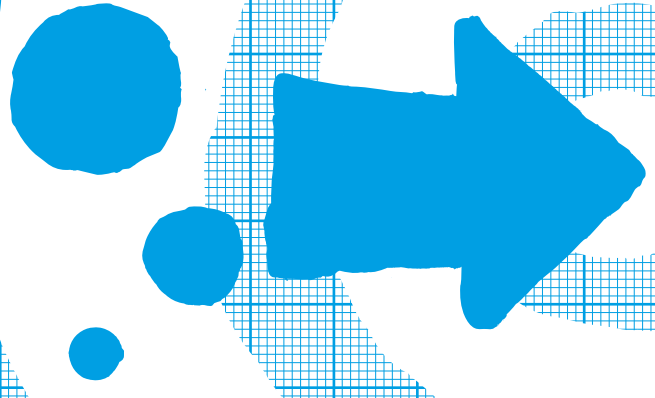

Global Maritime Issues Monitor 2021

GLOBAL MARITIME FORUM

Marsh

IUMI International Union of Marine Insurance

Global Maritime Issues Monitor

2021

GLOBAL MARITIME FORUM

Marsh

IUMI
International Union of Marine Insurance

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Critical issues facing the maritime industry

Foreword

Welcome to the fourth annual *Global Maritime Issues Monitor*. Based on a survey of public and private decision makers from six continents and commentary from more than a dozen leaders and experts, the report tracks and studies perceptions of some of the critical issues facing the maritime industry.

In the report's context, we look at how issues and perceptions of preparedness have changed over the past year as the industry found its challenges from the COVID-19 pandemic while shifting attention to environmental and talent issues.

We asked which issues do those in the sector at large view as most likely to occur? Which will have the most impact? How prepared do they see the industry should such events unfold? What steps are needed to meet environmental goals and regulations?

As life and work in a COVID-19-altered world became the norm in 2021, it is not surprising that pandemics dropped from the high ranking among our respondents. Although it's worth noting that the crew change crisis spawned by the pandemic continues to defy solution and may influence the broader issues relating to workforce skills.

And as environmental issues—from floods to storms to wildfires—grew in severity, the maritime sector increased its focus on sustainability, environmental regulations, and related matters. The focus in 2021 is a shift back to the pre-pandemic world of 2019, when environmental issues led much of the discussion in our survey.

The 2021 *Global Maritime Issues Monitor* looks at the top global issues identified by survey respondents in terms of likelihood, impact, and preparedness. We also look at talent issues within the industry as organizations seek ways to attract new blood both on the ground and at sea.

We hope you enjoy this year's report, and that it stimulates conversation in your organization about the range of issues facing the industry, as well as the opportunities.

The Global Maritime Forum, Marsh and IUMI would like to thank those who participated in our survey, and we give special thanks to the individuals who took the time to provide perspective on the findings and whose comments you will find throughout the report.

Johannah Christensen
Chief Executive Officer
Global Maritime Forum

Martin Baker
Global Head of Marine & Cargo
Marsh Specialty

Richard Tyrrell
President
International Union of Marine Insurance

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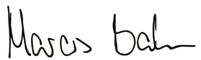
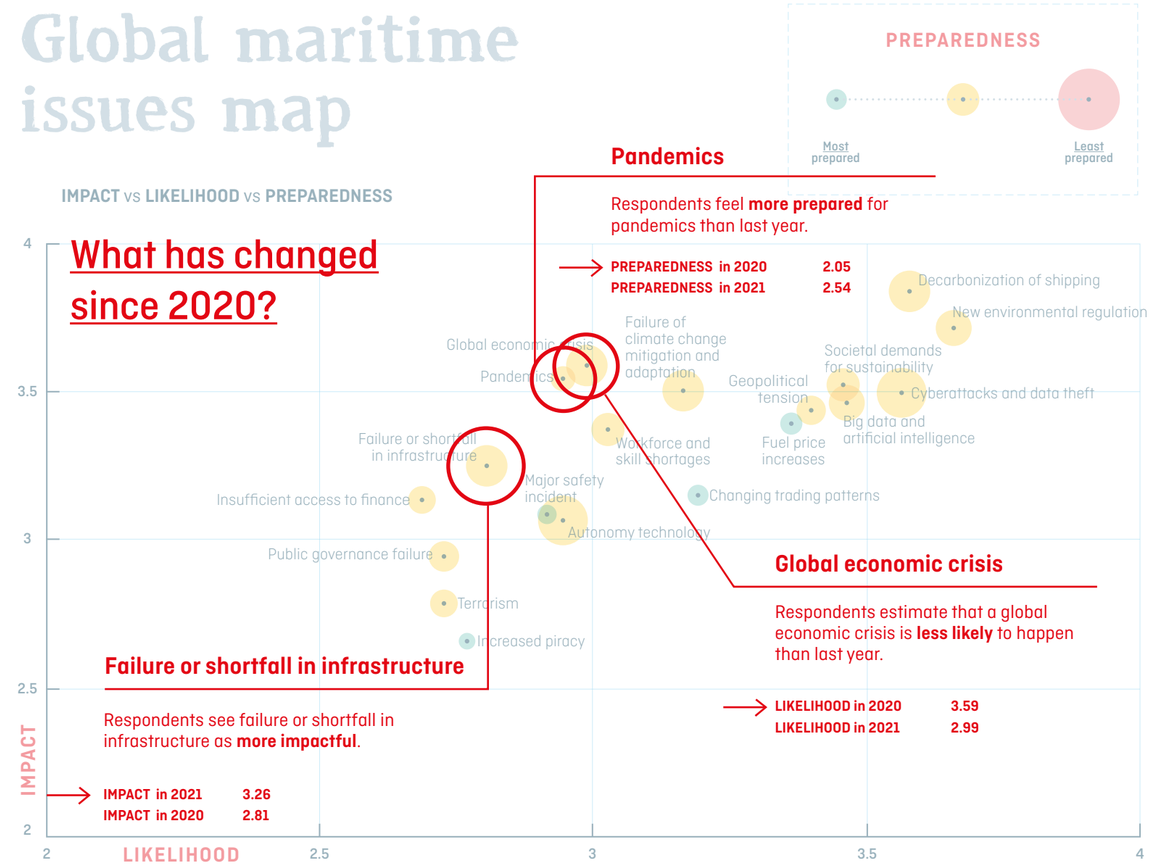


Richard Turner
President

International Union of Marine Insurance

Global maritime issues

Global maritime issues map



Global maritime issues map

IMPACT vs **LIKELIHOOD** vs **PREPAREDNESS**

What has changed since 2020?

Pandemics

Respondents feel **more prepared** for pandemics than last year.

PREPAREDNESS in 2020 2.05
PREPAREDNESS in 2021 2.54

Global economic crisis

Respondents estimate that a global economic crisis is **less likely** to happen than last year.

LIKELIHOOD in 2020 3.59
LIKELIHOOD in 2021 2.99

Failure or shortfall in infrastructure

Respondents see failure or shortfall in infrastructure as **more impactful**.

IMPACT in 2021 3.26
IMPACT in 2020 2.81

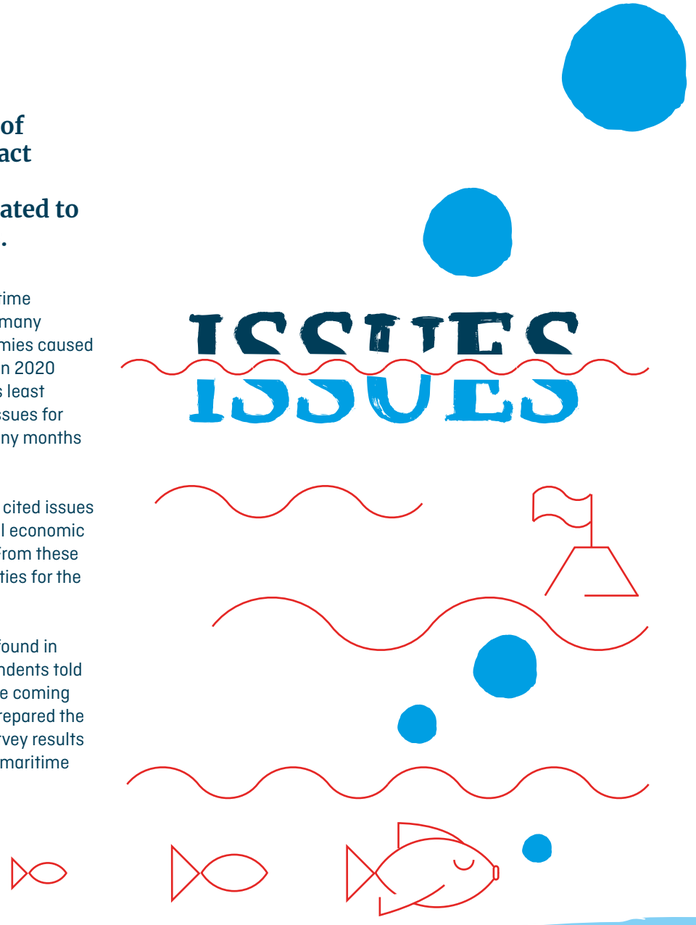
Global maritime issues

Environmental issues topped the list of concerns that will have the most impact in the coming decade for the global maritime industry, particularly as related to decarbonization and new regulations.

At the same time, leaders gained confidence in the maritime industry's ability to manage pandemic risk—despite the many disruptions in supply chains, shipping, and global economies caused by COVID-19 in the past 18 months. Survey respondents in 2020 ranked pandemic as the issue for which the industry was least prepared; however, in 2021 they placed it as one of the issues for which the industry was most prepared, reflecting the many months of intense focus.

Along with environmental concerns, survey respondents cited issues related to cyberattacks, sustainability, geopolitics, global economic crisis, and digitalization as being of particular concern. From these emerging issues will come the challenges and opportunities for the sector in coming years.

To provide a broad perspective, the survey and analysis found in this report come from a variety of sources. Survey respondents told us which issues they believe are most likely to arise in the coming decade, which could have a high impact, and how well prepared the sector is to meet the challenges. We add depth to the survey results by soliciting comments on the findings from a variety of maritime leaders and experts.



Potential impact of environmental issues increases

Environmental issues are top of mind for the marine industry in 2021. Decarbonization of shipping, new environmental regulation, and the failure of climate change mitigation and adaptation all scored high on their perceived impact and likelihood, and worryingly low on preparedness.

Respondents saw decarbonization of shipping as the most impactful issue, followed by new environmental regulation.

The potential for a global economic crisis dropped to the number three spot for impact in 2021, after having ranked as the number one most impactful issue for three consecutive years. It also fell considerably in terms of likelihood, and improved in terms of the industry's preparedness.

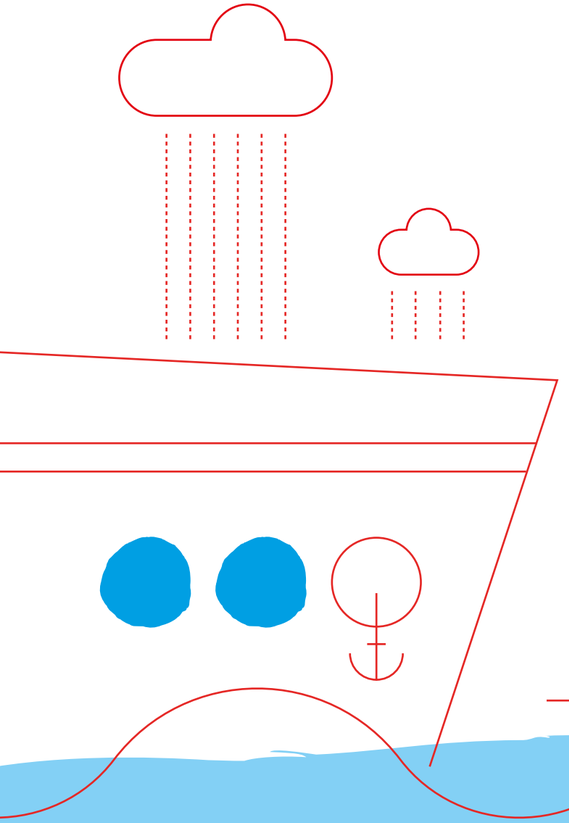
This was only the second year we listed pandemics as an issue in the survey, and respondents placed it fourth on the list of issues ranked according to their potential impact, after ranking it third last year. It is encouraging to see that, following a year of managing pandemic-related issues, respondents saw the industry as better able to manage them, and ranked it high in terms of preparedness.

What **impact** do you think the following issues will have on the maritime industry over the next 10 years?

1 Minimal impact / **2** Minor impact / **3** Moderate impact / **4** Major impact

2021 RANK	2020	ISSUE	SCORE
1	2	**Decarbonization of shipping**	**3.85**
2	4	New environmental regulation	3.72
3	1	Global economic crisis	3.59
4	3	Pandemics	3.56
5	7	Societal demands for sustainability	3.54
6	8	Failure of climate change mitigation and adaptation	3.51
7	9	Cyberattacks and data theft	3.50
8	6	Big data and artificial intelligence	3.47
9	5	Geopolitical tension	3.46
10	15	Fuel price increases	3.40
11	11	Workforce and skill shortages	3.38
12	17	Failure or shortfall in infrastructure	3.26
13	10	Changing trading patterns	3.16
14	12	Insufficient access to finance	3.14
15	16	Major safety incident	3.09
16	13	Autonomy technology	3.07
17	14	Public governance failure	2.94
18	18	Terrorism	2.79
19	19	Increased piracy	2.66

See **Glossary of terms** on page 28



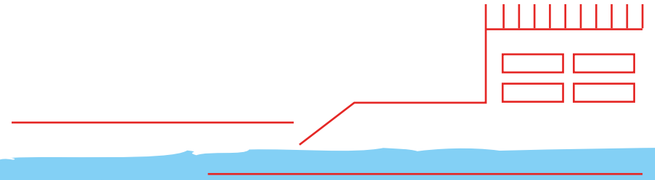
Likelihood of economic crisis seen as falling

For the second consecutive year, respondents saw new environmental regulation as the number one most likely issue to face the industry in the coming decade. Decarbonization of shipping, clearly related, placed a close second, moving up from sixth place last year as companies look for viable solutions.

Cyberattacks/data theft, and big data/artificial intelligence placed third and fourth, respectively. For cyberattacks and data theft this was a move up from fifth place.

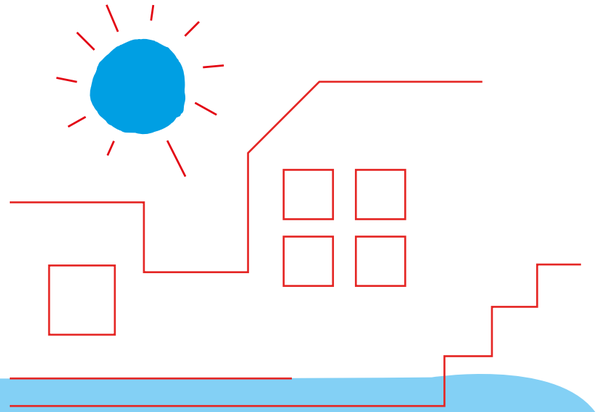
Issues around workforce and skill shortages moved from being seen as the fourteenth most likely issue to tenth on the list, in all likelihood a result of the ongoing crew change crisis.

The biggest shift came regarding the perceived likelihood of a global economic crisis, which fell from second place in 2020 to eleventh in 2021. It's worth noting that this year's position harkens back to the issue's pre-pandemic ranking; it placed tenth in 2019.



Pandemics once again ranked relatively low in terms of likelihood, falling to the thirteenth place from tenth last year. This remains a red flag if companies take the view that when COVID-19 is "done" a new pandemic is somehow unlikely.

Apart from the issues listed above, the largest move came in insufficient access to finance, which dropped to nineteenth from thirteenth last year. This coincides with the movement in global economic crisis.



What is the likelihood of the following issues occurring within the next 10 years?

1 Very unlikely / **2** Unlikely / **3** Likely / **4** Very likely

2021 RANK	2020	Issue	SCORE
1	1	**New environmental regulation**	**3.66**
2	6	Decarbonization of shipping	3.58
3	5	Cyberattacks and data theft	3.56
4	3	Big data and artificial intelligence	3.47
5	7	Societal demands for sustainability	3.46
6	4	Geopolitical tension	3.40
7	11	Fuel price increases	3.37
8	8	Changing trading patterns	3.19
9	9	Failure of climate change mitigation and adaptation	3.17
10	14	Workforce and skill shortages	3.03
11	2	Global economic crisis	2.99
12	12	Autonomy technology	2.94
13	10	Pandemics	2.94
14	16	Major safety incident	2.92
15	19	Failure or shortfall in infrastructure	2.81
16	18	Increased piracy	2.77
17	15	Public governance failure	2.73
18	17	Terrorism	2.73
19	13	Insufficient access to finance	2.69

Low preparedness on environmental and digital issues

It's important to view the industry's ranking of likelihood and potential impact of issues against the perception of how prepared it is to manage them. For example, although autonomy technology is the issue respondents feel the least prepared for, it ranks only sixteenth for impact and twelfth for likelihood, indicating the issue is not high on the industry agenda.

Cyberattacks and data theft, on the other hand, rank second for the industry in lack of preparedness, a move up from seventh place last year. The issue also ranks seventh for impact and third for likelihood, underscoring the industry's concern.

Respondents are also not very confident in the industry's preparedness for the failure of climate change mitigation and adaptation, and the decarbonization of shipping. The two issues rank in third and fourth place for least prepared.

Pandemics preparedness had the biggest move year-over-year, shifting from first place to fifteenth among the issues for which respondents felt the industry was least prepared.

Respondents also feel better prepared for a global economic crisis, which moved from second place for least prepared in 2020, to fifth in 2021.

Increased piracy remains the issue for which the industry is seen as best prepared.

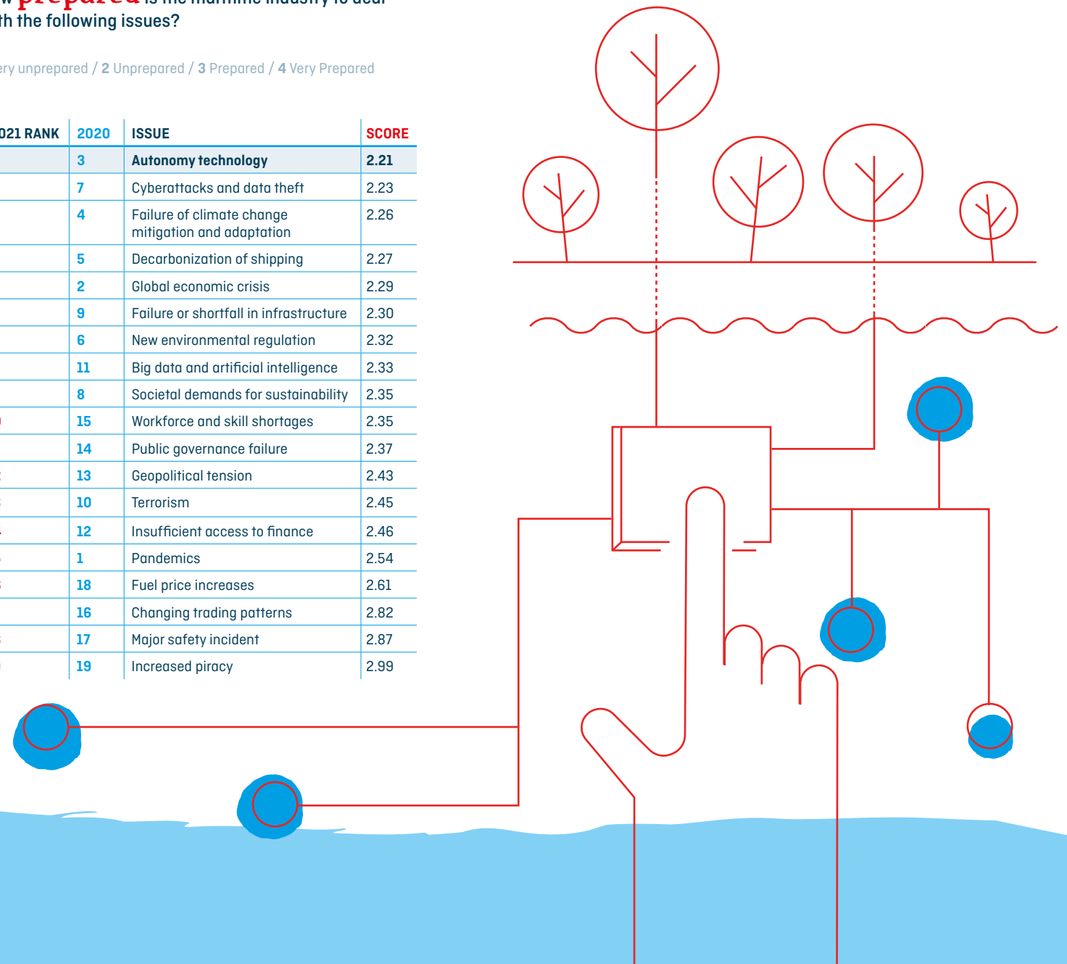
In general, it is not uncommon for organizations to have a gap between their internal perception of preparedness and their actual level of readiness, suggests a recent Marsh Risk Resilience Report. An accurate perception of organizational preparedness is necessary, because a false sense of security can halt an organization in its tracks.

GLOBAL MARITIME ISSUES

How prepared is the maritime industry to deal with the following issues?

1 Very unprepared / **2** Unprepared / **3** Prepared / **4** Very Prepared

2021 RANK	2020	ISSUE	SCORE
1	3	**Autonomy technology**	**2.21**
2	7	Cyberattacks and data theft	2.23
3	4	Failure of climate change mitigation and adaptation	2.26
4	5	Decarbonization of shipping	2.27
5	2	Global economic crisis	2.29
6	9	Failure or shortfall in infrastructure	2.30
7	6	New environmental regulation	2.32
8	11	Big data and artificial intelligence	2.33
9	8	Societal demands for sustainability	2.35
10	15	Workforce and skill shortages	2.35
11	14	Public governance failure	2.37
12	13	Geopolitical tension	2.43
13	10	Terrorism	2.45
14	12	Insufficient access to finance	2.46
15	1	Pandemics	2.54
16	18	Fuel price increases	2.61
17	16	Changing trading patterns	2.82
18	17	Major safety incident	2.87
19	19	Increased piracy	2.99



Top issues

Looking at the overall context of survey respondents' views on likelihood, impact, and preparedness, environmental issues stand out, particularly as related to climate change. Other notable issues this year include a looming talent shortage as well as the increase of cyberattacks and data theft. It's notable that economic and geopolitical issues were overshadowed this year for the first time.

Decarbonization and other environmental issues come to the fore

Issues linked to decarbonization and climate change—decarbonization of shipping, new environmental regulation, and failure of climate change mitigation and adaptation—score high on impact and likelihood this year, and worryingly low on preparedness.

For the first time, decarbonization of shipping is seen as the most impactful issue, followed by new environmental regulation.

"We as an industry are now ready to rise to the challenge and play our part in combatting climate change," says **Christian M. Ingerslev**, CEO of Maersk Tankers. "This is a change, which is undoubtedly driven by an increasing pressure from consumers, investors, financing institutions, and customers."

Now is an important time in the shipping industry's effort to better prepare for decarbonization and new environmental regulation. There will be both challenges and opportunities along the way, as well as expectations from the public regarding what steps the shipping industry should be taking in terms of reducing its carbon footprint.

The broad implications of decarbonization extend to fuel price increases, which in 2021 moved to tenth place regarding impact, up from fifteenth place last year. This could be the result of immediate price increases happening while people were taking the survey; however, looking with a 10-year perspective could signal that the industry is bracing for new and more costly zero emission fuels, which some see as a necessity.

"We have seen the shipping industry come on board with a strong and almost united voice that a price on carbon is a necessity," says **Rasmus Bach Nielsen**, Global Head of Fuel Decarbonization, Trafigura. "The next step, and key, is to get a regulatory framework where charterers are obliged to pay for ships that have higher than established benchmark emission profiles."

After that, Nielsen says, would be "a real behavioral change [leading] to charterers paying higher freight for zero carbon fueled ships, due to the CO_2 profile, or owners being compensated in full for the extra expense, depending on the regulatory framework."

Societal demands for sustainability have also risen in the industry's perception of impact and likelihood.

"Consumers have become much more focused on the environmental footprint of products and services [including] material choices, manufacturing processes, means of operation, energy usage, delivery and transport options, and disposal and recycling," says **Nick Brown**, CEO, Lloyd's Register. "Environmental, social and governance criteria are being more rigorously applied. The maritime industry is not exempt from this global trend and … society expects us to harness efficiencies and use resources effectively, while protecting people and the environment."

Talent shortages loom in the background

The impact and likelihood of workforce and skill shortages rank higher in the survey in 2021. At the same time, respondents feel the industry is less prepared to manage these issues.

There is little doubt the crew change crisis is a major driver of their perception, although other factors also influence the score. Since the start of the COVID-19 pandemic, thousands of seafarers have been stuck on ships beyond the expiry of their contracts as many countries decline to let them enter. As of September 2021, the Neptune Declaration Crew Change Indicator estimates that 8.9% of seafarers are in this position, with 1.2% on board for more than 11 months post-expiry. More than 800 organizations have signed the Neptune Declaration on Seafarer Wellbeing and Crew Change, which seeks to find an end to this crisis, in part by encouraging the vaccination of seafarers.

Still, the longer the situation remains, the more impact it will have, not only on individual seafarers, but on the global economy. As recently noted by Jeremy Nixon, CEO of ONE, in a World Economic Forum article: "If left unresolved, the difficulties in carrying out crew changes could expand as seafarers understandably start considering if they want to return to sea, which could pose a threat to the resilience of global supply chains."

The maritime industry may also experience workforce shortages on shore. Growing demands for diversity, equity, and inclusion (DE&I) could place an industry often viewed as "old-fashioned" in a difficult position when it comes to attracting talent.

"The transition towards a more sustainable, zero emission future within the shipping industry offers the opportunity to 'build back better' and increase inclusivity and representation," says **Sturla Henriksen**, Special Advisor Ocean, UN Global Compact. "According to recent estimates, women represent only about 2% of the world's seafarers. Active policies are needed to promote women in maritime work and enable them to flourish."

Still, some see this as an exciting time to join the industry.

"In Singapore, the maritime ecosystem is rapidly transforming as a result of digitalization and decarbonization," says **Tan Beng Tee**, Executive Director, Singapore Maritime Foundation. "Therefore, far from being 'traditional,' new career options and new skills sets are emerging for talents skilled in data science, analytics, the Internet of Things, and sustainability to shape the industry for the decades to come."

Whether at sea or on shore, the maritime workforce will require increasing mastery of digital skills.

"We need to attract young people, with their vital contemporary skill sets and mindsets, by offering them the chance to be part of something that resonates," said Capt. **Rajesh Unni**, Founder and CEO, Synergy Group. "Digitalization certainly does that, and so do notions like sustainability, and NegaWatts. We need to develop and present these as part of the career path. We might be able to attract, recruit, train, and refresh, but the even bigger issue is meshing all this into a shipping environment steeped in tradition, hierarchy, and process."

Digital issues re-emerge as a priority

The issue of cyberattacks and data theft are seen as both more impactful and more likely this year than last. At the same time, respondents feel the industry is not fully prepared to tackle them.

This shift may in part result from the Colonial pipeline cyberattack, which occurred while the survey was being conducted. However, it would be difficult these days to find a time when cyberattacks are not in the news.

"Organizations in the maritime sector are not alone in feeling unprepared regarding cyberattacks," said **Sarah Stephens**, International Head of Cyber, Marsh. "While at one point in time the industry may have felt 'insulated' from targeted attacks, this is changing as vessels, ports, terminals, and other parts of the organization continue to upgrade their technology."

But the likelihood is that cyberattacks in the marine industry will continue to increase. "The growing reliance of the maritime industry on digitalization and connectivity has exponentially increased the likelihood of a cyber incident," says **Patrizia Kern**, Head Marine, Swiss Re Corporate Solutions. "Other than the basic safeguards like the training of all employees—and seafarers—establishing robust OT safeguarding procedures and IT architectures, [and other steps], industries must build up reliable business continuity plans" and invest more resources in cyber resilience.

Experts broadly agree that the maritime industry needs to take a more comprehensive approach to address cyber issues. In a joint statement, **Daniel Ng**, CEO of CyberOwl, and **Paul Dean**, Global Head of Shipping at HFW, said: "To be better prepared, maritime organizations need to move beyond a minimum compliance approach to addressing cyber risk. This extends beyond simply a technical issue, but should include operational, reputational, legal, and commercial risk management. Without this combined approach a shipping business cannot be assured that it is properly protected."

Big data and artificial intelligence also score highly: eighth for impact, fourth for likelihood, and eighth for preparedness.

"As artificial intelligence becomes more embedded in logistics operations, and autonomous driving systems become more ubiquitous in every mode of transportation, the entire ecosystem of the movement of goods will evolve," says **Elisabeth Case**, Silent Cyber Leader, US & Canada Cyber Practice, Marsh.
"The marine sector will be impacted in multiple ways, including the interoperability of cargo booking and forwarding systems, electronic bills of lading. These developments may shift liability leading to the need to purchase new and or expanded insurance programs that align with new laws."

Economic and geopolitical issues overshadowed

Economic and geopolitical issues dominated the rankings in 2020 due to the pandemic, but ranked lower on the industry's agenda this year. Though still seen as having significant impact, global economic crisis moved from the number two spot for likelihood to number eleven.

Some observers believe that the maritime industry needs to be careful to not overlook evolving geopolitical tensions, such as those between the US and China.

"The industry is missing out on the potential consequences of the heightening of the tensions between the US and China," says Professor **Ian Goldin** of Oxford University. "It appears that this risk has not diminished with the Biden presidency [and] risks escalation on both sides, with spillovers for global trade, economic growth, and a joint problem to solve critical challenges, including the pandemic and climate change."

And the pandemic, of course, continues to factor into the global economy.

"Maritime supply chains have been severely impacted by the COVID-19 pandemic, and experienced further disruptions due to historically high container traffic volumes as well as other unexpected events," says **Binyam Reja**, Acting Global Director for Transport, World Bank. "These constraints have adversely impacted economic development, especially in low- and middle-income countries. Long-term challenges such as increasing climate change and a growing digital divide will exacerbate this situation by raising the costs of international trade."

The highest scoring geopolitical issue, geopolitical tension, received similar scores to last year. However, compared to other issues, it dropped in the rankings on impact and likelihood. In this time of hyper-connected risks, the industry will need to consider the interplay between climate issues and geopolitical ones.

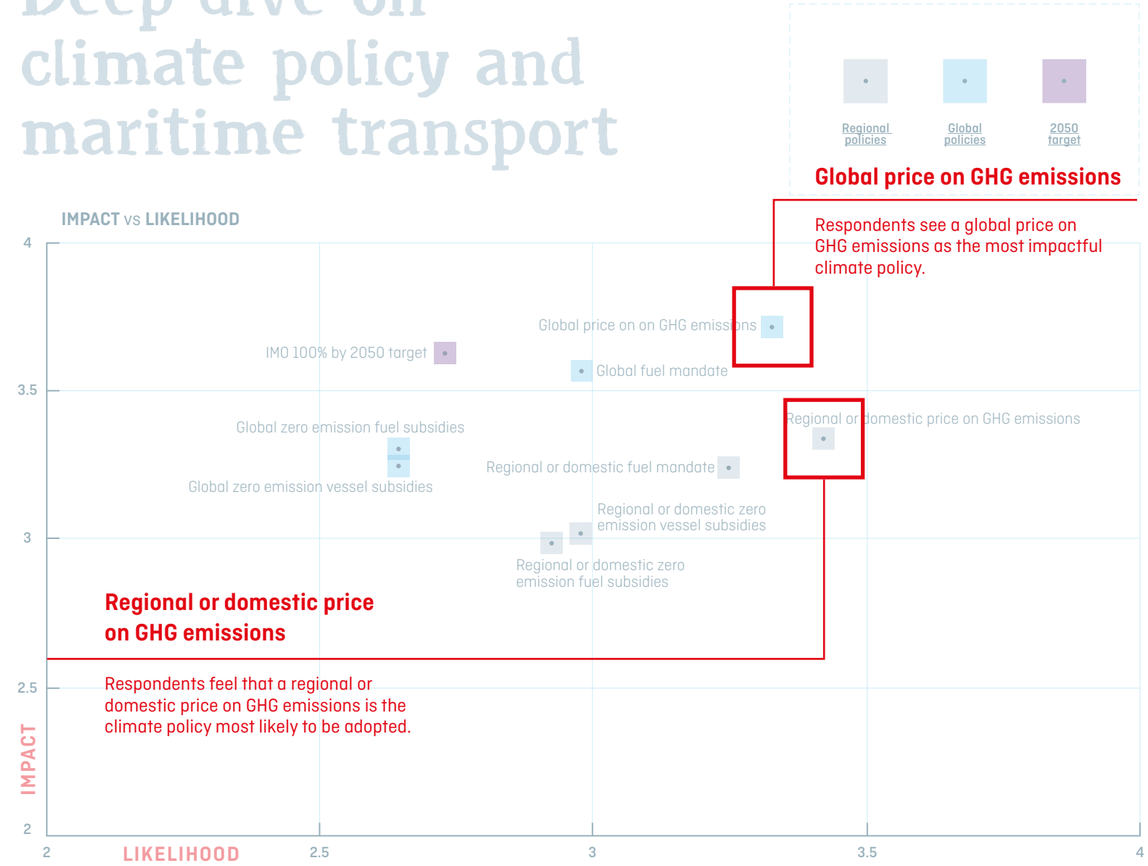
"The geopolitical significance of the Middle East and other key oil exporters will be diminished and the importance of minerals that are significant inputs into the climate transition will be increased—lithium, copper, and others," says Oxford's Goldin. "Increased extreme weather events, such as hurricanes and tornadoes, increased flooding, and tidal surges will slow shipping and impact on ports. The climate factors will accelerate the transformation of value chains, and with that the composition of what is shipped, the volumes and routes, and the types of vehicles and their fuels."

Failure or shortfall in infrastructure increased in respondents' ranking of impact and likelihood compared to last year. Likely reasons include the Suez Canal blockage, the congestion at North American and South China ports due to reduced workforce, increased COVID-19 restrictions, and the container shortage as the pandemic affected the normal flow of containers.

"There will always be unforeseen disruptions to the global maritime industry," says Dr. **Ricaurte Vasquez Morales**, Panama Canal Administrator. "The past two years have shown that our ability to overcome these challenges depends on the resilience and commitment of our workforce, which through its adherence to safety allowed the canal to continue enabling the delivery of essential goods around the world throughout the pandemic."

Despite the many supply chain disruptions the maritime industry faced in the last year, there was no significant change in views of the likelihood of changing trading patterns.

Deep dive on climate policy and maritime transport



Note: Survey respondents were asked to assess the likelihood of the individual climate policies being adopted by governmental and inter-governmental bodies by 2030. They also assessed the potential impact of each policy. They were not asked to evaluate the industry's preparedness for the potential adoption of these issues.

Deep dive on climate policy and maritime transport

Global price on GHG emissions

Respondents see a global price on GHG emissions as the most impactful climate policy.

Regional or domestic price on GHG emissions

Respondents feel that a regional or domestic price on GHG emissions is the climate policy most likely to be adopted.

Note: Survey respondents were asked to assess the likelihood of the individual climate policies being adopted by governmental and inter-governmental bodies by 2030. They also assessed the potential impact of each policy. They were not asked to evaluate the industry's preparedness for the potential adoption of these issues.

Deep dive on climate policy and maritime transport

International shipping emits about 3% of global greenhouse gas (GHG) emissions. To contribute to global efforts to rein in climate change, the maritime sector will need to reduce its carbon footprint. Its success depends in large part on the implementation of policy frameworks that would enable it to reach global climate targets with the scale and urgency required. This deep dive explores different policy options available to regulators in the maritime space, and the industry's perception of them.

Overall, respondents rank global policies higher in terms of impact than they do regional policies. On the other hand, regional or domestic policies are generally seen as more likely to be implemented. On both the global and regional/domestic levels, regulatory measures, such as the pricing on GHG emissions and fuel mandates, are seen as more likely to be used than are incentives, such as fuel and vessel subsidies.

Pricing of GHG emissions viewed as key step

Placing a price on GHG emissions is seen as the most effective climate policy, and the most likely to be implemented. A global price on GHG emissions took the top spot for impact and second place for likelihood, although enactment of regional or domestic pricing was seen as the most likely and placed third for impact.

"To decarbonize the industry with speed and at scale, we need to ensure that there is financial incentive for industry participants," said **Christian M. Ingerslev**, CEO of Maersk Tankers. "This is where regulation will play an important role. By putting a price on carbon, regulators can close the competitiveness gap between fossil fuels and zero emission fuels—a challenge that cannot be solved by the market alone."

Isabelle Durant, Acting Secretary-General, UNCTAD, says that a carbon levy at the global level would help create a level playing field between fossil fuels and zero carbon bunker fuels, and make the polluters pay. "Such measures can also help raise revenues for urgently needed research and development, and help weaker and vulnerable developing countries—including small island developing states and least developed countries—fund mitigation measures during the process of decarbonization," she says.

However, some are less than hopeful that a global price on GHG emissions can be agreed with the urgency needed to match the climate crisis. A number of regions—the EU most vocally—are considering whether to regulate shipping, which explains why a regional price on GHG emissions may be more likely than a global one. In July, the European Commission proposed to include shipping in the EU Emissions Trading System (ETS), while the US and China have suggested they might take similar steps.

Maersk Tankers CEO Ingerslev says the industry would prefer that regulation is global and implemented by the International Maritime Organization (IMO). While regional regulation might increase complexity, he also stresses that it would "drive innovation and investments into decarbonization, which would otherwise be delayed by inaction."

He adds, "Many voices are concerned that regional regulation is detrimental to the efforts of the IMO. I, however, believe that it is a forceful reminder to the IMO of the importance of raising the bar and speeding up global regulation."

China has pledged to peak emissions by 2030, and to reach carbon neutrality by 2060. Domestically, China is using a number of policy and regulatory tools "to set targets and timelines to decarbonize, including a just-launched ETS for the power sector, which is scheduled to be expanded," says **Christine Loh**, Chief Development Strategist, Institute for the Environment, Hong Kong University of Science and Technology. "Internationally, China prefers multilateral negotiations. Unilateral action is seen negatively, such as the possible extension of the EU ETS to cover international ships calling at EU ports, which is seen as an extraterritorial tax."

What impact do you think the following climate policies would have if adopted on advancing shipping's decarbonization over the next 10 years?

1 Minimal impact / 2 Minor impact / 3 Moderate impact / 4 Major impact

RANK	ISSUE	SCORE
1	**Global price on GHG emissions**	**3.71**
2	Global fuel mandate	3.57
3	Regional or domestic price on GHG emissions	3.33
4	Global zero emission fuel subsidies	3.30
5	Global zero emission vessel subsidies	3.25
6	Regional or domestic fuel mandate	3.24
7	Regional or domestic zero emission vessel subsidies	3.01
8	Regional or domestic zero emission fuel subsidies	2.99

What is the likelihood that by 2030, relevant governmental and inter-governmental bodies will adopt the following climate policies for shipping?

1 Very unlikely / 2 Unlikely / 3 Likely / 4 Very likely

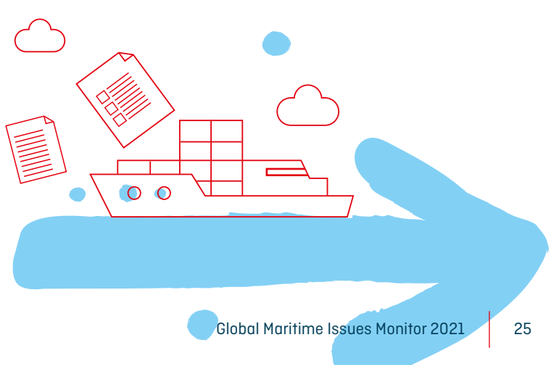
RANK	ISSUE	SCORE
1	**Regional or domestic price on GHG emissions**	**3.42**
2	Global price on GHG emissions	3.33
3	Regional or domestic fuel mandate	3.25
4	Global fuel mandate	2.98
5	Regional or domestic zero emission vessel subsidies	2.98
6	Regional or domestic zero emission fuel subsidies	2.92
7	Global zero emission vessel subsidies	2.65
8	Global zero emission fuel subsidies	2.65

What impact do you think an IMO target to reduce GHG emissions from international shipping by 100% by 2050 would have on advancing shipping's decarbonization over the next 10 years?

IMO 100% by 2050 target	3.62

What is the likelihood that the IMO will adopt a target to reduce international shipping's total annual GHG emissions by 100% by 2050 when it revises its GHG Strategy by 2023?

IMO 100% by 2050 target	2.73



Policy makers urged to leave no country behind

"UNCTAD's assessment of GHG reduction measures adopted at the IMO shows that coastal least developed countries will likely be more affected by increasing costs and lower speeds resulting from the short-term GHG reduction measures," says UNCTAD's Durant. "It is UNCTAD's position that technical and financial support need to be provided, so that those who are most negatively affected by climate change are not also the ones to be most negatively affected by the process of decarbonization."

The Pacific Islands are one of the regions most vulnerable to climate change. Limiting global temperature rise to 1.5° (C) gives some atoll states a 50% chance of survival.

The Marshall Islands' ambassador to Fiji and the Pacific Islands, H.E. **Albon Ishoda**, urges countries to leave none behind: "A transition that only involves the developed and large economies will not be durable. A universal GHG levy, with the majority of funds dedicated to ensuring the poorest and most vulnerable match step the transition, is the only tool to provide an equitable process to decarbonizing the shipping industry at speed and scale. We must not forget the fleets of smaller, older ships that service the majority of the third world."

A global and/or regional fuel mandate is seen as the second most impactful climate policy, behind a global price on GHG emissions. Both options have their advantages and can complement each other. However, one advantage of regulation that effectively puts a price on GHG emissions is that it can generate revenues that can both be used for supporting the deployment of zero emission vessels and fuels, and securing an equitable and just transition, especially for developing countries.

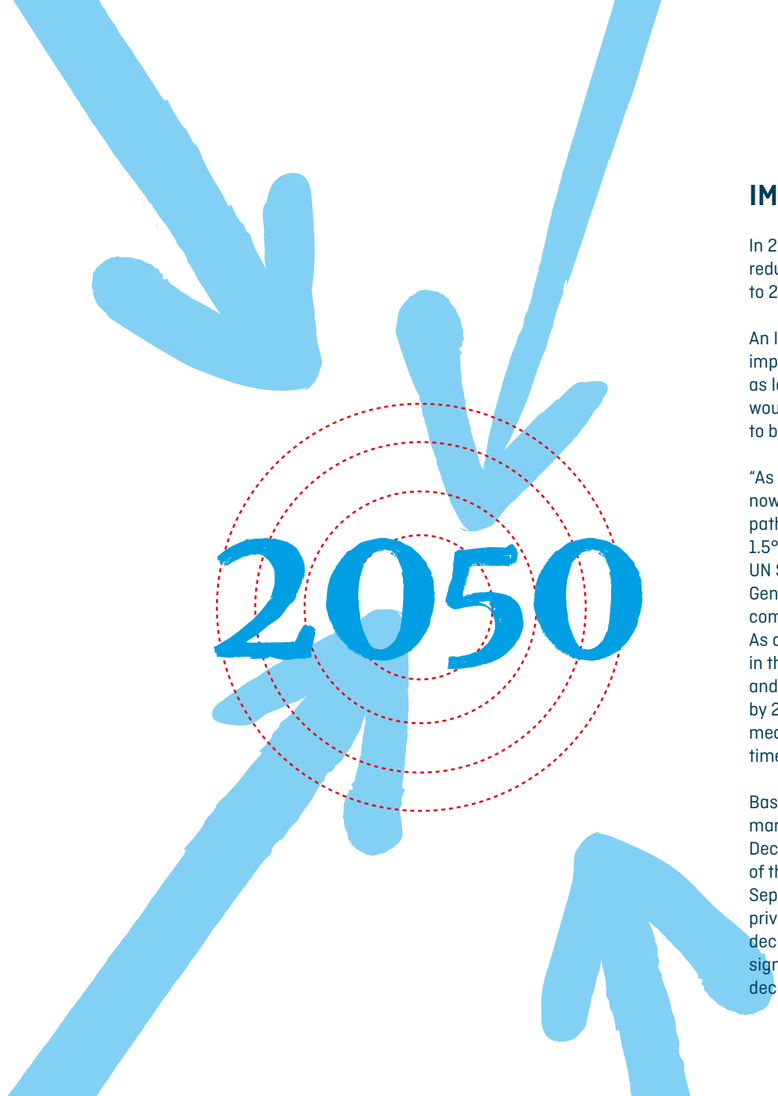
Vessel and fuel subsidies less likely to be adopted

Zero emission vessel and fuel subsidies are viewed as less effective than a price on GHG emissions or a fuel mandate, although their scores indicate the industry finds them having influence. However, global-level subsidies are seen as less likely to be adopted.

"To make the switch to net zero carbon fuels viable in the current market environment, the shipping industry will require sustained carbon prices well in excess of $100 per ton, and at least twice the current European ETS price," Dr. **Matthew Ives**, Senior Researcher, and **Alex Clark**, Researcher, Smith School, University of Oxford, say in a joint statement. "Maintaining a level playing field requires these prices to be applied universally."

Regional/domestic subsidies are seen as both impactful and likely. This may reflect the fact that many zero emission projects are already receiving subsidies. The Getting to Zero Coalition's Mapping of Zero Emission Pilots and Demonstration Projects finds that many projects identified by the mapping receive public funding, especially in the EU.

"Contracts-for-difference (CfDs), in the shipping context, can offer firms a guaranteed price for net zero carbon fuel over a period of time in exchange for its use on a ship," Ives and Clark say. "In so doing, it can stimulate the market for such fuels, attract private investment, and ultimately bring down the costs faster than would otherwise be possible. This mechanism has been applied with marked success in the renewable energy sector, and offers flexibility in design and application, while also being agnostic to the source of funding."



DEEP DIVE ON CLIMATE POLICY AND MARITIME TRANSPORT

IMO 100% by 2050 target

In 2018, the IMO adopted the Initial GHG Strategy, which seeks to reduce emissions from shipping by at least 50% by 2050 compared to 2008 levels. This strategy is set to be revised in 2023.

An IMO 100% by 2050 target is seen as having almost as much impact as a global price on GHG emissions, although it is also viewed as less likely to be implemented. Among respondents, 68% say it would have an important impact, but only 23% believe it is very likely to be adopted.

"As UN Secretary-General Antonio Guterres said, the climate crisis is now a 'code red for humanity'. Only by choosing the most ambitious pathway can we prevent temperature rise exceeding the world's 1.5° (C) temperature goal," said **Selwin Hart**, Special Adviser to the UN Secretary-General on Climate Action and Assistant Secretary-General for the Climate Action Team. "That means every country, city, company, and industry must step up climate actions immediately. As decarbonization of the global economy gathers pace, it is firmly in the shipping sector's own interests—as well as of the economies and societies it serves—to commit clearly to net-zero emissions by 2050, and to take ambitious, urgent, and actionable near-term measures to cut their own GHG emissions and deliver this target on time and in full."

Based on the more than 150 organizations from across the global maritime value chain that have signed the Call to Action for Shipping Decarbonization, it would seem safe to conclude that a large part of the maritime industry agrees. The Call to Action, launched on September 22, 2021, calls on world leaders to work together with the private sector to deliver the right enabling environment for shipping decarbonization, with clear timelines and regulations. With this, the signatories state, the maritime sector can commit to an equitable decarbonization of the maritime supply chain by 2050.

Methodology

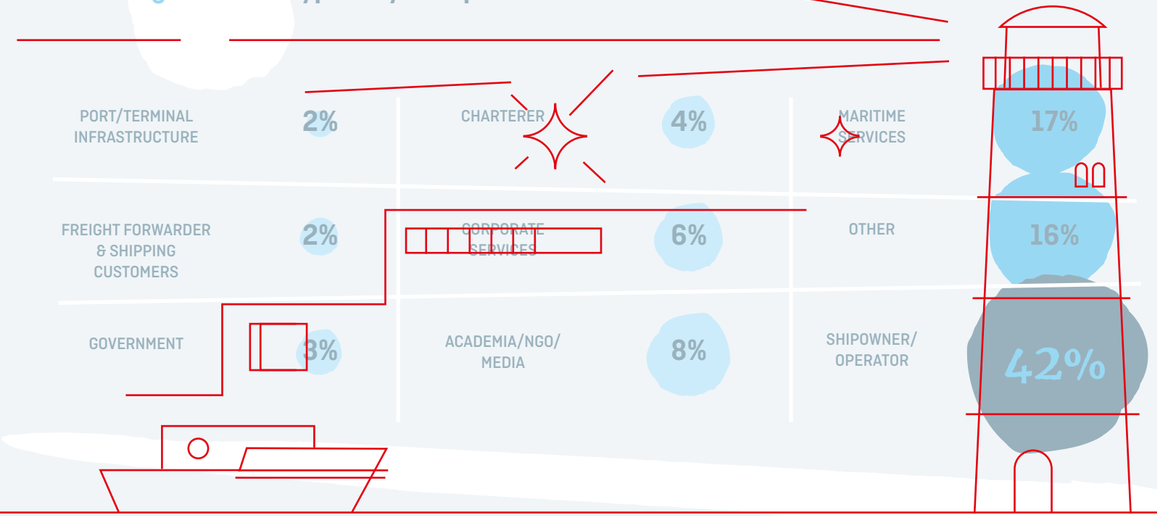
The *Global Maritime Issues Monitor 2021* is based on a survey conducted between April 19 and May 23, 2021, which was completed by senior maritime stakeholders from the Global Maritime Forum, Marsh, and IUMI's multi-stakeholder networks. Respondents included board members, C-suite, and functional decision makers from the private sector, alongside government and civil society representatives. The sample represents a diverse network of maritime stakeholders from six continents.

Respondents ranked a series of global maritime issues on their potential impact to seaborne trade, the likelihood of different events occurring over the next 10 years, and the maritime industry's preparedness for these events. The survey looked at 19 general maritime issues, and sought to understand the maritime sector's perception of different climate policies and their effectiveness in helping the sector reach decarbonization targets.

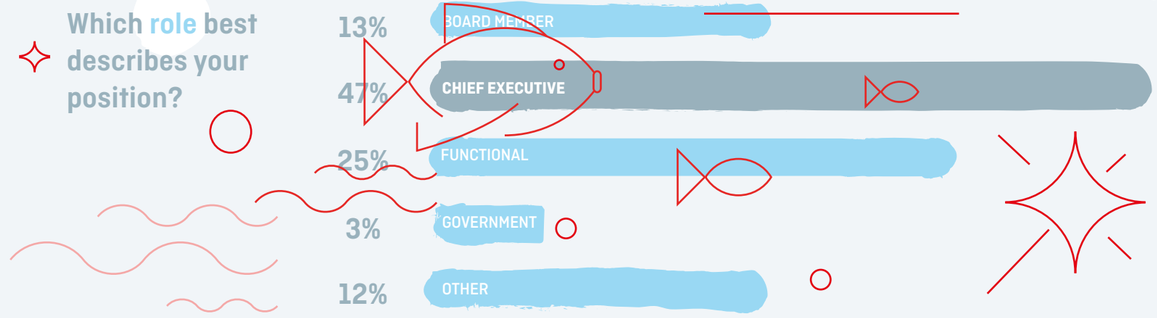
The responses were coded to allow comparisons. Arithmetic mean scores were calculated for each issue and used to rank them in terms of likelihood, impact, and preparedness. Leaders and experts were then asked to comment on and provide context for the findings between July 6 and August 27, 2021. The results were used to produce an impact vs. likelihood vs. preparedness chart and to provide the supplementary evidence used throughout the report. In the deep dive, only impact and likelihood were assessed. The results were used to produce an impact vs. likelihood chart.

Survey population

What organization type do you represent?



Which role best describes your position?



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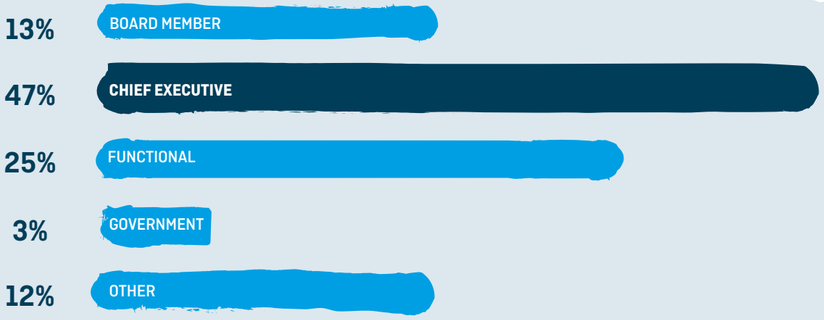
Survey population

What organization type do you represent?

PORT/TERMINAL INFRASTRUCTURE	2%	CHARTERER	4%	MARITIME SERVICES	17%
FREIGHT FORWARDER & SHIPPING CUSTOMERS	2%	CORPORATE SERVICES	6%	OTHER	16%
GOVERNMENT	3%	ACADEMIA/NGO/ MEDIA	8%	SHIPOWNER/ OPERATOR	42%

Which role best describes your position?



In which region is your office based?

25%
Asia

2%
AUSTRALIA / OCEANIA

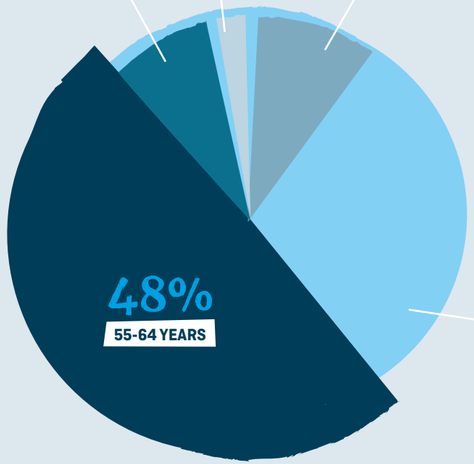
3%
AFRICA

13%
North America

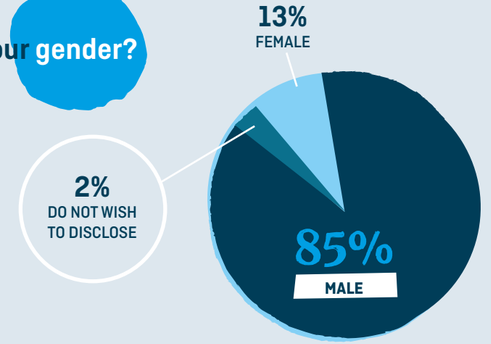
<1%
LATIN AMERICA AND THE CARIBBEAN

57%
Europe

What is your age?



What is your gender?



Global maritime issues

Economic issues

Changing trading patterns
Changes to the maritime trading landscape and supply chain that will have an impact on global trade (for example, One Belt One Road, deindustrialization, near-sourcing).

Failure or shortfall in infrastructure
Failure to adequately invest in, upgrade, and/or secure transportation infrastructure, leading to loss of economic activity, pressure, or a breakdown with system-wide implications.

Fuel price increases
Increases in fuel prices leading to economic pressure or uncertainty for the maritime industry.

Global economic crisis
A significant downturn in the global economy resulting in a lack of growth for the maritime industry.

Insufficient access to finance
Inability of the maritime industry to attract sufficient finance for long-term investment.

Geopolitical issues

Geopolitical tension
A bilateral or multilateral dispute between states that escalates into economic, military, cyber, societal, or other conflict.

Governance failure
Inability of regional or global institutions to resolve issues of economic, geopolitical, or environmental importance.

Increased piracy
An increase in the practice of attacking and robbing maritime businesses at sea or on land.

Terrorism
An unlawful use of violence and intimidation by individuals or groups with political or religious goals that inflicts human or material damage.

Environmental & human health issues

Decarbonization of shipping
The various consequences to the maritime industry resulting from pressure—regulatory, competitive or societal—to reduce the use of or eliminate fossil fuels within shipping, and replace them with fuels and/or technologies that do not emit greenhouse gasses.

Failure of climate change mitigation and adaptation
Adverse consequences to the maritime industry resulting from the failure of governments and businesses to enforce or enact effective measures to mitigate climate change, protect populations, and help businesses impacted by climate change to adapt.

Major safety incident
An unintended event within the maritime industry that severely disturbs normal operations and has vast irreversible consequences on human life and/or the environment (for example, explosion causing loss of life, oil spill).

New environmental regulation
Efforts to minimize the maritime industry's negative impact on the environment (for example: SOx and NOx emissions, ballast-water discharges, ship recycling) through new regulation (excluding regulation pertaining to the decarbonization of shipping).

Pandemics
Outbreak of a disease that occurs over a wide geographic area and affects an exceptionally high proportion of the population.

Societal issues

Societal demands for sustainability
Rise in demands for organizations to act responsibly with regard to the environment, society, and the economy (for example, preservation of biodiversity, diversity and inclusion, circular economy).

Workforce and skill shortages
Shortages in the maritime industry's workforce, either in size, type, skill, or experience, both at sea and on land.

Digital issues

Autonomy technology
Technology that is able to perform tasks without human interaction (for example, unmanned ships, autonomous ports).

Big data and Artificial intelligence
The process of collecting large amounts of data and using artificial intelligence to interpret it, learn from it, and apply these learnings to specific tasks and goals.

Cyberattacks and data theft
Attempts by hackers to damage or destroy a computer network or system causing economic impact and the exploitation of private or official data.

Deep dive on climate policy and maritime transport

Global price on GHG emissions
A measure that incorporates the societal and environmental cost of GHG emissions from shipping into the cost of doing business. The price would apply to all GHG emissions from international shipping, and could result from different mechanisms such as (but not limited to) a levy on either fuel consumption or GHG emissions, or a market for trading emission allowances with a decreasing cap.

Regional or domestic price on GHG emissions
A measure that incorporates the societal and environmental cost of GHG emissions from shipping into the cost of doing business. The price would apply to GHG emissions resulting from predefined regional or domestic activity, for example, within the European Union or within a specific country.

Global fuel consumption mandate
Regulation that requires the consumption of a certain percentage of low/zero emission fuels similar to current fuel mandates for road transport. The mandate would apply to all international shipping/fueling.

Regional or domestic fuel consumption mandate
Regulation that requires the use of a certain percentage of low/zero emission fuels. The mandate would apply to consumption in a predefined regional/domestic area of shipping fueling, for example, within the European Union or within a specific country.

Global zero emission vessel subsidies
Direct or indirect subsidies that significantly lower the cost of the construction of zero emission vessels, and which are made available from global sources, such as an IMO fund, to stakeholders irrespective of their regional or national affiliation.

Regional or domestic zero emission vessel subsidies
Direct or indirect subsidies that significantly lower the cost of the construction of zero emission vessels, and that are limited to stakeholders from a specific region or country.

Global zero emission fuel subsidies
Direct or indirect subsidies that significantly reduce the extra cost of using zero emission fuels compared to fossil fuels (for instance, contracts for difference), and that are made available from global sources, such as an IMO fund, to stakeholders irrespective of their regional or national affiliation.

Regional or domestic zero emission fuel subsidies
Direct or indirect subsidies that significantly reduce the extra cost of using zero emission fuels compared to fossil fuels (for instance, contracts for difference), and that are limited to stakeholders from a specific region or country.

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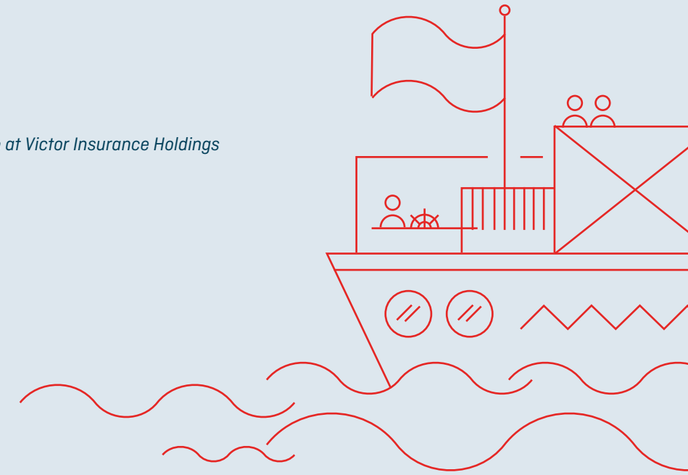

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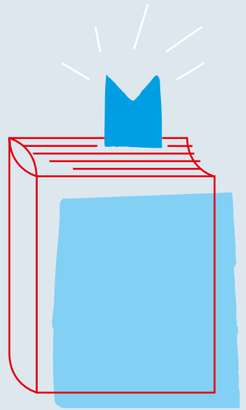
Remember: the time to act is now!



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