and improvement plans
- Train all employees on privacy protection (statutory training)
- Offer privacy protection training courses (CPO and relevant staff)
- Participate in the unique identification information safety measure management survey
- Conduct activities to ensure personal information safety
- Incorporate amendments to the privacy law in our systems
- Clear personal information stored in our systems (retention policy)
- Purchase a privacy damage liability insurance policy

Information Security Disclosure

In 2022, we started disclosing key information regarding security details on our information security disclosure portal. In 2021, we focused on investing in anti-spam, replacing the Wireless Intrusion Prevention System (WIPS), and purchasing personal information liability insurance.

Investment in privacy protection



Information Security

Vessel Security Management

Onboard Cybersecurity System

Vessels are exposed to risks of external cyber-attacks on their operation systems. As information technologies such as automation and autonomy of vessel operation systems, are commonly employed, the scope and degree of the impact of cyber-attacks on vessels are growing serious. We conduct a range of activities to strengthen vessels' cybersecurity. All vessels are equipped with firewalls, and cybersecurity plans are included in the vessel administration manual. Also, onboard security officers and managers are designated to prevent security breaches.

Response to Security Breaches

Security breaches are immediately reported to the CPO and responsible organization upon detection to take instant recovery measures. Access and time logs, and other details about the incident are collected, stored, and used to develop measures to prevent recurrence.

Security Breach Prevention Activities

Security risk assessment

We conduct security risk assessments to identify vulnerabilities and prepare for potential cyber-threats. Onboard IT systems are tested to identify key vulnerabilities to cyber-attacks, potential security breaches, and their impact on vessel operations. In particular, risk assessments are required every time we relieve seafarers or conduct important program updates, or if there is a suspicious case of malware infections.

Strengthening Physical Security

In addition to the technical security solutions and infrastructure, we have a security USB system in place to enhance physical security. Workstations are secured with locks, and USB ports are operated in locked state. To prevent data leakage through personal devices and avoid virus and data deterioration, we require that only pre-approved portable storages may be used.

Visitors are also briefed on our cybersecurity rules and are asked to sign a declaration to comply with the manual. If visitors need to use computers, we allow them to use independent workstations segregated from networks.

Onboard cybersecurity training

Promoting seafarers' cybersecurity awareness is crucial for the effective prevention of cyber-threats. We conduct onboard cybersecurity training for employees embarking on their first voyage and all seafarers.

Training time

- Training for employees embarking on their first voyage
- Regular half-annual training

Topics

- Use of emails and the internet (including Wi-Fi)
- Use of personal devices (including portable storage devices)
- How to set passwords and manage personal/confidential information
- How to respond to and report cybersecurity incidents
- Risks for security breaches from visitors
- Security system updates, vaccine programs, etc.



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Financial

Consolidated Statement of Financial Position Summary (Unit: KRW million)

Category	2019	2020	2021
Assets			
Current assets	679,531	662,523	1,358,712
Non-current assets	3,774,646	3,996,804	5,130,067
Total assets	4,454,177	4,659,327	6,488,779
Liabilities			
Current liabilities	709,108	604,301	1,149,410
Non-current liabilities	845,538	1,248,374	1,742,532
Total liabilities	1,554,646	1,852,675	2,891,942
Equity			
Owner's equity	2,886,423	2,806,652	3,596,837
Share capital	534,569	534,570	534,570
Capital surplus	717,132	717,132	717,132
Other reserves	1,398,748	1,226,301	1,493,821
Retained earning	235,974	328,649	851,314
Non-controlling equity	13,108	0	0
Total Equity	2,899,531	2,806,652	3,596,837
Total Equity and liabilities	4,454,177	4,659,327	6,488,779

Consolidated Statement of Comprehensive Income Summary (Unit: KRW million)

Category	2019	2020	2021
Sales	2,467,891	2,497,159	4,616,107
Cost of sales	2,180,119	2,193,226	3,950,376
Gross profits	287,772	303,933	665,731
Selling and administrative expenses	77,753	78,721	92,785
Operating profits	210,019	225,212	572,946
Financial income	18,275	17,158	30,118
Financial costs	67,091	64,629	60,049
Gains or losses from equity method	40	5,377	12,639
Other non-operating gains or losses	-12,978	-91,162	-5,296
Net income before income tax	148,265	91,956	550,358
Income tax expense	-538	-1,234	-1,053
Current net income	147,727	90,722	549,305
Other comprehensive income	91,367	-170,580	267,608
Total comprehensive income	239,094	-79,858	816,913

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Economic value creation and distribution

Category		Unit	2019	2020	2021
Sales by business area*	Bulk carriers	KRW million	1,835,659	1,757,973	3,569,191
	Containers	KRW million	219,027	246,667	353,341
	Tankers	KRW million	134,544	142,671	140,167
	LNG carriers	KRW million	23,547	14,698	93,618
	Agri-trading	KRW million	295,595	376,663	498,182
	Others (ship management, leasing, etc.)	KRW million	131,761	202,489	234,897
Economic value distribution	Employees	KRW million	177,020	193,716	247,950
	Suppliers	KRW million	40,640	53,657	51,857
	Shareholders and investors	KRW million	53,220	66,407	93,552
	Governments	KRW million	632	1,220	915
Local communities		KRW million	1,154	1,071	1,427

* Based on sales before removing internal trade.

Government subsidies and grants

Category		Unit	2019	2020	2021
Tax exemptions and deductions		KRW million	14,020	11,964	10,847
Subsidies		KRW million	0	6,609	6,512
Others (guarantee)*		KRW million	21,850	0	0

* Korea Ocean Business Corporation offered guarantee for 95% of loans for the green facility refurbishment secondary conservation loan project (Korea Development Bank, KRW 23 billion).

New employees' wage in comparison to minimum wage, by gender

Category		Unit	2019	2020	2021
Pan Ocean					
New employee, male (onshore)		KRW	3,573,900	3,630,500	3,747,200
New employee, female (onshore)		KRW	3,573,900	3,630,500	3,747,200
Minimum wage (onshore)		KRW	1,887,100	1,941,340	1,970,720
% new employee wage in comparison to minimum wage (male)		%	189	187	190
% new employee wage in comparison to minimum wage (female)		%	189	187	190
New employee, male (offshore)		KRW	4,103,969	4,151,819	4,242,113
New employee, female (offshore)		KRW	4,103,969	4,151,819	4,242,113
Minimum wage (offshore)		KRW	1,745,150	1,795,310	1,822,480
% new employee wage in comparison to minimum wage (male)		%	235	231	233
% new employee wage in comparison to minimum wage (female)		%	235	231	233

Category		Unit	2019	2020	2021
POSSM					
New employee, male		KRW	3,188,000	3,188,000	3,284,000
New employee, female		KRW	3,188,000	3,188,000	3,284,000
Minimum wage		KRW	1,745,150	1,795,310	1,822,480
% new employee wage in comparison to minimum wage (male)		%	183	178	180
% new employee wage in comparison to minimum wage (female)		%	183	178	180

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Financial

Total annual salary

Category	Unit	2019	2020	2021
Pan Ocean				
Highest paid	KRW million	542	536	786
Average of all employees (excluding highest paid)	KRW million	82	87	100
Growth rate of highest paid	%	2.3	(1.1)	46.6
Average growth rate of all employees (excluding highest paid)	%	2.5	6.1	14.9
Total growth rate	%	2.2	12.1	24.4

Category	Unit	2019	2020	2021
POS SM				
Highest paid	KRW million	186	190	213
Average of all employees (excluding highest paid)	KRW million	69	70	79
Growth rate of highest paid	%	(5.2)	2.2	11.7
Average growth rate of all employees (excluding highest paid)	%	2.1	18.8	12.5

Local workforce in major operations

Category	Unit	2019	2020	2021
Locally hired employees	People	162	150	149
Senior workforce	People	12	23	19
% senior workforce among locally hired employees	%	7.4	15.3	12.8

(Based on annual overseas subsidiary personnel management plans. Chinese office and subsidiary, Japanese office and subsidiary, U.S. office and subsidiary, Singapore, Brazil)

Board composition

Category		Unit	2019	2020	2021
Board	Total	People	7	7	7
	Inside directors	People	3	3	3
	Independent directors	People	4	4	4
No. of female directors		People	0	0	0
CEO-BoD Chair separation		Y/N	N	N	N

Shareholder composition

(As at December 31 2021)

Name	No. of shares	% share	Relation
Harim Holdings and affiliated person	292,666,553	54.75	Largest shareholder and affiliated person
National Pension Service	27,931,307	5.23	N/A
Others	213,971,652	40.02	N/A
Total	534,569,512	100	

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Ethical code violations and disciplinary measures

Category		Unit	2019	2020	2021
Ethical code violations	Total	Cases	1	1	0
	Unlawfulness/fraud	Cases	0	0	0
	Petition (complaints, grievances)	Cases	0	1	0
	Unfair trade/corruption	Cases	0	0	0
	Other unethical conduct	Cases	1	0	0
Disciplinary measures	Total	Cases	1	1	0
	Heavy Penalty	Cases	0	0	0
	Light Penalty	Cases	1	1	0

Ethical management practice and compliance pledge

Category		Unit	2019	2020	2021
No. of subjects		People	873	887	931
No. of signees		People	868	882	927
% signed		%	99.4	99.4	99.6

(Unsigned: those on parental, sick, or other leaves)

Compliance inspection

Category		Unit	2019	2020	2021
Subjects	Teams inspected	Teams	49	49	53
	Inspection items	Items	140	143	143
Results	Compliance results	%	100	100	100

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Environmental

Onshore: Head office and 4 domestic operations,
Vessels: owned (all), chartered (Scope 3 emissions)

Energy Consumption

Category	Unit	2019	2020	2021
Owned vessels' fuel consumption (Scope1)	TOE	689,380	758,189	884,038
HFO (B-C oil)	TOE	633,988	302,587	388,916
LFO (B-C oil)	TOE	17,957	412,382	406,961
DO (B-A oil)	TOE	37,435	43,220	54,518
LNG	TOE			33,643
Corporate vehicles fuel consumption (Scope1)	TOE	-	17	17
Gasoline	TOE	-	16	16
Diesel	TOE	-	1	1
Electricity (Scope2)	TOE	341	305	293
Chartered vessel's fuel consumption (Scope3)	TOE	393,869	463,336	711,485
HFO (B-C oil)	TOE	345,013	15,176	42,680
LFO (B-C oil)	TOE	21,369	423,059	622,398
DO (B-A oil)	TOE	27,487	25,101	46,407
Total energy consumption* (Scope 1+2)	TOE	689,721	758,511	884,348
Sales	KRW 100 million	21,559	21,029	40,692
Energy intensity (per unit of sales)**	TOE/KRW 100 million	31.992	36.070	21.733
Energy saving (per unit of sales)	%	-	13	-40

* Includes energy consumption by vessel and domestic operations; Scope 3 excluded from total energy consumption and intensity estimation.
** (Scope1 + Scope2 energy consumption) / Pan Ocean separate sales

GHG Emissions

Category		Unit	2019	2020	2021
Direct GHG emissions (Scope1*)	Mobile combustion	tCO ₂ eq	2,172,997	2,382,970	2,757,404
	Vessels**	tCO ₂ eq	2,172,997	2,382,921	2,757,356
	Vehicles	tCO ₂ eq	-	49	48
Indirect GHG emissions (Scope2***)	Power purchased	tCO ₂ eq	641	569	539
Total (Scope1 + Scope2)		tCO ₂ eq	2,173,638	2,383,539	2,757,943
Other indirect GHG emissions (Scope 3)	Upstream	tCO ₂ eq	1,241,500	1,453,048	2,884,436
	Products and services purchased	tCO ₂ eq	-	-	22,191
	Leased assets	tCO ₂ eq	1,241,500	1,453,048	2,232,155
	Transport and logistics	tCO ₂ eq	-	-	629,965
	Employees business travel	tCO ₂ eq	-	-	42
	Employees com-muting	tCO ₂ eq	-	-	83
Sales	KRW 100 million	21,559	21,029	40,692	
GHG emissions intensity**** (per unit of sales)		tCO ₂ eq / (KRW 100 million)	100.822	113.343	67.776

(Scope 1, 2, 3 estimates include CO₂, CH₄, and N₂O.)

* Scope1: Pan Ocean's owned vessel corporate car
** Total fuel consumption and incinerator usage in vessels. In the case of incinerator usage, the data from 2019-2020 are excluded as aggregation and verification began in 2021
*** Scope 2: Power consumption by Pan Ocean's domestic operations
**** (Scope1 + Scope2 emissions) / Pan Ocean's sales amount based on separate financial statement

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Air Pollutant Emissions

Category	Unit	2019	2020	2021
NOx (nitrogen oxides)	Kg	58,611,154	63,851,643	71,729,675
SOx (sulfur oxides)	Kg	6,895,430	7,511,958	8,438,785
NM VOC (non-metharve volatile organic compounds)	Kg	1,416,018	1,803,822	878,954
Particulate matter (PM10) - dust	kg	3,754,344	4,796,229	2,364,412

(Emission factors based on IMO MEPC Cir. 681, 2nd IMO GHG STUDY 2009(MEPC59 INF.10))

Water Withdrawal

Category	Unit	2019	2020	2021
Head Office	m³	10,243	7,465	6,295
Busan Sales Team	m³	303	292	279
Pohang Office	m³	-	-	-
Dangjin Office	m³	-	-	-
Total	m³	10,546	7,757	6,574

(No data available for Pohang and Dangjin Offices' water withdrawal, 100% water supplies, No water recycling, Except for water withdrawal in vessels)

Waste

Category		Unit	2019	2020	2021
Waste generation	Total	tonne	21,322	24,987	28,405
	Food waste	tonne	333	325	348
	Domestic waste	tonne	1,539	1,684	1,949
General waste from vessels (non-hazardous)	Subtotal	tonne	1,872	2,010	2,297
	Waste oil	tonne	17,393	20,878	23,437
	Waste absorbent	tonne	573	628	922
Designated waste from vessels (hazardous)	Plastics	tonne	1,050	1,106	1,306
	Ashes	tonne	434	366	443
	Subtotal	tonne	19,450	22,978	26,108
Office waste	Head Office	tonne	-	-	2.21
	Busan Sales Team	tonne	0.49	0.55	0.63
	Pohang Office	tonne	-	0.08	0.05
	Dangjin Office	tonne	0.25	0.25	0.13
	Subtotal	tonne	0.74	0.88	3.02
	General waste (non-hazardous) – Office	tonne	-	-	-
Waste recycling	Designated waste (hazardous) - Vessel*	tonne	6,546	7,311	9,604
	Total	tonne	6,546	7,311	9,604
%total waste recycled		%	30.70	29.26	33.81

* Plastics and sludge from vessels

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Employees

Category		Unit	2019	2020	2021
Pan Ocean					
Total employees	Total	People	1,001	1,061	1,135
	Onshore	People	327	327	352
	Male	People	244	246	258
	Female	People	83	81	94
	Offshore	People	674	734	783
	Male	People	663	725	771
By employment type	Female	People	11	9	12
	Onshore	People	327	327	352
	Regular	People	320	322	341
	Non-regular	People	7	5	11
	Offshore	People	674	734	783
	Regular	People	397	434	480
By age	Non-regular	People	277	300	303
	Onshore	People	327	327	352
	Under 30	People	14	16	34
	30 - 49	People	280	272	269
	50 or older	People	33	39	49
	Offshore	People	674	734	783
By geography	Under 30	People	245	248	261
	30 - 49	People	205	243	267
	50 or older	People	224	243	255
	Onshore	People	327	327	352
	Domestic	People	324	323	348
	International	People	3	4	4
Manage position*	Offshore	People	674	734	783
	Domestic	People	674	734	783
	International	People	-	-	-
	Onshore	People	215	238	245
	Male	People	183	203	203
	Female	People	32	35	41
Offshore management positions: Chief officer and First engineer or higher	Offshore	People	327	364	403
	Male	People	326	363	401
	Female	People	1	1	2

* Onshore management positions: Section chief (professional section chief) or higher; admin support excluded; contract workers included
Offshore management positions: Chief officer and First engineer or higher

Category		Unit	2019	2020	2021
POS SM					
Total employees	Total	People	110	132	150
By employment type	Regular	People	97	115	127
	Non-regular	People	13	17	23
By age	Under 30	People	11	16	21
	30 - 49	People	88	105	111
	50 or older	People	11	11	18
By geography	Domestic	People	109	131	149
	Oversea	People	1	1	1
By position*	Lower level manager	People	9	16	17
	Male	People	5	11	12
	Female	People	4	5	5
	Middle level manager	People	53	56	56
	Male	People	51	53	52
	Female	People	2	3	4
	Upper level manager	People	23	29	34
	Male	People	23	29	34
	Female	People	0	0	0
	Others	People	25	31	43

* Lower level manager: Deputy section chief
Middle level manager: Section chief, deputy head
Upper level manager: Department head, executive
Others: Foreman and PJT supervisor

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New Recruitment and Turnover

* Total turnover rate = Employees that resigned within the year / Total employees at the end of the year (including overseas offices)
Voluntary turnover rate = Employees that voluntarily resigned within the year / Total employees at the end of the year (including overseas offices)

Category		Unit	2019	2020	2021
Pan Ocean					
New recruitment	Total	People	161	206	235
	Onshore	People	3	19	39
	Male	People	3	16	24
	Female	People	-	3	15
	Seafarer	People	158	187	196
	Male	People	153	185	189
	Female	People	5	2	7
Turnover*	Onshore				
	Total turnover rate	%	5.0	3.3	3.6
	Voluntary turnover rate	%	3.4	2.5	3.1
	Seafarer				
	Total turnover rate	%	9.1	10.2	8.4
	Voluntary turnover rate	%	8.9	8.9	6.8
Avg. length of service	Total	Years	9.6	9.2	8.8
	Onshore (Male)	Years	12.9	13.2	13.1
	Onshore (Female)	Years	11.9	12.6	11.7
	Seafarer (Male)	Years	8.2	7.6	7.2
	Seafarer (Female)	Years	2.5	2.3	1.8

Retiree Reemployment

Category	Unit	2019							2020							2021						
		Master	Chief engineer	Ratings			Total		Master	Chief engineer	Ratings			Total		Master	Chief engineer	Ratings			Total	
				Deckhand	Steward	Engineer					Deckhand	Steward	Engineer					Deckhand	Steward	Engineer		
Part-timer employees (A)	People	24	31	21	11	26	113		22	27	20	11	26	106		22	27	17	13	18	97	
To be hired (B)	People	3	8	2	2	8	23		5	7	3	2	4	21		7	11	1	1	2	22	
No. of people subject to part-time employment (C=A+B)	People	27	39	23	13	34	136		27	34	23	13	30	127		29	38	18	14	20	119	
Retirees with no-rehire conditions (D)	People	3	8	3	2	5	21		7	3	4	1	12	27		0	0	0	1	1	2	
No. of people rehired (C-D)	People	24	31	20	11	29	115		20	31	19	12	18	100		29	38	18	13	19	117	

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Education and Training | Time and costs

Category		Unit	2019	2020	2021
Pan Ocean					
Training time	Total training time	Hours	33,553	22,153	30,410
	Onshore	Hours	14,145	13,777	17,470
	Seafarer	Hours	19,408	8,376	12,940
	Avg. training time per person	Hours/person	34	21	27
Training costs	Total training costs	KRW	1,036,963,875	687,364,863	866,257,292
	Onshore*	KRW	308,819,875	283,162,863	342,157,292
	Seafarer**	KRW	728,144,000	404,202,000	524,100,000
	Avg. training costs per person	KRW/person	1,035,928	647,846	763,222

(Training declined in 2020 due to COVID-19)
* Total training costs + self-development (Welfare Card)
** For Korean seafarers

Category		Unit	2019	2020	2021
POS SM					
Training time	Total training time	Hours	2,877	4,783	8,364
	Avg. training time per person	Hours/person	28	39	62
Training costs	Total training costs	KRW	45,563,991	36,797,345	67,609,518
	Avg. training costs per person	KRW/person	442,369	299,165	500,811

(Employees total at the end of the year, those on leaves, PJT contract workers, part-timers excluded)

Education and Training | Human rights training

Category		Unit	2019	2020	2021
Workplace disability awareness	Pan Ocean				
	Onshore				
	No. of trainees	People	346	347	374
	Completed	People	346	347	374
	% completion	%	100	100	100
	Seafarer				
	No. of trainees	People	674	734	783
	Completed	People	674	734	783
	% completion	%	100	100	100
	POS SM				
Workplace sexual harassment prevention	Pan Ocean				
	Onshore				
	No. of trainees	People	346	347	374
	Completed	People	346	347	374
	% completion	%	100	100	100
	Seafarer				
	No. of trainees	People	674	734	783
	Completed	People	674	734	783
	% completion	%	100	100	100
	POS SM				
Workplace bullying prevention	Pan Ocean				
	Onshore				
	No. of trainees	People	105	115	159
	Completed	People	96	115	159
	% completion	%	91.4	100	100
	Seafarer				
	No. of trainees	People	674	734	783
	Completed	People	674	734	783
	% completion	%	100	100	100
	POS SM				
Workplace bullying prevention	Pan Ocean				
	Onshore				
	No. of trainees	People	104	-	142
	Completed	People	83	-	142
	% completion	%	79.8	-	100
	Seafarer				
	No. of trainees	People	674	734	783
	Completed	People	674	734	783
	% completion	%	100	100	100
	POS SM				

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Education and Training | Training by duty/position

Category	Type		2019		2020		2021		
			Hours	People	Hours	People	Hours	People	
Duty	Group	Special lecture	56	12	16	2	36	6	
	Inhouse	Online	3,644	420	4,263	530	3,719	536	
		Professional practice	1,086	50	1,116	49	1,413	281	
		Onboarding	2,160	11	-	-	-	-	
		OJT	1,100	11	900	9	500	5	
		Marine practice	Deputy section chief promotion	-	-	1,020	17	-	-
			Bulk operations	378	37	-	-	-	-
			New hire	-	-	1,272	12	2,603	19
			Position	Group	Executive	258	18	-	-
Team leader	72	3			42	3	156	12	
Team member S	560	4			556	4	282	2	
Team member	792	33			184	23	280	35	
Promotion	528	22			995	31	574	41	
New hire	627	19		-	-	208	13		
Inhouse	Executive	Seri CEO		-	-	386	15	511	19
		Executive course		-	-	50	1	126	2
	Team leader	Hunet CEO		-	-	586	57	908	62
		Evaluator/labor		-	-	416	52	134	67
		New hire	-	-	480	12	1,074	19	

Employee Diversity

Category		Unit	2019	2020	2021
Pan Ocean					
% female employees	Total	%	9.4	8.5	9.3
	Onshore	%	25.4	24.8	26.7
	Seafarer	%	1.6	1.2	1.5
People with disabilities	Total	People	4	4	4
	% employees with disabilities	%	0.41	0.39	0.34
Foreigner		People	0	0	0
Veterans		People	6	6	6
% base salary and compensation, female to male*			100	100	100
Board diversity					
Gender	Male	People	4	4	4
	Female	People	0	0	0
Age	Under 50	People	0	0	0
	50 or older	People	4	4	4

POSSM					
% female employees	Total	%	23	21	25
		People	0	0	0
People with disabilities	Total	People	0	0	0
	% employees with disabilities	%	0	0	0
Foreigner		People	0	0	0
Veterans		People	0	0	0
% base salary and compensation, female to male*			100	100	100

* Same base salary for male and female employees; no differential rates apply.

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Parental Leaves

Category		Unit	2019	2020	2021
No. of employees that used parental leaves	Pan Ocean				
	Onshore	Male	0	1	1
		Female	6	2	4
	Seafarer	Male	5	4	6
		Female	0	0	0
	POS SM				
	Male	People	0	0	1
	Female	People	1	2	2
No. of employees that returned from parental leaves	Pan Ocean				
	Onshore	Male	0	0	0
		Female	3	3	3
	Seafarer	Male	4	3	5
		Female	-	-	-
	POS SM				
	Male	People	0	0	1
	Female	People	0	0	2
% employees returning from parental leaves	Pan Ocean				
	Onshore	Male	-	-	0
		Female	75	50	100
	Seafarer	Male	80	75	83
		Female	-	-	-
	POS SM				
	Male	%	-	-	100
	Female	%	-	-	50
No. employees that served for 12 months or more after parental leaves	Pan Ocean				
	Onshore	Male	-	-	-
		Female	3	3	3
	Seafarer	Male	0	2	2
		Female	-	-	-
	POS SM				
	Male	People	-	-	1
	Female	People	-	-	0
% employees serving for 12 months or more after parental leaves	Pan Ocean				
	Onshore	Male	-	-	-
		Female	100	100	100
	Seafarer	Male	100	100	83
		Female	-	-	-
	POS SM				
	Male	%	-	-	-
	Female	%	-	-	50

Employees Subject to Regular Performance and Career Development Review

Category	Unit	2019	2020	2021
Pan Ocean*	%	100	100	100
* Excluded: CEO/Executive Directors/Independent Directors, employees with less than 6-month service in the year, employees hired in the past 6 months, emergency planning officer/labor union, contract workers (subject to separate evaluation)				
Category	Unit	2019	2020	2021
POS SM**	%	86	79	83

** Excluded: PJT supervisors, part-timers

Welfare and Benefits

Category	Unit	2019	2020	2021
Total	KRW million	33,940	37,538	44,502
Per person	KRW million	34	35	39

(Based on separate financial statements in the Business Report)

Labor Union Membership

(As of January each year)

Category	Unit	2019	2020	2021
No. of employees eligible	People	247	243	250
No. of union members	People	210	203	207
% membership	%	85.0	83.5	82.8

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Incidents

Lost time incidents

Category		Unit	2019	2020	2021
Onshore	Working hours*	Hours	886,824	886,824	954,624
	Lost time incidents	Cases	0	1	0
	Lost time incident rate (LTIFR)	Lost time incidents per million hours	0	1.128	0
	Deaths	People	0	0	0
Offshore	Working hours**	Hours	1,690,392	1,840,872	1,963,764
	Lost time incidents	Cases	10	11	8
	Lost time incident rate (LTIFR)	Lost time incidents per million hours	5.91	5.97	4.07
	Deaths	People	0	0	0

(A lost time incident involving lost time of multiple employees counted as a single incident)

* Working hours: No. of employees at the end of the year * Monthly ordinary wage calculation base (226 hours) * 12 months
No. of employees based on the year-end Business Report

** Working hours: No. of employees at the end of the year * Monthly ordinary wage calculation base (209 hours) * 12 months
No. of employees based on the year-end Business Report (domestic only, foreign nationals excluded)

Marine accidents

Category		Unit	2019	2020	2021
Injuries per vessel		Cases/vessel	0.31	0.22	0.21
Vessel accident per vessel		Cases/vessel	0.21	0.19	0.39
Serious vessel accident		Cases	0	1	0

Social Responsibility Activities

Category		Unit	2019	2020	2021
Pan Ocean					
Total donations		KRW million	953	1,070	1,325
Employees' fundraising		KRW million	0	0	0
Volunteer activities	Total volunteers	People	49	20	0
	Total hours	Hours	98	40	0
	Hours per person	Hours	2	2	0
POSSM					
Total donations*		KRW million	-	1	2.4

* Regular monthly donation of KRW 200,000 to the Korean Red Cross from August 2020

Information Security

Information security training

Category		Unit	2019	2020	2021
Pan Ocean					
Training hours		Hours	346	347	374
No. of trainees		People	346	347	374
POSSM					
Training hours		Hours	117	345	135
No. of trainees		People	86	115	135

Customer privacy protection

Category		Unit	2019	2020	2021
No. of complaints received about customer privacy protection		Cases	0	0	0
No. of customer information leak, theft, loss incidents		Cases	0	0	0

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Pan Ocean’s disclosures for the reporting period follow the Global Reporting Initiative Standards 2021.

Disclosure		Location	Explanation
GRI 2: General Disclosures 2021			
The organization and its reporting practices			
2-1	Organizational details	7-10	
2-2	Entities included in the organization’s sustainability reporting	About this report	
2-3	Reporting period, frequency and contact point	About this report	
2-4	Restatements of information	-	Inaugural report
2-5	External assurance	100	
Activities and workers			
2-6	Activities, value chain and other business relationships	7-17	
2-7	Employees	84	
2-8	Workers who are not employees	84	
Governance			
2-9	Governance structure and composition	66, 80	
2-10	Nomination and selection of the highest governance body	67	
2-11	Chair of the highest governance body	67	
2-12	Role of the highest governance body in overseeing the management of impacts	67	
2-13	Delegation of responsibility for managing impacts	67	
2-14	Role of the highest governance body in sustainability reporting	67	
2-15	Conflicts of interest	68, 80	
2-16	Communication of critical concerns	67, 68	
2-17	Collective knowledge of the highest governance body	68	
2-18	Evaluation of the performance of the highest governance body	68	
2-19	Remuneration policies	68	
2-20	Process to determine remuneration	68	
2-21	Annual total compensation ratio	80	

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Disclosure		Location	Explanation
GRI 2: General Disclosures 2021			
Strategy, policies and practices			
2-22	Statement on sustainable development strategy	Letter to Stakeholders	
2-23	Policy commitments	72	
2-24	Embedding policy commitments	73-74	
2-25	Processes to remediate negative impact	43, 73	
2-26	Mechanisms for seeking advice and raising concerns	43, 73	
2-27	Compliance with laws and regulations	27	
2-28	Membership associations	102	
Stakeholder engagement			
2-29	Approach to stakeholder engagement	24	
2-30	Collective bargaining agreements	54, 88	
GRI 3: Material Topics 2021			
3-1	Process to determine material topics	20	
3-2	List of material topics	20	
3-3	Management of material topics	21-23	

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Disclosure		Location	Explanation
GRI 201: Economic Performance 2016			
201-1	Direct economic value generated and distributed	78-79	
201-2	Financial implications and other risks and opportunities due to climate change	30	
201-3	Defined benefit plan obligations and other retirement plans	-	Disclosed in the Business Report
201-4	Financial assistance received from government	79	
GRI 202: Market Presence 2016			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	79	
202-2	Proportion of senior management hired from the local community	80	
GRI 203: Indirect Economic Impacts 2016			
203-1	Infrastructure investments and services supported	63	
203-2	Significant indirect economic impacts	48, 63	
GRI 204: Procurement Practices 2016			
204-1	Proportion of spending on local suppliers	-	
GRI 205: Anti-corruption 2016			
205-1	Operations assessed for risks related to corruption	74	
205-2	Communication and training about anti-corruption policies and procedures	73	
205-3	Confirmed incidents of corruption and actions taken	81	
GRI 206: Anti-competitive Behavior 2016			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	-	Disclosed in the Business Report (sanctions)
GRI 207: Tax 2019			
207-1	Approach to tax	-	[Not Applicable] No tax policy
207-2	Tax governance, control, and risk management	-	[Not Applicable] No tax policy
207-3	Stakeholder engagement and management of concerns related to tax	-	[Not Applicable] No tax policy
207-4	Country-by-country reporting	-	[Information Unavailable] Not disclosed

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Disclosure		Location	Explanation
GRI 301: Materials 2016			
301-1	Materials used by weight or volume	-	[Not applicable] given the type of business
301-2	Recycled input materials used	-	[Not applicable] given the type of business
301-3	Reclaimed products and their packaging materials	-	[Not applicable] given the type of business
GRI 302: Energy 2016			
302-1	Energy consumption within the organization	82	
302-2	Energy consumption outside of the organization	-	[Information Unavailable] No consumption outside of the organization
302-3	Energy intensity	82	
302-4	Reduction of energy consumption	82	
302-5	Reductions in energy requirements of products and services	82	
GRI 303: Water and Effluents 2016			
303-1	Interactions with water as a shared resource	38	
303-2	Management of water discharge-related impacts	-	[Not Applicable] given the type of business
303-3	Water withdrawal	83	
303-4	Water discharge	-	[Not Applicable] given the type of business
303-5	Water consumption	-	[Not Applicable] given the type of business
GRI 304: Biodiversity 2016			
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	38	
304-2	Significant impacts of activities, products, and services on biodiversity	38	
304-3	Habitats protected or restored	38	
304-4	IUCN Red List species and National Conservation List species with habitats in areas affected by operations	38	

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Disclosure		Location	Explanation
GRI 305: Emissions 2016			
305-1	Direct (Scope 1) GHG emissions	82	
305-2	Indirect (Scope 2) GHG emissions	82	
305-3	Other indirect (Scope 3) GHG emissions	82	
305-4	GHG emissions intensity	82	
305-5	Reduction of GHG emissions	82	
305-6	Emissions of ozone-depleting substances (ODS)	-	
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	83	
GRI 306: Waste 2020			
306-1	Waste generation and significant waste-related impacts	37	
306-2	Management of significant waste-related impacts	37	
306-3	Waste generated	83	
306-4	Waste diverted from disposal	83	
306-5	Waste directed to disposal	-	[Information Unavailable] Unable to verify vessel waste disposal after landing; treatment commissioned to general waste recycling services
GRI 308: Supplier Environmental Assessment 2016			
308-1	New suppliers that were screened using environmental criteria	64	
308-2	Negative environmental impacts in the supply chain and actions taken	64	

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Disclosure		Location	Explanation
GRI 401: Employment 2016			
401-1	New employee hires and employee turnover	85	
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	53	
401-3	Parental leave	88	
GRI 402: Labor/Management Relations 2016			
402-1	Minimum notice periods regarding operational changes	54	Communicating through Labor-management council
GRI 403: Occupational Health and Safety 2018			
403-1	Occupational health and safety management system	55	
403-2	Hazard identification, risk assessment, and incident investigation	59	
403-3	Occupational health services	56-58	
403-4	Worker participation, consultation, and communication on occupational health and safety	58	
403-5	Worker training on occupational health and safety	56	
403-6	Promotion of worker health	57-58	
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	59-61	
403-8	Workers subject to an occupational health and safety management system	55	
403-9	Work-related injuries	89	
403-10	Work-related illness	89	
GRI 404: Training and Education 2016			
404-1	Average hours of training per year per employee	86	
404-2	Programs for upgrading employee skills and transition assistance programs	44-48	
404-3	Percentage of employees receiving regular performance and career development reviews	88	
GRI 405: Diversity and Equal Opportunity 2016			
405-1	Diversity of governance bodies and employees	66, 87	
405-2	Ratio of basic salary and remuneration of women to men	87	

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Disclosure	Location	Explanation
GRI 406: Non-Discrimination 2016		
406-1	Incidents of discrimination and corrective actions taken	43
GRI 407: Freedom of Association and Collective Bargaining 2016		
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	- None
GRI 408: Child Labor 2016		
408-1	Operations and suppliers at significant risk for incidents of child labor	43 -
GRI 409: Forced or Compulsory Labor 2016		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	43 -
GRI 410: Security Practices 2016		
410-1	Security personnel trained in human rights policies and/or procedures	86 Human rights education for all employees regularly
GRI 411: Rights of Indigenous People 2016		
411-1	Incidents of violations involving rights of indigenous peoples	- [Information Unavailable] No incidents
GRI 413: Local Communities 2016		
413-1	Operations with local community engagement, impact assessments, and development programs	63
413-2	Operations with significant actual and potential negative impacts on local communities	38
GRI 414: Supplier Social Assessment 2016		
414-1	New suppliers that were screened using social criteria	64
414-2	Negative social impacts in the supply chain and actions taken	64
GRI 415: Public Policy 2016		
415-1	Political contributions	- No political contributions
GRI 416: Customer Health and Safety		
416-1	Assessment of the health and safety impacts of product and service categories	- [Not Applicable] No assessment
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	- None
GRI 417: Marketing and Labeling 2016		
417-1	Requirements for product and service information and labeling	- [Not Applicable] Given the type of business
417-2	Incidents of non-compliance concerning product and service information and labeling	- [Not Applicable] Given the type of business
417-3	Incidents of non-compliance concerning marketing communications	- None
GRI 418: Customer Privacy 2016		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	89

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Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE	PAN OCEAN (2021)
Greenhouse Gas Emissions	Gross global Scope 1 emissions	Quantitative	Metric tons (t) CO ₂ -e	TR-MT-110a.1	2,757,404 (p.82)
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	Discussion and Analysis	N/A	TR-MT-110a.2	(p. 31-34)
	(1) Total energy consumed	Quantitative	TOE	TR-MT-110a.3	884,348 (p.82)
	(2) percentage heavy fuel oil		%		44% (388,916 TOE, HFO)
	3) percentage renewable		%		No renewable energy consumed
	Average Energy Efficiency Design Index (EEDI) for new ships	Quantitative	Grams of CO ₂ per ton-nautical mile	TR-MT-110a.4	Confidential
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N ₂ O), (2) SOx, and (3) particulate matter (PM ₁₀)	Quantitative	Metric tons (t)	TR-MT-120a.1	(p. 83) (1) 71,730 (2) 8,439 (3) 5,352
Ecological Impacts	Shipping duration in marine protected areas or areas of protected conservation status	Quantitative	Number of travel days	TR-MT-160a.1	Uncountable
	Percentage of fleet implementing ballast water (1) exchange and (2) treatment	Quantitative	Percentage (%)	TR-MT-160a.2	(1) 24% (2) 76%
	(1) Number and (2) aggregate volume of spills and releases to the environment	Quantitative	(1) Number, (2) m ³	TR-MT-160a.3	(1) None (2) None
Employee Health & Safety	Lost time incident rate (LTIR*)	Quantitative	Rate	TR-MT-320a.1	(p. 89) Onshore: 0 Seafarer: 4.07
Business Ethics	Number of calls at ports in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index	Quantitative	Number	TR-MT-510a.1	0
	Total amount of monetary losses as a result of legal proceedings associated with bribery or corruption	Quantitative	Reporting currency	TR-MT-510a.2	0

* LTIR: (lost time incidents) / (1,000,000 hours worked)

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Sustainability Disclosure Topics & Accounting Metrics

TOPIC	ACCOUNTING METRIC	CATEGORY	UNIT OF MEASURE	CODE	PAN OCEAN (2021)
Accident & Safety Management	Number of marine casualties, percentage classified as very serious*	Quantitative	Number, Percentage (%), People	TR-MT-540a.1	Accident: 1 Accident ratio: 1.4% Casualties: 1
	Number of Conditions of Class or Recommendations	Quantitative	Number	TR-MT-540a.2	0
	Number of port state control(PSC**) (1) deficiencies and (2) detentions	Quantitative	Number	TR-MT-540a.3	(1) 231 (2) 1

* Including the death, serious injury, the loss of a person from a ship, the loss or abandonment of a ship, material damage to a ship, or severe damage to the environment
** PSC: a system in which the port state checks whether foreign ships entering ports under their jurisdiction comply with the requirements of international regulations on safety, and takes necessary measures such as detention of the ships if deficiencies are found

Activity Metrics

(Based on owned vessels)

ACTIVITY METRIC	CATEGORY	UNIT OF MEASURE	CODE	PAN OCEAN (2021)
Number of shipboard employees	Quantitative	Number	TR-MT-000.A	783
Total distance traveled by vessels	Quantitative	Nautical miles (nm)	TR-MT-000.B	6,375,022
Operating days	Quantitative	Days	TR-MT-000.C	39,293
Deadweight tonnage	Quantitative	Thousand deadweight tons	TR-MT-000.D	12,919,545
Number of vessels in total shipping fleet	Quantitative	Number	TR-MT-000.E	109
Number of vessel port calls	Quantitative	Number	TR-MT-000.F	3,240
Twenty-foot equivalent unit (TEU) capacity	Quantitative	TEU	TR-MT-000.G	6,041

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Category	Recommendation disclosures	Page
Governance	a. Describe the board's oversight of climate-related risks and opportunities	29
	b. Describe management's role in assessing and managing climate-related risks and opportunities	29
Strategy	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term, perspective	30
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning	30
	c. Describe the resilience of the organization's strategy, taking different climate-related scenarios, including a 2°C or lower scenario into consideration	30
Risk Management	a. Describe the organization's processes for identifying and assessing climate-related risks	29
	b. Describe the organization's processes for managing climate-related risks	29
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	29
Metrics & Targets	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	28, 31-32, 82
	b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks	82
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	28, 31-32

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To readers of Pan Ocean ESG Report 2022

Introduction

Korea Management Registrar (KMR) was commissioned by PAN OCEAN to conduct an independent assurance of its ESG Report 2022 (the "Report"). The data and its presentation in the Report is the sole responsibility of the management of PAN OCEAN. KMR's responsibility is to perform an assurance engagement as agreed upon in our agreement with PAN OCEAN and issue an assurance statement.

Scope and Standards

PAN OCEAN described its sustainability performance and activities in the Report. Our Assurance Team carried out an assurance engagement in accordance with the AA1000AS v3 and KMR's assurance standard SRV1000. We are providing a Type 1, moderate level assurance. We evaluated the adherence to the AA1000AP (2018) principles of inclusivity, materiality, responsiveness and impact, and the reliability of the information and data provided using the Global Reporting Initiative (GRI) Index provided below. The opinion expressed in the Assurance Statement has been formed at the materiality of the professional judgment of our Assurance Team.

Confirmation that the Report was prepared in accordance with the GRI standards 2021 was included in the scope of the assurance. We have reviewed the topic-specific disclosures of standards which were identified in the materiality assessment process.

- | GRI Sustainability Reporting Standards
- | Universal standards
- | Topic specific standards
 - GRI 201: Economic Performance
 - GRI 205: Anti-Corruption
 - GRI 302: Energy
 - GRI 305: Emissions
 - GRI 401: Employment
 - GRI 403: Occupational Health and Safety
 - GRI 404: Training and Education

As for the reporting boundary, the engagement excludes the data and information of PAN OCEAN' partners, suppliers and any third parties.

KMR's Approach

To perform an assurance engagement within an agreed scope of assessment using the standards outlined above, our Assurance Team undertook the following activities as part of the engagement.

- | reviewed the overall Report
- | reviewed materiality assessment methodology and the assessment report
- | evaluated sustainability strategies, performance data management system, and processes
- | interviewed people in charge of preparing the Report
- | reviewed the reliability of the Report's performance data and conducted data sampling
- | assessed the reliability of information using independent external sources such as Financial Supervisory Service's DART and public databases.

Limitations and Recommendations

KMR's assurance engagement is based on the assumption that the data and information provided by PAN OCEAN to us as part of our review are provided in good faith. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. To address this, we referred to independent external sources such as DART and National Greenhouse Gas Management System (NGMS) and public databases to challenge the quality and reliability of the information provided.

Conclusion and Opinion

Based on the document reviews and interviews, we had several discussions with PAN OCEAN on the revision of the Report. We reviewed the Report's final version in order to make sure that our recommendations for improvement and revision have been reflected. Based on the work performed, it is our opinion that the Report applied the GRI Standards 2021. Nothing comes to our attention to suggest that the Report was not prepared in accordance with the AA1000AP (2018) principles.

| Inclusivity |

PAN OCEAN has developed and maintained different stakeholder communication channels at all levels to announce and fulfill its responsibilities to the stakeholders. Nothing comes to our attention to suggest that there is a key stakeholder group left out in the process. The organization makes efforts to properly reflect opinions and expectations into its strategies.

| Materiality |

PAN OCEAN has a unique materiality assessment process to decide the impact of issues identified on its sustainability performance. We have not found any material topics left out in the process.

| Responsiveness |

PAN OCEAN prioritized material issues to provide a comprehensive, balanced report of performance, responses, and future plans regarding them. We did not find anything to suggest that data and information disclosed in the Report do not give a fair representation of PAN OCEAN actions.

| Impact |

PAN OCEAN identifies and monitors the direct and indirect impacts of material topics found through the materiality assessment, and quantifies such impacts as much as possible.

Competence and Independence

KMR maintains a comprehensive system of quality control including documented policies and procedures in accordance with ISO/IEC 17021:2015 - Requirements for bodies providing audit and certification of management systems. This engagement was carried out by an independent team of sustainability assurance professionals. KMR has no other contract with PAN OCEAN and did not provide any services to PAN OCEAN that could compromise the independence of our work.

November 2022 Seoul, Korea



CEO E. J. Hwang

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DNV BUSINESS ASSURANCE

No.: AS_PRJN-454946_KR_POI

PAN OCEAN CO., LTD.

VERIFICATION STATEMENT GREENHOUSE GAS (GHG) EMISSIONS

Introduction

DNV Business Assurance Korea Ltd. ("DNV") was commissioned by Ocean Co., Ltd. ("Pan Ocean") to verify the Pan Ocean's Greenhouse Gas Inventory for the calendar year 2021 based upon a limited level of assurance. Pan Ocean is responsible for the preparation of the GHG emissions data on the basis set out within the WRI/WBCSD GHG protocol (A Corporate Accounting and Reporting Standard), 2006 IPCC Guidelines for National Greenhouse Gas Inventories, and the principles set out in ISO 14064-1:2008. Our responsibility in performing this work is to the management of Pan Ocean only and in accordance with terms of reference agreed with them. DNV expressly disclaims any liability or responsibility for any decisions, whether investment or otherwise, based upon this assurance statement.

Scope of Assurance

The emissions data covered by our examination comprise Direct emissions (Scope 1 emissions), Indirect emissions (Scope 2 emissions) and Other indirect emissions (Scope 3) within the Pan Ocean's domestic business sites

- Organizational boundary: Pan Ocean's domestic business sites (Headquarters (Seoul), Busan Sales Team, Pohang Office, Dangjin Office)
- Operational boundary: Direct emissions (Scope 1), Indirect emissions (Scope 2) and Other indirect emissions (Scope 3)

Verification Approach

The verification has been conducted by DNV from October 25th through November 17th, 2022 and performed in accordance with the verification principles and tasks outlined in the 'the 'ISO 14064-3:2019'. We planned and performed our work to obtain all the information and explanations deemed necessary to provide us with sufficient evidence to provide a verification opinion, concerning the reported emission figures in ton CO2 equivalent.

- As part of the verification process
- We have reviewed and verified the Pan Ocean's GHG Inventory Tool (Excel based)
 - We have reviewed and verified the process to generate, aggregate and report the emissions data

Conclusions

Based on the process and procedures conducted, there is no evidence that the GHG assertion is not materially correct and is not a fair representation of GHG data and information, and has not been prepared in accordance with a related standard on GHG quantification, monitoring and reporting The GHG Emissions of Pan Ocean for the year 2021 were confirmed as below

Greenhouse Gas Emissions of Pan Ocean for Yr 2021					Unit: ton CO2 equivalent
2021	Direct emissions (Scope1)		Indirect emissions (Scope2)	Total emissions	Total emissions
	Vessel	Vehicle	Electricity		
Pan Ocean	2,757,356	48	539	2,884,436	5,642,379

Note: The emission figure was rounded up.
* Other indirect emissions (Scope 3) reported: Purchased goods & services, Upstream leased assets, Upstream transportation and distribution, Business travel, Employee commuting

17th November 2022



Jang-Sub Lee
Country Manager
DNV Business Assurance Korea Ltd

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Name
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Korea Industry Associations Council
Korea Listed Companies Association
Korea Enterprises Federation
Korea Shipowners Association
Korea International Trade Association
Yellow Sea Liners Committee
Korea Near-Sea Freight Conference
Korea AEO Association
Korea Ship Managers Association
Korea Gas Union
Society of International Gas Tanker and Terminal Operators
Korea Emergency Planning Officers Council





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