

Norges
Rederiforbund
Norwegian
Shipowners'
Association

The background of the cover is a photograph of a ship's deck, likely an offshore supply vessel, during sunset. The ship's white superstructure and red deck are visible on the left, with a large wake of white water churning in the dark blue sea. The sky is a mix of deep blue and orange from the setting sun, with scattered clouds.

MARITIME OUTLOOK 2022



Photo: Simen Guldberg

MARITIME OUTLOOK
2022



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FOREWORD

At the end of January, we received the results that form the basis for analyses in this year's Outlook Report. Here we saw an industry with brighter prospects, heading into a normalized year after two years marked by the corona pandemic. Only a few weeks after the survey, the picture has changed dramatically.

The national security picture was abruptly dominated by Russia's attack on Ukraine. The attack is a gross violation of international law and involves a dramatic development for global security and stability. The war creates a completely new security situation in Europe, with consequences that are difficult to predict today.

Extensive economic sanctions and countermeasures will affect both the security situation and the world economy for some time to come. Forecasts for the coming year are consequently characterized by great uncertainty - especially with regard to energy policy, economic expectations for the year, and the international picture.

Shipping is by nature a cyclical industry that is accustomed to adapting to rapid shifts in its surroundings. This year's Outlook Report shows that the industry is still able to adapt quickly.

Following two tough years with the pandemic, the signs are pointing in the right direction. Fewer ships are in layup. Shipowners have increased revenues and there are cautious expectations of improved profitability for the coming year. In the next few years, shipowners plan to build 162 ships and eight rigs. All these vessels



will be built with technology that reduces emissions, and nine out of ten shipowners believe they will be able to deliver climate-neutral solutions in line with the Norwegian Shipowners' Association's ambitions for the future.

Seaborne transport is already the most climate-friendly and energy-efficient mode of transport available, and the Norwegian maritime industry is leading the way in making the industry even greener.

The key lies in the experience and competence found in the Norwegian maritime cluster. Over the years we have learned how to utilize the ocean's resources, and now we are embarking on a new era of energy production at sea. Offshore wind can become our new industrial epoch and a key element in meeting future energy challenges. If we are to succeed in this as we have done in the past with oil and gas activities, we will once again need robust and predictable framework conditions. We have had this for decades under different administrations. Norwegian governments have seen the value of developing the Norwegian maritime sector.

The Hurdal platform gives us reason to believe that the new government will do the same.

We are used to changing as the world around us changes. And we are accustomed to being in the forefront. Norwegian shipping and the maritime industry will continue to take the lead.

A handwritten signature in blue ink that reads "Harald Selvig". The signature is written in a cursive, flowing style.

SUMMARY

2021 was yet another year marked by the corona pandemic. Intrusive infection control measures led to extensive operational challenges for shipping companies. For a prolonged period of time, carrying out crew changes presented major challenges, and restrictions on port calls delayed and complicated essential logistics operations. Three out of four shipping companies state that they experienced a significant or very significant degree of operational challenges in 2021 as a result of the corona pandemic.

Shipowners expect major operational challenges in 2022 as well, especially outside Norway. Nearly three out of four shipowners expect significant or very significant operational challenges outside Norway. At the same time, we see that almost no companies expect 2022 to proceed without any form of operational challenges. This indicates that the corona pandemic will affect Norwegian shipping also in 2022.

Modest growth in 2021

The collective revenue of shipowners organized in the Norwegian Shipowners' Association remained relatively stable from NOK 216.5 billion in 2020, to NOK 217.4 billion in 2021. The offshore segments have faced very demanding times since the oil price collapse in 2014.

Rig companies in particular have experienced a large drop in turnover in 2021, amounting to 11 percent. Rig companies have had their turnover more than halved since 2014, with turnover in 2021 of about NOK 31 billion. Offshore service shipping companies have seen their turnover further reduced by four percent, and are now reporting total turnover of NOK 56 billion. This is also nearly half of turnover compared to 2014.

The transport segments experienced significant growth in turnover in 2021. Deep sea shipowners experienced growth of five percent, and now report total revenues of more than NOK 112 billion. Short sea shipowners had growth in turnover of seven percent, and now report revenues of almost NOK 10 billion.

The passenger ship segment also experienced a growth in turnover in 2021, but this will only make up about one-seventh of the reduction they experienced in 2020.

Guarded optimism in 2022

Optimism has increased slightly for 2022, with overall modest positive expectations for the year. Collectively, shipping companies state that they expect an increase in turnover of four percent in 2022. If the forecast is correct, shipping companies' total revenues will end up at around NOK 227 billion in 2022, up four percent from 2021.

The offshore segment is markedly divided in its expectations for 2022. Offshore service shipping companies expect a significant growth in turnover, about eight percent, giving total revenues of about NOK 61 billion. Rig companies expect a further decline in turnover in 2022, of about seven percent.

There is considerable optimism among short sea shipowners. As many as three out of four expect growth in 2022, and none anticipate reduced turnover. Overall, they expect growth of seven percent, matching growth numbers from last year.

By far the strongest optimism is to be found among passenger shipowners, with all companies anticipating growth in 2022. In total, passenger shipowners expect revenue to more than double, giving growth of 111 percent. This growth would lift

passenger shipowner revenues to above the pre-pandemic level.

The deep sea segment is divided in its expectations for 2022. Fifteen percent of shipowners report expectations of significantly lower revenues, explained by restructuring of the fleet through the sale of vessels. The remaining companies expect about the same or somewhat increased turnover as a result of stronger markets. Overall, there is an expectation of a reduction of about one percent in turnover in 2022, related to changes in the number of ships in the fleet.

Fewer ships in layup

Following a very demanding 2020, it is clear that activity picked up significantly in 2021. Layup figures declined from 204 ships and rigs laid up in January 2021, to 86 ships and rigs in layup in January 2022.

Offshore service shipping companies are still reporting high layup figures. Sixty-two offshore service vessels are currently laid up. This is a significant decrease from last year, when 144 offshore service vessels were in layup. Rig companies have also significantly reduced their layup figures. Rig companies entered 2021 with 23 ships in layup. The expectation of 13 rigs in layup by year's end has been met precisely.

As of January 2022, deep sea shipowners have a total of four vessels in layup. This is a significant reduction from last year, when this segment had 22 vessels in layup. This reflects the current strong deep sea market. Short sea shipowners report seven vessels in layup. These ships are exclusively related to passenger transport, an indication of the demanding market for passenger shipowners over the last two years.

All segments expect a further reduction in layup figures in 2022. In total, shipowners expect layup figures to be reduced by more than a third. In particular, offshore reports significant and positive expectations for 2022. Passenger shipowners expect only one ship in layup by the end of 2022.

170 new ships and rigs the next five years

In this year's survey, 54 percent of shipping companies state that they plan to order new ships or rigs over the next five years. Companies estimate that they will order a total of 162 ships and eight rigs in the five-year period. The transport segments in particular (deep sea and short sea) make up the largest proportion of shipping companies stating the intention to sign new contracts.

Maritime policies work

The Norwegian maritime industry employs almost 85,000 people in Norway, creates value for NOK 154 billion a year, and is ranked as the world's fifth largest maritime nation in terms of fleet value. In order for Norway to maintain its position as a maritime superpower, internationally competitive framework conditions are needed.

A competitive tonnage tax, a net wage scheme for seafarers and an attractive ship register are the most important framework conditions in fierce international competition. It is also important to preserve the high proportion of Norwegian private owners in the industry. The wealth tax weakens the competitiveness of this ownership by systematically discriminating against Norwegian owners in favour of foreign ownership groups and publicly owned companies. Ninety-four per cent of shipping companies believe that it is important or very important to abolish the wealth tax on working capital in order to strengthen Norwegian private ownership,

and half of shipping companies believe the wealth tax has negative consequences for the green shift.

Norwegian shipping companies are dependent on operational seafaring expertise. The ongoing process of implementing Norwegian wage and working conditions in Norwegian waters will lead to Norwegian seafarers currently employed by shipowners being phased out to cover costs, as Norwegian wages are not competitive anywhere else in the world. Norwegian seafarers' competitiveness is strengthened through a statutory and improved subsidy scheme for seafarers, through an industry agreement for wages and working conditions on the Norwegian continental shelf, and through the public sector setting requirements for Norwegian wages and working conditions in public procurement.

Shipping to be climate neutral

The Norwegian shipping industry has high ambitions to become climate neutral in 2050, and from 2030 Norwegian shipping companies will only order ships based on zero-emission technology. Over 90 percent of shipping companies say that they believe they will be climate neutral by 2050, in line with the Norwegian Shipowners' Association's climate strategy. The government must strengthen and accelerate the green shift through a targeted set of instruments.

Today, traditional fuels are significantly cheaper than more climate-friendly alternatives. In an industry characterised by tough competition, it is crucial that the price difference between fossil and climate-friendly fuels be reduced if the green transition is to be speeded up. Therefore, there is a need for a CO₂ fund that can accelerate development of new technologies and alternative forms of energy in the maritime industry.

The era of offshore wind must be launched

Norwegian Shipowners' Association members are already embarking on the era of offshore wind, but it is happening in other countries. As many as 85 percent of Norwegian Shipowners' Association members believe that a domestic market for floating offshore wind is a prerequisite for their ability to compete internationally. We believe that the government's strategy for offshore wind does not provide the necessary momentum needed in offshore wind development, and fear that this will lead to Norway continuing to lag behind its European competitors.

Shipping is international

Shipping represents the most important infrastructure for trade between continents. In order to ensure that shipping can operate on equal terms, adopted regulations must in fact be implemented by IMO member states and practiced equally across national borders. It is crucial that the Norwegian authorities support international rule of law and multilateral governance at a time when globalization is increasingly being challenged by regional advances, national interests and protectionist forces. More than half of shipowners report that they are negatively affected by global protectionism.

A DARK DAY IN WORLD HISTORY

The global community awoke on February 24 to the darkest day in post-war history.

Russia's attack on Ukraine was underway. Overnight, security concerns in Europe escalated.

World leaders condemned President Putin almost unanimously, and history's most severe and comprehensive sanctions were announced the same day.

"Even though Russian intentions with political dialogue and diplomacy proved to be insincere, few believed that Russia would choose to launch a large-scale attack on their neighbour Ukraine, Europe's second-largest country. The attack is an unacceptable violation of international law," says Audun Halvorsen, Executive Director for security and contingency planning in the Norwegian Shipowners' Association.

Society had not had time to put the pandemic no one was prepared for behind it, before the unthinkable and unexpected struck once again. For shipping, an industry highly exposed to all the world's crises, the consequences of the pandemic are still being felt. No one yet knows just how this crisis will play out.

"The war will have major consequences for security in our surrounding areas, for the world economy and potentially also for global supply chains. At the same time, it is too early to determine all the potential consequences for our members," says Halvorsen.

Ukrainian and Russian sailors represent over 14 percent of the world's crews, according to the International Chamber of Shipping. Many of these seafarers work on Norwegian Shipowners' Association members' ships. The safety of seafarers and ships is a priority for Norwegian shipowners.

Halvorsen reports that the association works closely with Norwegian authorities, the Norwegian Shipowners' Mutual War Risks Insurance Association (DNK) and NORMA Cyber – a maritime cyber security centre built up by the Norwegian shipping industry.

"Together we maintain a high level of contingency planning for our members in the region. In situations that are unclear and unpredictable, the competence and strength of this contingency planning collaboration is unique and highly valuable."



Photo: Fredrik A. Rosså

The maritime industry is a rural industry

The outlying municipalities top the list of municipalities with the highest proportion of maritime employees.

If you were to ask random people on the streets of Fedje or Hyllestad in Vestland, or Dønna in Nordland, it is far more likely that they will work in the maritime industry than if you were to do the same in Bergen, Oslo or Stavanger.

The three municipalities top the list of counties with the most maritime employees per capita, a new analysis from the Norwegian Shipowners' Association and Maritime Forum shows. Overall, the maritime industry employs almost 90,000 people.

"The maritime industry is to a very high degree a rural industry. The companies offer high- competence workplaces along the entire coast, with jobs both at sea and on land. The industry is international, which provides a unique opportunity to combine family life in Norwegian districts with work around the world," says Harald Solberg, CEO of the Norwegian Shipowners' Association.

Most companies in the industry are small and medium-sized, according to this year's value creation report from Maritimt Forum. Only one percent of the companies have more than 500 employees. These are largely shipowners, and they accounted for over a quarter of employment in the maritime industry in 2020.

"Shipowners are the hub of the maritime cluster, and an important reason why Norway can boast a complete and unique maritime industry," Solberg continues. "Shipowners create fertile ground for a number of other segments of the industry as

well, whether it be seafarers, equipment suppliers, shipyards, finance, insurance, class societies or related services. Overall, they are absolutely crucial for employment and value creation along the entire coast."

The value creation report also shows that maritime companies, to a greater extent than other industries, are located in less central areas. As many as 57 percent of these enterprises are located in rural areas, compared with 28 percent of enterprises in the rest of Norwegian business and industry.

Among the ten municipalities with the highest proportion of maritime employees, none has more than 3,000 inhabitants.

The top ten municipalities with the highest proportion of maritime employees in terms of population are:

1. Fedje (56.2 %)
2. Hyllestad (36.4 %)
3. Ulstein (21.0 %)
4. Austevoll (20.7 %)
5. Sande (20.3 %)
6. Utsira (18.7 %)
7. Herøy (Møre og Romsdal) (16.8 %)
8. Kinn (14.7 %)
9. Flatanger (14.7 %)
10. Dønna (14.2 %)

Sources: Maritimt Forum/Menon Economics and Statistics Norway.

Government seeking a green transition in the blue industries

On October 14, Norway got a new minister responsible for the maritime industry. Bjørnar Selnes Skjæran is the man holding the reins when framework conditions for the industry are to be further developed. In addition to his post as Minister of Fisheries and Ocean Policy, he is the deputy leader of the Labour Party, and a central figure when the party makes strategic choices.

He is clear on what impresses him most about the maritime industry, immediately highlighting the complete Norwegian maritime cluster.

"It is impressive how Norway, through generations of maritime competence, capacity for innovation, and adaptability, has managed to build up a complete maritime cluster that places us among the world's elite in shipping," says Skjæran.

One of the most important challenges the industry will face in the coming decades is the need to reduce its climate emissions considerably. The industry itself has expressed an ambition to halve emissions by 2030, and be climate neutral by 2050. Skjæran believes the industry has all the prerequisites for success, and emphasizes that the Norwegian



Photo: NTB/The Office of the Prime Minister

authorities must actively support the work.

"If there is one industry in the world that has what it takes to succeed in climate change, it is the Norwegian maritime industry. The maritime industry is already at the forefront of the development of green

solutions for shipping. We are leaders in batteries, hydrogen and ammonia. Now we must build on that," he says.

The government's political platform, the Hurdal platform, states that the government, together with industry, will ensure that the development of low and zero emission shipping makes an important Norwegian contribution to reducing global emissions.

"The business community knows its own pain points, and they have the best prerequisites for identifying bottlenecks and obstacles to the green transition. When the authorities, business and industry,



Photo: Shutterstock

commercial partners and knowledge environments are working well together, that is when we achieve the best results,” he says.

As an important part of their work to facilitate new climate and environmental technology in the industry, the government is preparing a green restructuring package for climate-friendly restructuring of ships.

“We have started work on a restructuring package for climate-friendly shipping. Among other things, we are taking a closer look at instruments, regulations, infrastructure and public procurement. The goal is for Norway to retain its leading role in the green shift in the maritime industry,” he says.

CEO of the Norwegian Shipowners’ Association,

Harald Solberg, welcomes both the minister and the restructuring package. The Norwegian Shipowners’ Association has ambitious members who have already made great progress toward the green shift.

“The Norwegian maritime industry has been at the forefront all along, which means that strict climate requirements and ambitious international climate goals represent a competitive advantage for the Norwegian cluster. It is positive that the government both recognizes and continues to build on this. We have high expectations for the government’s restructuring package, and are happy to contribute to the work,” says Solberg.

The maritime industry employs many and creates significant value

The maritime industry is one of Norway's most important industries and plays an important role in value creation and employment in many parts of the country.

Along the Norwegian coast there is a complete maritime cluster that includes world-leading companies in a wide range of segments. Norwegian companies and knowledge institutes are behind a continuous stream of innovations in ship design, dynamic positioning, propulsion systems, equipment and services.

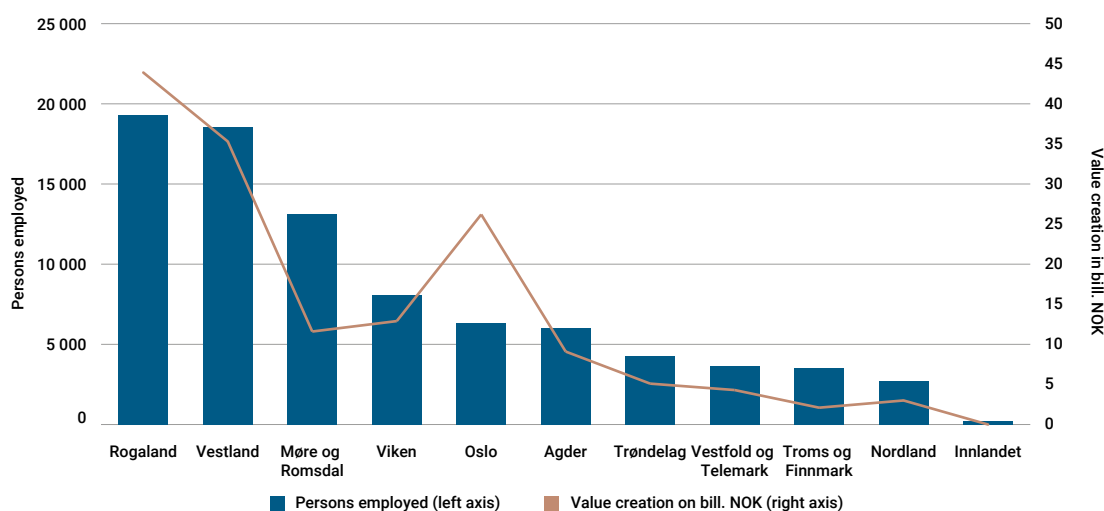
On the threshold of a new decade, prospects were good for growth for the maritime industry in Norway. At the beginning of 2020, the industry counted more than 90,000 employees. That is almost 4,000 more than the low point following the fall in oil prices in 2017, but it is still almost 10,000 fewer than the high point of 2014.

The highest number of employees is found in Rogaland and Vestland, and these are also the counties with highest value creation. The two municipalities accounted for more than half of value creation in the maritime industry in 2020.

In March 2020, the corona pandemic and a lower oil price reversed optimism in the industry. Now, however, it seems that the pandemic did not hit as hard as feared, and that things have generally gone well in the maritime industry. Value creation for 2021 is estimated at NOK 154 billion, in line with 2020. The number of employees also appears to be at the same level as the previous year.

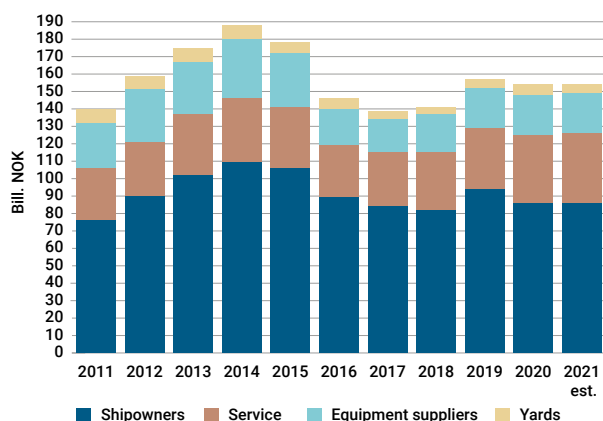
Key figures for 2021 indicate that the industry as a whole did not experience growth from 2020. The stagnation can be attributed to many different factors, but there are some that stand out: the order books for offshore and cruise will be emptied by 2022, cruise tourism has not yet picked up, and corona measures in Norway and in other countries prolonged the effect of the corona pandemic on the maritime industry in 2021. On the other hand, rising freight rates, high oil prices and large investments in offshore wind indicate that growth will pick up in the coming years.

Key figures by county for the maritime industry, 2020



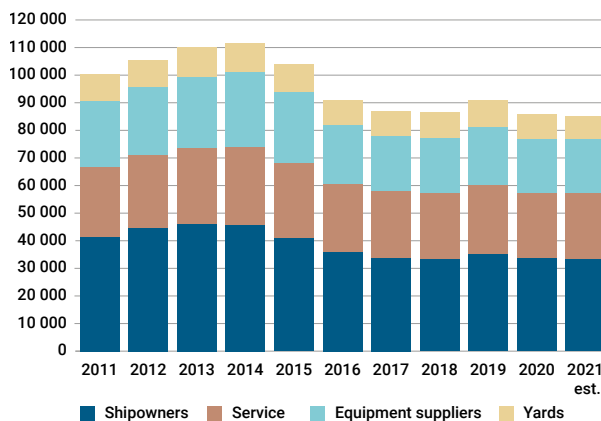
Source: Maritimt Forum / Menon Economics

Value creation in the maritime industry 2011-2021, by main groups. Bill. NOK



Source: Maritimt Forum/Menon Economics

Number of employees in the maritime industry in Norway 2011-2021, by main groups



Source: Maritimt Forum/Menon Economics

Significant possibilities in new markets

Norwegian shipowners and maritime companies have been technology leaders for many years. Among other things, they are central to the advanced technological development of the oil and gas industry. Specialized vessels, positioning systems and control systems are examples of areas where Norwegian industry is a leader. Norwegian maritime companies use technology and expertise from, among others, the offshore industry to establish themselves in new markets. This knowledge transfer is crucial for

success in other maritime industries. The market for floating offshore wind is an area where Norwegian companies see opportunities and can take the lead. Several companies have already invested in both vessels and technology to position themselves in this market. In the years to come, further opportunities will open up for production of renewable energy, increased food production and the harvesting of other natural resources such as minerals and medicines. Here, too, Norwegian companies have the opportunity to take a leading position.

“Ocean influencers” bring attention to the industry

In recent years, the Norwegian Shipowners' Association and Maritimt Forum have invited young people to become Maritim Karriere Ambassadors. The ambassadors help profile their work or education to those who are curious about what the maritime industry has to offer.

In their role as ambassadors and “ocean influencers”, they are visible in Maritim Karriere’s social media, providing important voices for the future maritime industry in various arenas and meetings throughout the year. This year’s ambassadors represent broad diversity in the industry, with different vocational and educational directions.

20-year-old Elise Kvilhaug is a motorman apprentice at Fjord1. “This profession suits anyone who is willing to make a contribution. For those who want to challenge themselves and explore the world in a different way, you must be prepared to be away from family and friends, but in return you get the world’s best ‘office’ and many good experiences with good people. For example, if you have the opportunity to

serve on the school ship Gann, I recommend doing so. Do not be afraid to do something else than what your friends are doing!”

Reidar Fredrik Frydenlund is 26 years old and employed as chief officer in Norled. He is now on leave to sail with Hurtigruten. “I love my job as deck officer and can never get enough of the coast. You have to deal with stress, get along with different people and sometimes work long days, but it’s worth it. And if you change your mind, there are many opportunities on land as well. This is a future-oriented industry. If you are considering a maritime career, I recommend doing what I did: Take upon nautical studies and become a deck officer!”



As a child, Sara Marie Melbye followed ships from her living room window with great interest. Today she holds a Master's degree in engineering and works as a maritime trainee for DOF Subsea. The 25-year-old observes that stricter environmental requirements are being set for the maritime industry, meaning that the industry is dependent on recruiting creative and talented individuals who can contribute with innovative solutions.

"It's fun to be part of the green shift. We are working to make the ships greener and carrying out several survey and construction projects within the renewable sector. In addition, the job consists of many different experiences and interesting people with different ways of thinking," Sara says.

Martin Hellum is 33 years old, and his father sailed abroad in the 1970's. He is convinced that the stories he was told as a boy greatly influenced his choice of a maritime career. Today he works as a bosun on the Coast Guard ship Nordkapp. "It started with

me taking two years of electrical engineering in high school. After finishing my apprenticeship, I started my military service, as an artilleryman on KV Nordkapp. I immediately got a feel for the maritime lifestyle, which is varied, interesting and fun," he says.



**FOLLOW THE "OCEAN
INFLUENCERS" DAY BY DAY
ON SNAPCHAT**

A world leader can always be better

Growing up seaside in Bømlo, with his first investment in an outboard motor before the age of five, it was perhaps written in the stars that Knut Arild Hareide would one day head up the Norwegian Maritime Authority.

The newly appointed director looks forward to leading the agency from Haugesund and has clear thoughts about Norway's most globally competitive public administration.

"This is about providing the world's best service to our customers," Hareide emphasizes.

Norway as a maritime nation is a world leader in several areas. The Norwegian Maritime Authority director has clear ambitions and is well aware that inertia is rarely a recipe for continued success. A world leader can always get better, he maintains.

"Digitization and the green shift characterize the global maritime industry and will require major changes in a short time. Here, the Maritime Authority will continue to be an important contributor and interlocutor with its customers and the entire maritime community. This may require us to be creative and come up with new thinking if we are to accelerate the pace and retain the role of a world-leading maritime nation, also into the future," Hareide reflects.



Photo: Norwegian Maritime Authority

The Norwegian flag has strengthened its position during the pandemic and continues to be associated with quality. This trend must extend into the future, Hareide emphasizes. "In practice, it also requires a flag that can withstand international competition and thereby remain globally competitive.

Decisions made here at home will have great significance for Norway's future as a shipping nation."

The Norwegian Maritime Authority's new director is concerned with listening to industry needs, and emphasizes the importance of future regulations being enforceable in practice.

»» Viking Energy to be the first offshore vessel run on green ammonia

The supply ship Viking Energy will be retrofitted to cover long distances on pure ammonia without greenhouse gas emissions. The EU has allocated NOK 100 million to the ShipFC project, which will pave the way for zero-emission vessels.

Viking Energy is owned and operated by Eidesvik, and will be the first ship in the world to have an ammonia-powered fuel cell installed. The new energy system will enable the ship to sail on clean fuel for up to 3,000 hours a year.

With a 2 MW fuel cell, the project will demonstrate that longer voyages with zero emissions are possible for larger ships with high power requirements. The aim is also to verify that a large fuel cell can supply all the electrical power needed for the ship systems on board in a safe and efficient way.

Cuts emissions by 70 percent

The retrofit project is one of several ongoing green projects in the company. Eidesvik has also entered into collaboration with Aker BP, where the goal is to cut emissions from several existing supply vessels by at least 70 percent with new technology. The project has been named "Retrofit".

"We believe that new and green technology can help extend the life of existing ships, while at the same time achieving major emission reductions," says Gitte Talmo, CEO of Eidesvik.

Talmo also believes that retrofitting has several advantages, since significant energy is required



Photo: Eidesvik Offshore ASA

for both recycling and building of new ships.

"Cutting emissions on existing ships makes a lot of sense in a resource perspective, in addition to being an economically realistic alternative. Retrofitting six to seven vessels to achieve 70 percent lower emissions will cost the same as building one new zero-emission vessel. Emissions reductions with the first alternative will be significantly higher," says Talmo.

A significant part of the ShipFC project will consist of upscaling a 100 kilowatt fuel cell to 2 megawatts. The fuel cell itself will first be tested on land in a parallel project, where Alma is responsible for development and construction. The testing will be performed at the catapult center Sustainable Energy in Stord.

The ammonia system onboard Viking Energy will be supplied by Wärtsilä, and is scheduled for installation in 2024.

First with both LNG and ammonia

In addition to being the first to use ammonia, in 2003 Eidesvik was the first shipping company to install propulsion systems based on natural gas (LNG), also on Viking Energy.

The company has recently invested in battery packs for a number of its ships, and today 11 of the 12 ships Eidesvik has in operation have some form of battery-hybrid solution.

"Viking Energy has been a success for Eidesvik. In 2024, emissions from the vessel will be reduced by between 83 and 98 percent, and fuel consumption by 42 percent. The ship has been the first in a number of groundbreaking projects, and is tangible proof that our investments in innovation in climate and the environment are bearing fruit," Talmo concludes.

»» At the helm in Skudeneshavn

Since the price of oil fell in 2014, Solstad Shipping in Skudeneshavn has been in transition. And like many other offshore companies, they have been working around the clock with restructuring. Lars Peder Solstad, CEO of Solstad Shipping, has led the company since 2002. "I was never afraid of collapse, and we were never headed there either. But I was very happy when we landed the agreement a year ago," says Solstad.

Like his father, Lars Peder has taken his turn at sea. As a 14 year-old, he took his first summer job at sea on board Normand Jarl. He later sailed in various positions on many of the shipowner's vessels, concluding his life at sea as chief officer on Normand Neptun.

In 1996, he went ashore and started work as a charterer in the company, stepping up as CEO of the operating company Solstad Shipping in 1999, and Solstad Offshore ASA in 2002. He has been at the helm ever since.

But it was his father Johannes who created the empire on the southern part of Karmøy. He still visits the office daily, at the age of 91.

"Values fluctuate, as they have always done, but it does not affect the way we work. We have built companies, and we have done very well, even though we have weathered extreme periods in recent years."

In 2015, the effect of the oil price fall hit the offshore industry with full force, and the family company on Karmøy had to react.

"The market remained abysmal, and we reached a level where we realized that it was no longer possible to continue. Everyone involved realized that. Aker was the answer for us. We had to initiate restructuring with our creditors, and it turned out to be a long and demanding process." But it worked.

"The company is still in business, based on the values and culture that



Photo: Solstad Offshore ASA

has been built up over many years here in Skudeneshavn. We have an active board and the reporting lines are as before. Solstad is Solstad. The difference between then and now is that we are a significantly larger company, and we have acquired solid partners with capital and expertise. This gives us a solid impact," Lars Peder says.

He sees a light at the end of the tunnel:

"Activity in the market has increased, rates are on the rise and we have a strong position both in Norway and internationally that we intend to take full advantage of," says the 50 year-old.

The head office of the shipowner, towering at the entrance to Skudeneshavn, currently employs around 100 people - about 30 more than in 2014. Solstad believes it is an example of company building. A new generation of expertise and ideas has taken over the office space - a necessity to be able to develop the company further.

"Size is not a goal in itself. But it is important to be big enough to be able to operate globally. We operate on all the world's oceans and have

offices in Rio de Janeiro, Perth, Singapore, Manila and Aberdeen, among others. In total, we have 3,600 employees at sea and on land.

Solstad is optimistic about the future. Solstad Offshore has entered the renewable market with great zeal, and around 10 percent of its revenue is derived from from this segment today.

"We will continue to grow in this market, but I do not believe that the oil and gas business will be phased out anytime soon. For example, the Johan Sverdrup field just off the coast here will produce oil for several more decades. Activity in both oil and gas and offshore wind will continue to grow in the future."

Through the use of new technology and optimization of operations, Solstad's goal is to reduce emissions from its own fleet by 50 percent by 2030 compared to 2008.

"We think this is realistic. Furthermore, we will reduce our own emissions to zero by 2050. I have great faith that new technology will help us get there. Already around 2025, we will see offshore vessels with almost zero emissions," says Solstad.

He is grateful for the support and goodwill of the local community, and he believes the debate on where Solstad Offshore's head office should be located has never been more untimely.

"Skudeneshavn is a good place regardless of good or bad times. The head office should be located here. This is where the competence is located, and we have added new functions in recent years that strengthen this position," he maintains.

CO₂ fund the next step on the road to a green shift in shipping

The Norwegian maritime industry is a spearhead in the international shipping industry's work with climate and environmental technology. Now the industry is ready to take the next step on the journey, through scaling up and industrialization of solutions. For this we need the muscles that a CO₂ fund can provide, says CEO of the Norwegian Shipowners' Association, Harald Solberg.

Norwegian shipping companies are participating in a number of groundbreaking technology projects today, financed by the industry with support from the Norwegian and European authorities. At the same time, policy instruments are not equipped to scale up new solutions, and support evaporates when the technology is considered mature.

"We see that new technology is consistently being developed and introduced to the market, but as soon as it is taken into use, the support that makes it possible to roll out the technology on a large scale disappears. This black hole in the policy instruments has become a climate brake in the restructuring of the Norwegian maritime industry," says Solberg.

In order to close the gap in policy instruments, Solberg believes the NOx Fund provides a good example. The industry has had great success in reducing NOx emissions through technology development supported by the NOx Fund. From 2018 to the present, the fund has provided support

for measures totalling about NOK 2.7 billion, which has helped to cut over 9,000 tonnes of NOx and over 450,000 tonnes of CO₂.

The NOx Fund deserves a successor

"The NOx Fund is a success story that deserves a sequel. Therefore, we believe that the area of responsibility for the NOx Fund should be expanded to cover CO₂ reducing measures, where income can be derived from increases in the CO₂ tax," says Solberg.

When shipping is incorporated into the EU quota system from 2023, large sums will be paid into the EU quota trading system. This represents several billion NOK that the Norwegian authorities will essentially get back, and which should be invested in a CO₂ fund to contribute to technology development and investments in CO₂ reducing measures.

"In EU countries, these funds from the quota trading system will go toward green measures. We



believe that Norway must ensure that Norwegian quota revenues are also used to realize the green restructuring of the industry,” says Solberg.

Contract for differences needed

An important instrument that can also be financed through income from quotas and a CO₂ tax is the so-called contract for differences (Cfd). Such contracts help reduce the price difference between traditional fuel and more climate-friendly alternatives.

“In an industry with low margins and fierce competition, it is crucial that price differences be reduced if development is to be accelerated. To speed up the green shift, we believe that funds from the CO₂ tax and the EU’s quota trading system should be used to finance contracts for differences,” says Solberg.

In a transitional phase, until the price of alternative fuels fall, Cfds can contribute to expanded use of alternative fuels, which in turn can drive more rapid

development of infrastructure for, and production of, alternative fuels. This in turn could bring about a change of pace in the green transition in the industry.

Major ambitions in the industry and with the authorities

Members of the Norwegian Shipowners’ Association have great ambitions of their own, and on behalf of their industry. As many as nine out of ten will invest in climate-neutral solutions when building new ships, and all will invest in technology that enables lower emissions than conventional technology.

“We are in the midst of a major restructuring of the international maritime industry, where everyone is investing in green solutions for tomorrow’s shipping. The industry, the policy instruments and the authorities all demonstrate high levels of ambition and commitment to green shipping. I believe this is reason to have high expectations for what we can achieve in the coming years,” Solberg concludes.



Photo: Höegh Autoliners

» Carbon neutral fuel technology to ensure zero emissions in 2040

Höegh Autoliners' investment in new ammonia-ready ships places the company in a leading position in sustainable shipping. The first vessels are expected to be delivered as early as 2024, and will be the first in the industry to be awarded DNV's "ammonia ready" classification.

The investment in ammonia-ready vessels is the company's latest initiative in a long-term strategy with a target of net zero in 2040. The first four vessels were ordered in January 2022, with an option for eight additional vessels.

Höegh Autoliners has reduced its carbon intensity by 37 percent across the fleet since 2008, and is well on track to achieving the global IMO target of a 40 percent reduction by 2030.

In addition to fuel technology, the size of the ships makes the project unique. One ship will be able to carry cargo equivalent to 9,100 passenger cars, making them the world's largest car transport ships. This amounts to 600 passenger car equivalents more than today's largest car transport ship, also developed,

built and operated by Höegh Autoliners.

"We are working actively to develop innovations in maritime technology, and feel a great responsibility to contribute to the fight against climate change. With the Aurora series, we are accelerating our decarbonisation and taking multiple steps toward the long-term goal of net zero in 2040," says Andreas Enger, CEO of Höegh Autoliners.

The ships are the first in Höegh Autoliners' new Aurora series, and are certified with DNV's new "ammonia ready" and "methanol ready" classifications. This means that ships already under construction are equipped for possible conversion from LNG to ammonia or methanol.

Supplying the ships is the



Photo: Höegh Autoliners

growing Chinese giant China Merchants Heavy Industry (Jiangsu), China's largest ship manufacturer within car and truck transport (PCTC).

"We are pleased to have secured delivery of the first ships already by 2024. By building the world's largest and greenest PCTC ships, we hope to show that the way to zero emissions for the industry is within reach, and that tomorrow's solutions are being developed today," Enger concludes.

Contracts for differences can make all the difference

Switching to greener fuels will have a major impact on emissions in the maritime sector. But in order to realize emission cuts, the price difference between traditional fuel and new energy carriers must be reduced. Contracts for differences (Cfd) can be the solution.

The maritime industry is well under way with a green transition, and has set ambitious targets for emission cuts. In many areas, the maritime industry is leading the way, and Norwegian shipping companies phasing in green fuels or designing new propulsion systems are in the news every week. However, many of the projects are completely dependent on funding from research projects, or support schemes for new technology - at the same time as there is a lack of schemes for scaling solutions.

A key element in reducing climate emissions will be to switch to more climate-friendly fuels, such as hydrogen or ammonia. The challenge is that both hydrogen and ammonia have far higher operating costs than fossil alternatives. This means that a transition involves too great a cost, and cannot be profitable.

"The maritime industry is well on its way to reducing its share of climate emissions. But the solutions must not be so expensive that they have consequences for the operation of the company or how many employees you can pay," says Director of international and climate affairs in the Norwegian Shipowners' Association, Helene Tofte.

Here, contracts for differences can literally make all the difference. Cfd is a scheme where the state covers the price difference between traditional fuel and



the greener alternatives such as hydrogen and ammonia where they will be used on new vessels during a transitional period.

"We must make it as easy to choose green as it is to choose fossil. No one wants to hold on to polluting solutions longer than necessary."

"Contracts for differences will provide the maritime industry the necessary predictability during a restructuring period and make it easier to focus on green solutions. At the same time, it helps to build up hydrogen and ammonia production, which will provide security for the maritime industry - and for other industries that will be dependent on hydrogen and ammonia in the future," Tofte concludes.

The scheme can be financed using funds that companies pay through an increased CO₂ tax and into the EU quota trading system. In this way, the industry will in reality be financing its own green transition.

EU climate ambitions reaching reality

2021 was a marathon year for climate policy in Europe.

Nearly halfway into the five-year period, the European Commission has made good on their promise: making climate the bellwether for all other policy development, establishing the Green Deal framework, adjusting reduction targets for 2030, and presenting a massive regulatory package - Fit for 55 - specifying what is needed and who must contribute to achieve the goals.

It will be no easy task. "It's going to be bloody hard", said EU's climate boss Frans Timmermans when he presented the package in July of 2021.

Shipping is in the spotlight, and among the sectors most highly impacted by the new measures. Shipping will now be included in the quota regime Emissions Trading System (ETS). The proportion of alternative fuels will be increased. There will be demands for shore power and possible changes in energy taxation. The EU's taxonomy also lays down guidelines for which investments in shipping can be regarded as green.

For European shipowners, the most important input is that measures must work in concert and contribute to concrete investments in scaling up green technologies. This will also be the central message in 2022, as the European Parliament and member states continue to work on the content of the Fit for 55 package.

When shipping is fully phased into the ETS in 2026, the industry will contribute significant funds that should be earmarked for restructuring in the maritime sector. The Norwegian Shipowners' Association has calculated that the contribution from the Norwegian fleet could amount to 200 million Euros annually from 2026. In January 2022, the Speaker of the European Parliament supported such an approach, proposing that 75 percent of the contribution from shipping go toward an "Ocean Fund".

"It's going to be bloody hard"



Future propulsion systems

Wärtsilä is a key player in the transition to greener shipping, delivering flexible and efficient engine solutions to a number of shipowners.

What does the company see as the most promising solutions for the future, and what are the main obstacles to a green shift? Roger Holm, President of Marine Solutions in Wärtsilä, shares some perspectives on the way forward for more climate-neutral shipping.

“The next few years will be crucial for restructuring shipping, and it is more urgent than ever to cut greenhouse gas emissions. In the years to come, we will see a gradual transition to motor solutions that are more flexible, with the possibility of combining several energy carriers,” says Holm. “In the future, we will have ships running on green ammonia and green methanol, and there will be a need to use a mixture of fuels to meet profitability and cost requirements. LNG will continue to be important for various industries in a transitional phase. We will also see a rapid

development in electrification and hybrid solutions, and more emphasis will be placed on energy optimization.”

– *What are the most important obstacles to increasing the pace of the green shift?*

“We will need to focus on innovation and on new green solutions. But to succeed, the right incentives must be in place. We must ensure that the transition we are facing is possible to implement in terms of cost. It will require good regulatory and framework conditions and getting the necessary carbon taxes in place. If the industry is to develop new solutions, we must feel secure that it pays to invest and that there are schemes that will contribute to profitability and necessary scaling.”

– Decarbonisation and digitization are two main drivers in the maritime industry. How can digitization contribute to greener shipping?

"Digitization can provide greater optimization of the fleet, which in turn means using less fuel, emitting a smaller amount of greenhouse gases, and operating more cost-effectively. Concrete examples of this are the optimization of sailing routes and the use of the 'just in time' principle, which helps to minimize fuel consumption and ensure the least possible time in port.

– Wärtsilä is active in Norway and has a number of Norwegian partners. How do you see the further development of this Finnish-Norwegian cooperation?

"The massive transformation of shipping we are facing today cannot be driven by individual players. It is only when we work together that we can accelerate green development. Wärtsilä has a number of activities in Norway, both proprietary and in collaboration with Norwegian players. We see impressive ambitions for the green shift from the Norwegian side. This means that we see Norway as an ideal 'hub' to be able to contribute substantially to the decarbonisation of shipping.

» Ready for the offshore wind adventure in Norway

To ensure the development of a competitive industry and motivate investments in the value chain, new areas for offshore wind must be opened regularly, says Sofie Olsen Jebsen, CEO of the newly established technology company Fred. Olsen 1848.

Fred. Olsen 1848 is a newly established company dedicated to the development of technology for the renewable solutions of the future. The company will focus on the development and commercialization of existing and new technologies, and draws on several decades of expertise in renewable energy. The goal is to combat climate change.

Fred. Olsen 1848 builds on over 170 years of experience in identifying and resolving challenges, from shipowning businesses established in 1848. Since then, Fred. Olsen-related companies have continuously contributed to major technological changes, from sail, to steam, to oil, and back to wind.

"The goal is to be at the forefront and be the preferred partner for companies looking for the right solutions in renewable energy," says Sofie Olsen Jebsen.

Technologies the company is working on today are aimed at solving some of the industry's key challenges in floating wind and floating solar energy, and the company is looking at new ways to develop technology without going the way of full-scale demonstration units.

Among other things, the company has developed Mobile Port Solution, an offshore installation interface that uses jack-up installation vessels in sheltered waters to integrate turbines into floating foundation structures. The company is also developing a solution for efficient maintenance of floating wind turbines, as well as Brunel, a floating wind turbine foundation based on a modular approach that enables immediate upscaling and low costs.

These technologies can contribute to building up a

domestic market for offshore wind in Norway, as the solutions are flexible and thus able to create jobs in various ports along our coast. In addition, the company will draw on the cutting-edge expertise of Norwegian subcontractors.

For Norway to create an offshore wind industry that contributes to new green jobs, a long-term predictable perspective is required.

"New areas for offshore wind must be opened regularly in addition to existing announced projects in order to ensure the development of a competitive industry and motivate investments in the value chain. In addition, offshore wind farms must be connected to an offshore network to enable development without subsidies. An offshore network will also provide the basis for large-scale offshore wind development now, with a greater impact on jobs and a transition from oil and gas," says Sofie Olsen Jebsen.

»» The world's first carbon neutral supply ship

Island Crusader is the first vessel on the Norwegian continental shelf to run on biogas. The fuel is CO₂-neutral and produced from fish waste and cow dung.

Island Crusader is a ten-year-old supply ship weighing 8,500 tonnes with full cargo, owned by shipowner Island Offshore. To date, the ship has run on LNG, with peak emissions equivalent to 2,000 fossil cars. In November 2021, the ship logged its first voyage with net zero emissions.

CO₂ emissions halved in two months

Island Crusader is usually

operated with LNG, but as a pilot project, one of two tanks is now filled with biogas. Experience has so far shown no technical challenges with the use of biogas, and it will in practice be possible to fill both tanks with biogas.

"We reduced the use of LNG, and thus emissions from fossil fuels, by 50 percent during the first two months, and our experience with the use of biogas is unequivocally positive," says



Photo: Island Offshore

Tommy Walaunet, CEO of Island Offshore Management AS.

From 15 October 2021 to

»» Awilco subsidiary with the world's largest offshore wind farm on its customer list

Integrated Wind Solutions is the Awilco Group's renewable arm, and is in the process of building special vessels to provide offshore wind services. Already on their customer list is the world's largest offshore wind farm.

In the summer of 2020, the Awilco group established the company Integrated Wind Solutions, which will take over the market for service and maintenance of offshore wind farms.

"The need for renewable energy has never been greater, and will increase sharply in the time ahead. We see tremendous potential in offshore wind, and our aim is to be a competent, relevant and important provider of shipping and services," says Lars-Henrik Røren,

CEO of Integrated Wind Solutions.

In order to make this a reality, they are now in the process of building up a fleet of specialized vessels that will transport personnel and material to and from offshore wind farms. So far, the company has ordered two large specialized vessels scheduled for delivery in the first half of 2023, with an option for four more. The ships have a total capacity of 120 people who will live on board while working on the wind turbines.

"In the EU alone, the authorities have ambitions to develop 300 gigawatts offshore by 2050. This means that we will not only see more, but also far larger wind turbines. This scenario calls for larger and more technical vessels that can deliver efficiently,

with lower costs and with good operational capacity. This is where Integrated Wind Solutions comes in," Røren explains.

Net zero target

The new vessels are designed as plug-in hybrids, but can also be partially operated fully electrically on some sailings. Once offshore charging infrastructure is in place, the goal is to switch to 100 percent electric operation.

"Zero-emission and environmentally friendly solutions will increasingly become a requirement in tender processes, and we are well equipped to meet these requirements from the start. This is where Integrated Wind Solutions will have a competitive advantage compared to retrofitted

31 January 2022, the reduction in CO₂ was as much as 635 tonnes.

Great potential for biogas in the oil and gas industry

Lundin Energy Norway is in charge of the pilot, which has made Island Crusader the world's first carbon neutral supply ship.

"There is a significant potential for the use of biogas in the oil and gas industry, but also other areas where LNG vessels are used," says Johan Mohr, head of procurement and logistics at Lundin Energy Norway.

At present, biogas plants are being built around Norway, and fuel availability is increasing. Nevertheless, there are still challenges associated with both access and logistics.

"The advantage of biogas is that we have a zero-emission alternative we can put right in the tanks, without modifying either machinery or ships."

In the long run, Mohr hopes that the pilot project can help open up new market segments for biogas producers.

As the market grows and

production volume increases, profitability can also improve, and biogas can become a more attractive fuel for shipping.

"As of now, it is not economical, the benefit is purely environmental. Biogas is much more expensive than both diesel and LNG. Lundin has invested heavily in ensuring the lowest possible emissions. Initially, this is a pilot project, and then we will see where this leads us. So far, at least, it is looking very positive," Walaunet concludes.



Photo: Awilco/Integrated Wind Solutions

offshore vessels," says Røren.

The new ships are also equipped to be able to run on both hydrogen and ammonia instead of diesel.

Landed a contract with the world's largest offshore wind farm

Integrated Wind Solutions has already registered interest from

several major players looking to secure transport services. The first ships will be delivered in the first half of 2023, and already have work on order. On 28 April 2021, it was announced that Integrated Wind Solutions will provide services to the world's largest offshore wind farm.

"We are pleased to have signed

an agreement with Dogger Bank, which will charter one of our new vessels. Having the world's largest wind farm on the customer list is an important step for us on the way to becoming a full-service provider of offshore wind services," Røren concludes.

»» Electrifying the Norwegian continental shelf with mobile offshore wind platforms

Odfjell Oceanwind will contribute to the petroleum industry succeeding in halving its emissions by 2030. They are currently developing mobile offshore wind platforms that will produce electricity from 2024.

The plan is to have the first mobile wind farms ready for production of electricity from 2024, as an alternative to electricity from land. The company has thus far received NOK 10 million from Enova to develop the concept.

"Access to enough renewable energy, both on land and at sea, is one of our biggest challenges if we are to achieve the climate goals. This also applies to the petroleum industry, which aims to cut climate emissions by 50 percent by 2030, says Per Lund," CEO of Odfjell Oceanwind.

"Given this, it is a great advantage to be able to supply renewable energy to the shelf without actually affecting the power system on land, and there

comes at a time when we want to create new, power-intensive industries across the country."

Reduces up to 70 percent of CO₂ emissions

Odfjell Oceanwind will supply typical 'off-grid' or 'micro-grid' customers. These are not connected to the public power grid, and often operate on fossil fuels such as natural gas or diesel. To achieve this, they have entered into collaboration with both Siemens Gamesa and Siemens Energy, who will produce wind turbines and batteries for the offshore wind platforms, respectively.

"Together with Siemens, we have developed a completely unique offshore wind platform solution that we call "WindGrid". In addition to wind turbines that can withstand harsh weather use, we have batteries on the offshore wind platforms that provide electricity storage. At most, the "WindGrid" solution can ensure



a reduction in CO₂ emissions of 70 percent compared with conventional fossil solutions," Lund says.

Turbines that can be used for more than 50 years

The mobile offshore wind turbines are sold or rented out in packages of varying sizes, and are to be anchored in the immediate vicinity of the platforms to be supplied with electricity. Towards the end of the field's lifetime, the offshore wind turbines are moved for reuse at the next location.

As the turbines are not connected to the power grid on land, the company is not obligated to participate in the





time-consuming processes for awarding offshore wind licenses. The rental model for the MOWUs also provides flexibility for fields with short or uncertain remaining service life, where it is difficult for operators to defend heavy investments.

“Traditionally, we have thought of offshore wind as permanent wind farms, but new technology makes it possible to move wind farms from place to place. The units can be reused for more than 50 years, about the same as with ships and rigs,” Lund explains.

Over 50 years of offshore experience

A merger between Odfjell Drilling and Oceanwind AS, the company Odfjell Oceanwind has a total of 50 years of offshore experience and 20 years of experience with offshore wind. Lund believes this is a good starting point for acquiring a position on the offshore wind segment:

“We have extensive experience in both floating offshore wind and the rig segment, and for us it is all about using the expertise we have built up in the best possible way. Our goal is therefore to take

a leading position in floating offshore wind, and ensure access to flexible offshore wind solutions.”

With the goal of energy production by 2024, the plan is to commission the first offshore wind turbines in 2022.

“We are already in close dialogue with several operating companies that want to connect our floating wind turbines to their oil and gas installations, and look forward to helping to significantly reduce emissions on the Norwegian continental shelf,” Lund concludes.

All photos: Odfjell Oceanwind

»» Joining forces with the power industry to focus on offshore wind

Engaging through Deep Wind Offshore, Knutsen OAS will use its long offshore expertise to compete for offshore wind projects both in Norway and internationally. But while the pace and interest in offshore wind is increasing globally, the company notes a lack of concrete action from the Norwegian authorities.

In January 2021, Knutsen OAS joined forces with Haugaland Kraft and Sunnhordaland Kraftlag (SKL) to establish a new offshore wind company. After recruiting management with extensive experience from the industry, the company now aims to realize its first goal - securing licenses for both Utsira Nord and Sørliche Nordsjø II.

"We are at the starting line for what could be a new industrial era in Norway, and with Utsira Nord and Sørliche Nordsjø II, Norway can take a position as a leading offshore wind nation, building on our expertise from the maritime sector, oil and gas and hydropower," says Knut Vassbotn, CEO of Deep Wind Offshore.

The offshore and energy industry on the team

By entering into a joint venture

with a power company and a producer of renewable energy, Knutsen OAS has ensured the Haugesund-based offshore wind company access to significant expertise in the energy and offshore market.

"We have a proud, Norwegian maritime history from the Knutsen side. Combined with the experience and expertise in infrastructure and network development from SKL and Haugaland Kraft, we are well positioned to participate in the development of a new offshore industry," says Vassbotn.

He points out that offshore wind projects will be very important to cover the future deficit in the power balance. The electrification of Norway will require even more renewable energy.

"We can create significant advantages for our region

and Norway if we manage to combine offshore wind with current hydropower production. This will provide impetus to new industrial projects, and facilitate green industrial growth and development," Vassbotn explains.

Gaining position internationally requires action

In addition to the advantage we have through long traditions in the maritime industries, Norway also has a geographical advantage in the offshore wind race.

"The Norwegian continental shelf has some of the world's best and most stable wind resources, and offshore wind can create tens of thousands of new jobs along the entire coast. The technological solutions exist, and are today being implemented around the world," says Vassbotn.

Nevertheless, Vassbotn believes that Norway has a long way to go, and presents the authorities with clear marching orders:

"The interest in offshore wind globally is enormous, and several countries are entering the competition for development. Norway and Norwegian industry are well placed to take a position in a rapidly growing offshore wind market, but if we are to succeed, we must get started - now."

John Martin Mjånes, Kjetil Harkestad, Olav Linga, Knut Vassbotn and Trygve Seglem.

Photo: Haakon Nordvik





Photo: Solvang ASA

»» Carbon capture and storage on deck

As one of the first in the world, gas transport shipowner Solvang ASA has signed a letter of intent with Wärtsilä for full-scale carbon capture and storage on one of their newest ships. With this initiative, the Stavanger-based shipping company continues its work toward the long-term goal of net zero emissions for their deep sea fleet.

In recent decades, Solvang has actively worked to reduce greenhouse gas emissions from its own fleet. By installing both SOx scrubbers and low-pressure exhaust gas recirculation (EGR), the company has significantly reduced its emissions of sulphur and NOx. Now Solvang is introducing a new measure to further clean the exhaust: a full-fledged onboard carbon capture and storage facility.

The plant is located in the stacks, where carbon is extracted from the exhaust before being cooled down and stored as liquid CO₂ in two tanks on deck. When the ship is docked, the CO₂ can be delivered to companies with use for the product, for example in synthetic fuel or in the food industry.

"This technology can be a key to decarbonising the shipping

fleet globally, and one of the technologies we must invest in to ensure the industry's transition to net zero. If we succeed with the project, it could be a milestone for international shipping," says Edvin Endresen, CEO of Solvang.

The amount of carbon captured by the plant will depend on factors such as heat, energy and tank capacity. The technology has the potential to capture up to 100 percent, but for the pilot project, the plant will be set up to capture up to 70 percent of emissions.

Maritime equipment supplier Wärtsilä has been developing scrubbers and exhaust treatment plants for 30 years. Now this experience will be applied in the groundbreaking work with carbon capture and storage facilities on deck, and this autumn Wärtsilä joined the Norwegian Carbon

Links (LINCCS) consortium. The partners will further develop the technology behind shipboard carbon capture, and received NOK 111 million in support from the Research Council of Norway's Green Platform in September 2021.

The solution planned for use by Solvang is currently being developed and tested in a simulated ship environment at Wärtsilä's factory in Moss. In 2023, the system will be installed on the ethylene tanker Clipper Eos, one of Solvang's newest ships.

"As one of the world's largest gas shipping companies, Solvang has a responsibility to reduce our global environmental impact. We have been early movers in the search for measures to decarbonize the fleet, and will continue to strengthen this focus going forward. We now have an experienced and future-oriented partner in Wärtsilä, and together we can find practical and cost-effective solutions for the entire shipping industry," Endresen concludes.

No time to lose

The authorities have an important role to play if Norway is to succeed in taking its place in the green shift, according to a new strategy covering research, development and innovation in the maritime industry. The Maritim21 strategy was handed over to the Minister of Fisheries and Ocean Policy Bjørnar Selnes Skjæran from the entire industry in January.

“The goal of the strategy is to stimulate research, development and innovation that contributes to sustainable growth and value creation in the maritime industry. The strategy is based on Norway being a world-leading maritime nation in 2030 by taking a leading role in the green shift,” says strategy group leader Ingrid Schjølberg, dean and professor at the Department of Marine Technology, NTNU.

The strategy highlights three areas for strategic research and innovation. First, a comprehensive digital investment is needed to increase competitiveness. In addition, low- and zero-emission technologies and solutions must be developed and implemented, requiring coordinated efforts and cooperation across the maritime value chains. Finally, barriers related to infrastructure, access to alternative fuels and electricity, economic profitability and safety must be removed through the use of green technologies in order to realize green and safe seaborne transport.

Schjølberg emphasizes the need for the authorities and policies to support the strategy.

“The public sector can help create an early market for new technology and new solutions for low- and zero-emissions through public-private innovation cooperation and procurement, as well as strategic use of purchasing power. This will make the industry more competitive,” says Schjølberg.

“The green industry boost is a priority for the government. We have set ourselves the goal of increasing Norwegian exports excluding oil and gas by at least 50 percent by 2030. To achieve this, we are



Handover of the Maritim21 strategy from Ingrid Schjølberg to Bjørnar Selnes Skjæran. Photo: Maritim21

dependent on succeeding in developing both existing and new ocean industries. For Norway to remain a world-leading maritime nation, research, innovation and digitalisation must be central. This strategy is an important input to the government’s work to promote the green industry boost and our commitment to green shipping towards 2030,” says Minister of Fisheries and Ocean Policy Bjørnar Selnes Skjæran.

The strategy will contribute to increased value creation, employment and the green shift. This is specified in three sub-goals for 2030:

- Minimum 50 percent growth in the industry’s value creation and export revenues in Norway (compared to 2019)
- Minimum 10 percent growth in the industry’s employment in Norway (compared to 2019)
- Help the maritime industry to reach official emission targets and support the industry’s own ambitions

IT moving from support to central role

IT will go from an internal support function occupied with fixing printers to advising on core business, says Sigurd Farnes, Customer Success Analyst at Kongsberg Digital. He predicts that those shipping companies working actively with digitalisation will have a competitive advantage in the years to come.

Sigurd Farnes is one of an increasing number of digital specialists working in the maritime industry. As part of the Customer Success team at Kongsberg Digital, he works closely with shipping companies to find areas for improvement and applications of data.

"In my role as an analyst, I work with technical analyses and computer products based on customer needs. Kongsberg Digital has developed a standardized infrastructure called Vessel Insight, where data is retrieved from the ship's systems and sent to a cloud environment. From here, the shipowner can give applications access to retrieve the data they need. Areas of use vary from automated reports to predictive maintenance, condition monitoring and energy efficiency," says Farnes.

Farnes is educated in marine cybernetics at NTNU and delivered his master's thesis in the development of machine learning models to identify symptoms of incipient errors in sensor data. He went on to complete the Norwegian Shipowners' Association's Maritime Trainee program as an employee of Color Line.



Photo: Kongsberg Digital

How do you think digitalisation will affect the maritime industry in the years to come?

"I believe competency and change management will be important for adapting the technology to the core tasks and work processes that exist in the industry. In the same way as in other industries, IT will go from being an internal support

function occupied with fixing printers, to becoming an advisor to the core business, for example in operations, technical operations or regulatory work," says Farnes.

He observes that several companies are now going from the concept phase to investment and practical implementation, where shipping companies choose a partner or invest their own resources to install and operationalize technology on a larger scale. Many are laying the technical foundation for expanded data



capture and future applications, where cyber security, standardization, efficient maintenance and scalability are key.

"I think there will be higher demand for instrumentation and quality of data to be used for analysis and decision support. In general, we will have broader insight into how ships are operated and what is being done to improve collaboration between crew, land organization, equipment suppliers and consultants," Farnes continues.

What competitive advantages do you think maritime companies that work actively with digitization can achieve?

"Digitization in shipping opens for innovation and new ways of working. One advantage is that investors, charterers and equipment suppliers expect easy access to data and reports in their format. With incentives for a lower carbon footprint, digitization and information sharing will be important for traceability of emissions and operations."

Farnes further explains that Boston Consulting Group estimates a potential of a 15 percent reduction in operational costs distributed over cost drivers such as energy, port, insurance, maintenance and personnel. Direct savings can be achieved through route optimization or tuning of machinery and hulls.

"Being able to demonstrate a sustainable footprint and uptime in the fleet will provide a competitive advantage, in addition to the fact that saving several hours a day on manual reports makes the working day easier," he says.

But competition for digital expertise is fierce, and the maritime industry is not the only industry undergoing a digital revolution. When asked what he thinks shipping companies should do to attract more candidates like himself, Farnes replies:

"I believe that an attractive employer is one who shows a willingness to invest, and that a professional environment is built around digitization that will meet the challenges of the future in transport and sustainability."

Major interest in future competency requirements

Digitization and new technology are changing the maritime industry. Maritime organizations are now mapping out which skills will be needed in the future and how the education system and companies must adapt to tomorrow's labour market.

Previous reports have shown that there will be an increased need for digital competence in the Norwegian maritime industry, both at sea and on land. In particular, there will be an increased need for continuing and higher education of employees, and for companies and educational institutions that support this development.


The Norwegian Shipowners' Association, The Norwegian Maritime Officers' Association, the Norwegian coastal shipowners and the Federation of Norwegian Coastal Shipping now want to drill deeper into the issues through interviews and analyses with the industry. The aim is to identify which measures must be implemented in order to meet future competence needs.

"New technology and digitalisation are placing demands on the maritime industry. It is no longer the case that what you learned during your education will be sufficient throughout your working life. The future will require a far higher degree of adjustment and continuing and higher education than today. This is why we need to learn how to organize educational institutions and working life accordingly," says Hans Sande, CEO of The Norwegian Maritime Officers' Association.

Norwegian maritime education must be among the best in the world, requiring that educational institutions constantly evolve in order to assert themselves. In addition to investing in up-to-date technical equipment, institutions must emphasize the skills that employees will need in the new, high-tech labour market, such as problem-solving ability, critical thinking and a general understanding of digital systems.

"More rapid technological changes require continuous and close collaboration between business and academia. It is necessary to link the industry's needs more closely to the development of education. We must train employees with the ability to develop the Norwegian maritime cluster for the future, and I am pleased that this project has generated such significant interest in the industry," says Harald Solberg, CEO of the Norwegian Shipowners' Association.

A number of industry stakeholders are assisting in the project through an expert group that meets regularly to provide input and direction for the work. The project receives funding from the Norwegian Maritime Competence Foundation, and results will be revealed in the spring of 2022.



What can we learn from the pandemic?

Few things are as global, complex and demanding as a pandemic. It is both spread and combated through international cooperation. Pandemics entail enormous challenges through loss of life, health burdens, loss of jobs and major restrictions in what we know as normal social life.

What can we learn from the Covid-19 pandemic? The question is answered in an evaluation report prepared by a member committee of the Norwegian Shipowners' Association. The report provides unique insight into how the pandemic affected the shipping industry.

The report states that the risk of pandemic was well known, but that neither shipping companies, the Norwegian Shipowners' Association nor the authorities were prepared for the challenges that had to be dealt with. Despite this, the overall experience is that the pandemic has been well managed, measured by results in a national context. Internationally, however, there have been great strains, especially for seafarers who by nature of their work must move across national borders and various infection control restrictions.

"Contingency planning for global crises is less about concrete preparations, and more about competence and tools for ongoing management," says Jan Kristian Haukeland, leader of the working group and EVP in DOF Subsea. "The community, with the Norwegian Shipowners' Association at its hub, constitutes a very effective toolbox for contingency planning for the industry."

With its global customer, supplier and labour market, the shipping and rig business has an operating model that is particularly vulnerable in the event

of a pandemic. Shipping companies that operate internationally are exposed to risk from many different sources. This includes financial risk. Many shipping companies have essentially had to cover the additional costs of the pandemic themselves.

"The overall experience is that the Norwegian Shipowners' Association and its members have handled the crisis well. At the same time, the challenges have been great, and we have had great difficulty managing crew changes internationally. It is particularly serious that as many as 400,000 seafarers have for long periods been stranded on board ships around the world, without the opportunity to get home," says Haukeland.

The report points out that international cooperation between countries broke down, and work on the IMO protocol did not pay off as might have been expected.

At the same time, shipowners have benefited from the shipping community in meeting international challenges. A good example of the potential inherent in the Norwegian Shipowners' Association's network internationally is the establishment of the test and quarantine centre in Manila. Cooperation with the Ministry of Foreign Affairs, the Ministry of Trade and Industry and the Norwegian Maritime Authority also contributed to effective handling of many ongoing challenges for shipping companies.

All ships to zero

The Norwegian maritime sector can continue to be a world leader, but we must take the lead in cutting emissions, writes Sigrun Aasland, head of the environmental organization ZERO.

BY SIGRUN AASLAND, HEAD OF THE ENVIRONMENTAL ORGANIZATION ZERO

In the Hurdal platform, the government has set a goal of reducing Norwegian emissions by 55 percent by 2030. By 2050, emissions should be at zero. That entails a significant dip in the emissions curve. Norwegian shipping companies and the maritime supplier industry have everything to gain from setting an example and taking the lead in the fight against climate challenges. For this to happen, greater momentum is needed, and stronger policies.

The good news is that the technology is well on its way, with rapid development in short sea shipping in recent years, and great opportunities in batteries, hydrogen and ammonia. Long-distance transport will require further technology development, and the entire shipping industry needs strengthened political support. Three steps are crucial to speed up the green shift at sea.

First, climate requirements for public procurement, licenses and regulations must be tightened. The technology shift in ferry traffic is one of the biggest successes in Norwegian climate policy, and demonstrates the power of courageous public procurement policies and strict climate requirements. Here, politicians have stimulated zero-emission technology, both batteries and hydrogen, and ensured that the Norwegian maritime supplier industry is a world leader independent of fossil fuels. Now other ship types must follow. Fish farming and the petroleum industry are obvious candidates for zero emissions requirements. The offshore segment is at the forefront of technology development and requirements should now be introduced for zero-emission solutions, as several political decisions have already predicated. On coastal routes, zero emission requirements should already be established for the next tender period, and an environmental bonus on current contracts must be implemented.



Photo: The environmental organization ZERO

Secondly, going green must be profitable. In the maritime sector, as in many other areas, much of the technology is available, but too expensive. Fleet renewal is costly, infrastructure is lacking, and renewable fuels are more expensive than fossil fuels. A higher CO₂ tax and increased volume of renewable fuels will gradually reduce the additional cost, but today the price is too high for most. We need instruments that offer relief in the intermediate phase. The latest example of unpredictability slowing down the green shift is Veidekke, which in January put plans for hydrogen ships on hold. In ZERO, we have advocated contracts for difference (CfD), where the authorities cover the additional cost of producing renewable fuels to replace fossil fuel. As the cost picture changes, it will also be possible to phase out the instrument. In addition, the government should be open to using funds from the CO₂ tax, which will increase to NOK 2,000 per tonne by 2030, for investments in climate solutions.

Thirdly, we need binding agreements between the authorities and the business community. It is commendable that the government intends to enter into partnerships with the business community to increase exports, create jobs and cut emissions. Such agreements must be mutually binding, both in terms of emission reductions and financial instruments. The authorities must improve predictability for both large and small maritime actors, and this must happen soon. A maritime climate partnership can show the way and provide the necessary momentum for the green shift, both at sea and on land.



The cathedral of the ocean

Norwegian welfare has its origins in the sea. Now is the time for new, major investments in sustainable oceans and coastlines.

BY HILDE NAGELL, ADVISOR IN THE THINK TANK AGENDA

In the novel *The Pillars of the Earth* by Ken Follett, the King decides to build a cathedral in Kingsbridge, a rather isolated location. The King envisions a vast, magnificent building stretching to the sky. This compels the engineers and stonemasons to build in new ways, and they construct arches and windows never seen before.

Innovation, jobs and new businesses were created because the King had assigned to them a social mission, without prescribing a detailed recipe. It is a way of thinking that also suits today's society. According to the well-known British-Italian economist Mariana Mazzucato, business policy today should define just such 'missions', or social missions. Social missions create new demand and coordinate the efforts of various actors, while at the same time providing the business community with predictability and stable framework conditions, and contributing to alleviating risk. One obvious area for such assignments in Norway is the ocean.

A vision for new ocean investment

Norwegian companies are highly progressive. They do not need to be controlled in detail, but more and more are calling for political leadership, clear expectations and greater predictability.



Photo: The Think Tank Agenda

One social mission should be sustainable management throughout Norway's maritime economic zone. Together with 13 other countries, Norway has committed itself to managing its ocean space 100 percent sustainably by 2025, and in April 2021, a report was submitted to Parliament on comprehensive

conservation of maritime resources. This work must now be followed up. Regulation and more sustainable use in themselves create new jobs, and can be an important export item for Norway. New technology such as drones and sensors in combination with machine learning and artificial intelligence can help monitor and control marine conditions.

Another social mission can be the production of sustainable fish feed based on Norwegian resources, something the government has already promised in the Hurdal platform. Thinking based on a social mission means seeing entire value chains in context:

If we are to have a sustainable aquaculture industry, we must ensure sustainable feed. When the state stimulates increased production of Norwegian-produced sustainable feed, it can create new jobs.

A third social mission could be the fight against marine plastics. Plastic pollution poses a significant threat to people and the environment. In February, the UN Environment Programme adopted a new agreement to stop plastic pollution in the world. Governments, the private sector and civil society must work together on this. Here, Norway already has significant technology and expertise that can give the impetus to innovation and create new jobs.

A fourth social mission is green shipping. The government stated in the Hurdal platform that they will present a green restructuring package for climate-friendly solutions for ships. When diverse tools are used in concert to achieve a common goal, incredible things can happen. Purchases in the ferry segment combined with decisions on zero emissions in the World Heritage fjords have, for example, contributed to the rapid development of battery and hydrogen technology in short sea shipping. Longer sea voyages are slightly more demanding, and more tools are needed here. Norwegian ships are well positioned to be able to deliver on this.

Steering clear of the reefs

The ocean is literally full of opportunity. But there are also reefs to be avoided.

The biggest challenge is probably coordination. The think tank Agenda has previously proposed that an ocean ministry be established. That was not to be. But we did get a Minister of Ocean Policy. Admittedly with a hyphen. Bjørnar Selnes Skjæran is Minister of Fisheries and Ocean Policy. He has been given responsibility for coastal management, maritime policy, green shipping and coordination of national maritime initiatives. In sum, his ministry has been given significant new tasks. How can we ensure that individual sectors and industries do not enter into

dialogue and set targets for emissions, but that they work together on stated common goals? The OECD points out that Norway needs an agenda-setting mechanism that makes it possible to set common goals and move in the same direction.

Another challenge is what is often called “rent seeking”, or “tilkarring” in Norwegian. How to prevent strong players from setting the agenda and defining terms and conditions? Shell, Aker and Equinor have plenty of money for the green shift. The industry giants have shown a willingness to take the lead. Going forward, it is important to ensure a level playing field, extensive openness and broad dialogue about social tasks.

A third challenge is financing. Climate partnerships and support for the green shift will incur considerable costs. Many are discussing a CO₂ fund where climate taxes go to finance the green shift. We also need to talk more about how we manage the community’s resources. The ocean resources belong to us all. It is therefore both fair and sensible to introduce a ground rent tax on this natural resource, as we have done with oil and hydropower.

In Europe, the idea of social mission is now being implemented in practice. Such assignments are broader than a single instrument, but more specific than overall emission targets. Norway supports EU’s programs with substantial funding. It is important that we in turn receive support for good Norwegian projects.

To achieve the Paris goals, we must readjust, and the task is formidable. Social missions must be designed as binding goals and cooperation between the authorities and the business community, and involve the business partners in the follow-up of progress. A major investment in sustainable seas and coastlines will counteract climate change and stop the loss of species diversity, while creating new and green jobs. Expectations that the government will follow up are now high.

Capital for the green shift

The transition to the green shift entails a radical change for an already capital-intensive shipping industry.

BY CHRISTOS TSAKONAS, GLOBAL HEAD OF SHIPPING AND
MARTHE LAMP SANDVIK, FIRST VICE PRESIDENT OF DNB OCEAN INDUSTRIES

Banks and other capital providers have a key role to play in this development, and we are seeing a major shift in the thinking of financial players as a result of these changes. Climate focus and ESG have never been more important, and have increasingly become part of credit and investment decisions.

Financial stakeholders are increasingly prioritizing companies with business models and strategies making them well equipped to meet the green shift. DnB is what we call a transition bank, meaning that we do not exclude, but want to make a positive contribution to reducing emissions among our customers and be a partner in this change.

The banks are also important discussion partners and advisers in facilitating capital structures that more effectively handle the increased risk and market complexity that the green shift brings. We expect to see new financing solutions, with more capital sources involved and risk distributed among multiple players. For example, shipyards, export credit institutions and asset managers with a sustainability mandate may have a greater role in a financing solution.

In the future, most structures will probably also include sustainability elements in the financing, something we are seeing a substantial increase in already, where companies that meet certain quantitative sustainability goals or KPIs receive benefits in the form of margins or other elements in the loan agreement.



Both photos: DnB

More partnerships and strategic alliances are also absolutely necessary in a green shift that requires major changes and is dependent on clear commercial signals across the value chain. There is also considerable activity within various interdisciplinary pilots and projects looking into new technology and financing of new solutions.

It is essential for DnB as a bank to be an active contributor and discussion partner in these forums. Among other things, we have been involved in interdisciplinary projects on ammonia-powered ships, standardization of restructuring financing for the maritime industry, and market-based mechanisms to increase the competitiveness of alternative fuels.



MARITIME OUTLOOK | 2022

Shipping is on the road to recovery

– but considerable uncertainty due to security policy unrest

Shipowners' revenue is influenced by developments in the global economy. The global economy in 2021 has to a very large extent been affected by the worldwide corona pandemic, with a number of countries enforcing intrusive infection control measures for nearly two years. In 2021, easing of restrictions in several countries led to a growth in demand for raw materials, products and thus also transport, and the global economy has again seen healthy growth, especially in the advanced economies.

In its report Global Economic Prospects, published in January 2022, the World Bank estimates that the world's gross national product increased by about 5.5 percent in 2021.¹ The International Monetary Fund (IMF) estimates that the global economy grew by 5.9 percent in 2021.² This is the strongest post-recession growth in 80 years, and is due to the fact that easing of corona restrictions in a number of countries has led to increased demand for goods and services. Growth in emerging markets (EMDEs)

is somewhat weaker and more fragile than in advanced economies. This is due to these countries having a lower vaccination rate and a lesser degree of economic stimulus packages, and that they were initially hit harder financially by the pandemic.

Intrusive infection control measures have led to extensive operational challenges for shipping companies. For an extended period of time, carrying out crew changes presented major challenges, and restrictions on port calls have delayed and made essential logistics operations more difficult. Three out of four shipping companies state that they have faced significant or very significant operational challenges in 2021 as a result of the corona pandemic. This is considerably higher than companies' expectations at the beginning of the year, when almost half anticipated significant or very significant operational challenges. This indicates that the challenges that followed the pandemic were longer lasting and more intrusive than shipowners could have envisioned at the beginning of 2021.

The World Bank forecasts for the global economy indicate growth of about 4.1 percent in 2022. The IMF is somewhat more positive and expects the global

¹ The World Bank, January 2022: Global Economic Prospects <https://openknowledge.worldbank.org/bitstream/handle/10986/34710/9781464816123-Ch01.pdf>

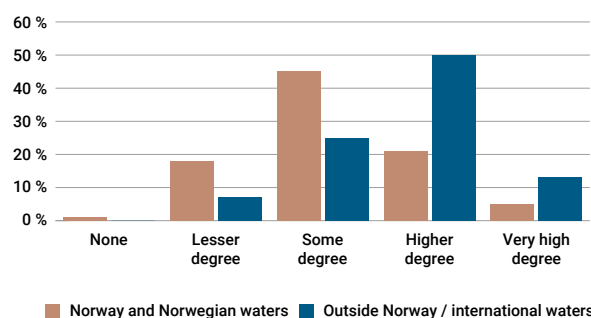
² IMF, January 2022: World Economic Outlook Update <https://www.imf.org/en/Publications/WEO/Issues/2022/01/25/world-economic-outlook-update-january-2022>

economy to grow by 4.4 percent in 2022. Advanced economies are expected to be able to get back to pre-pandemic levels in 2022 and 2023. Expected economic growth for 2022 and 2023 in emerging markets is not strong enough to bring these countries back to their pre-pandemic levels.

There is great uncertainty associated with the 2022 forecasts. The emergence of new Covid-19 variants could prolong the pandemic and cause new challenges in the global economy. It also appears that challenges that have arisen in the supply chain will persist into 2022. This comes in addition to high volatility in energy prices, which has a major impact on both activity and price levels in a number of countries' industrial activities. The IMF points out that other global risks may also arise, as geopolitical tensions remain high, and the ongoing climate crisis means that the probability of major natural disasters remains high.

Shipowners expect major operational challenges also in 2022, especially outside Norway. Almost three out of four companies anticipate a significant or very significant degree of operational challenges outside Norway. Only one in four expects a significant degree or very significant degree of operational challenges in Norway or Norwegian waters. At the same time, we see that there are almost no shipping companies that expect 2022 to proceed without any kind of operational challenges. This shows that the corona pandemic will affect Norwegian shipping companies also in 2022.

Shipowners' expectations for operational challenges in 2022 as a result of the corona pandemic

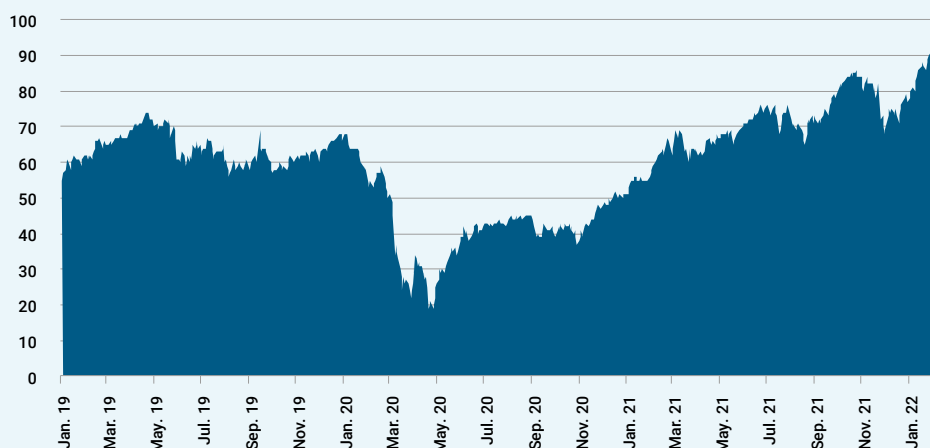


Source: BDO AS / Norwegian Shipowners' Association

Increased demand for ships and higher fleet utilization

Almost two years ago, at the start of the pandemic, demand for ships fell by 1.8 percent, the first decline since the financial crisis, and with a larger percentage reduction than after 2008. Conversely, last year demand rose sharply, by as much as 4.7 percent on an annual basis, recovering lost ground. Ports operating under capacity, pandemic-related delays in orders for new vessels, and many containers backed up in the logistics chain have led to less available cargo capacity in the market. This has resulted in higher rates in several transport segments, in particular the container segment. This year, Lorentzen & Stemoco expect demand to increase further, by 5.9 percent, constituting the second year in a row with an increase.

Oilprice Brent Crude 2019–2022



Source: Nasdaq

2020 also marked the low point for fleet utilization, about 80.7 percent. Last year, fleet utilization rose to 82.3 percent, and this year Lorentzen & Stemoco expect fleet utilization to rise to 84.7 percent. Demand varies greatly between the different segments. Container vessels reached a utilization rate of 90 percent in the second half of 2020, and this has strengthened further during last year and into this year. The dry cargo market follows, with the tank and gas market next.

Higher oil price means increased activity

Developments in oil prices greatly affect Norwegian shipping companies. The price of oil mainly influences offshore activity, and thus constitutes the most important prerequisite for activity in about one third of the Norwegian foreign fleet. At the same time, the price of oil is an important factor in the transport segment, as bunker costs make up a significant part of ship operating costs. Thus, a high oil price will be positive for turnover in the offshore segments, while a low oil price contributes to lower operating costs in the transport segments.

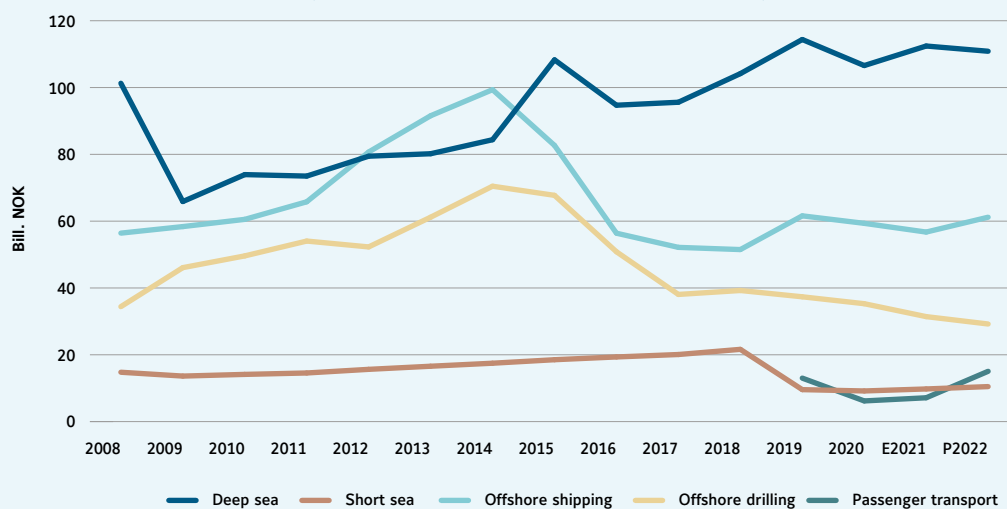
Most important for the price of oil is increasing demand, as well as production cuts introduced by OPEC+ from April 2020. Since then, oil prices have increased to the current USD 90 per barrel as a result of demand exceeding supply and inventories being reduced to critically low levels.

Increased demand for oil has led to increased activity in the offshore segments. The offshore service market picked up in 2021 after a very weak 2020. In the second half of 2021, anchor handling vessels and PSVs reached a fleet utilization of 65 percent. An increase in oil demand, strong oil prices and units sold to new markets can together generate good rates and increased fleet value in the offshore segment in 2022.

Growth in the transport segments in 2021 – reduction in offshore

The total revenue of Norwegian Shipowners' Association member companies has remained relatively stable, from NOK 216.5 billion in 2020 to NOK 217.4 billion in 2021. The transport segments, which include deep sea and short sea shipowners, have gradually increased their turnover since the financial crisis hit across the industry in 2008, currently accounting for almost 60 percent of total turnover among shipping companies.

Norwegian shipowners' turnover 2008 - 2022 (including 2021 estimates and prognosis 2022)



Source: BDO AS / Norwegian Shipowners' Association

The offshore segments have faced very demanding times since the oil price collapse in 2014. Sales and profitability are still far lower than before the fall in oil prices, and have not yet returned to a sustainable level. In 2021, total turnover in the offshore segments accounted for about 40 percent of total turnover among shipping companies. This is significantly lower than the peak year of 2014, when turnover in the offshore industry accounted for as much as 63 percent of shipping companies' total turnover.

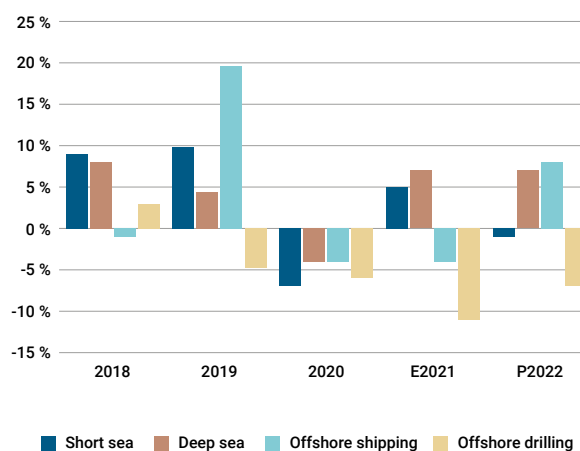
The transport segments experienced significant growth in turnover in 2021. Deep sea shipowners experienced a growth of five percent, and now report total revenues of more than NOK 112 billion. Short sea shipowners showed growth in turnover of seven percent, now with revenues of almost NOK 10 billion. Much of the growth is due to the very strong container market, which is also spilling over to other segments. Increased volumes and congestion in ports as a result of very rapid growth in activity and strict corona restrictions contributed to increasing the need for ships by almost six percent.

The passenger ship segment also experienced growth in turnover in 2021, but will only make up about one-seventh of the reduction they were subject to in 2020. In 2021, total turnover in this segment was just over NOK 7 billion. This is far from expectations stated by the companies in last year's survey. At that time, this segment stated an expected growth

of 73 percent. This shows that the pandemic turned out to be longer lasting and more serious than the passenger shipping companies could have imagined.

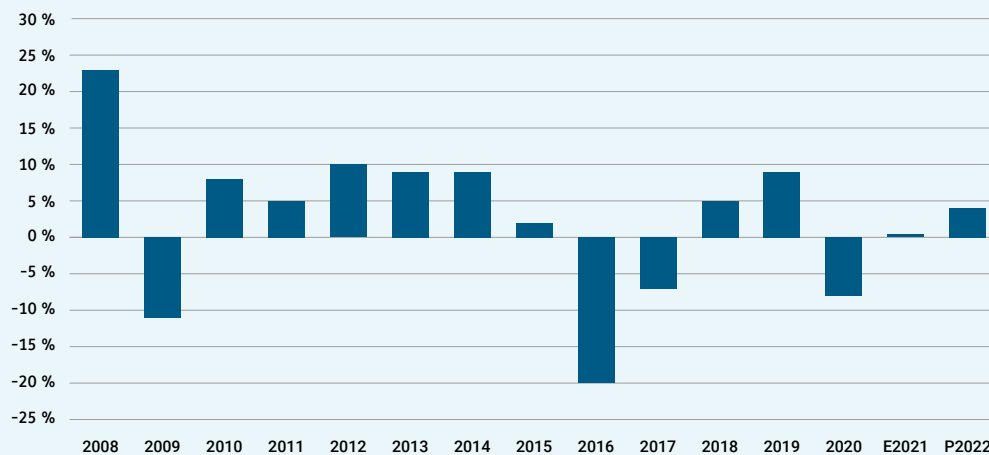
The offshore segments have experienced a further decline in turnover. Rig companies have in particular experienced a large drop in turnover, of 11 percent. Rig companies have seen their revenues more than halved since 2014, and in 2021 had revenues of about NOK 31 billion. Offshore service companies have had their turnover reduced by a further four percent, and now show total revenues of NOK 56 billion. This is also close to a 50 percent reduction in turnover compared to 2014

Annual growth rates for the shipping segments (including 2021 estimates and prognosis 2022)



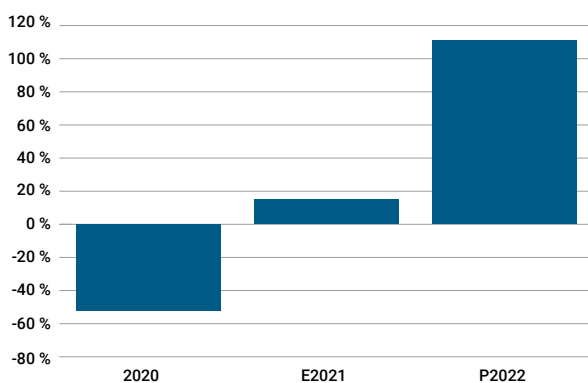
Source: BDO AS / Norwegian Shipowners' Association

Change in Norwegian shipowners' turnover from the previous year (including 2021 estimates and prognosis 2022)



Source: BDO AS / Norwegian Shipowners' Association

Annual growth rates for passenger transport (including 2021 estimates and prognosis 2022)



Source: BDO AS / Norwegian Shipowners' Association

Shipowners expect increased revenues in 2022

There is a degree of increased optimism for 2022, where overall expectations for the year are moderately positive. Overall, shipping companies state that they expect an increase in turnover of four percent in 2021. However, there is a large gap in expectations and sharp differences between the segments, with short sea, passenger and offshore service segments anticipating growth in turnover.

If the forecast is correct, shipping companies' total revenue will end up at around NOK 227 billion in 2022, up four percent from 2021.

Offshore remains demanding

The large fall in revenue among offshore service and rig companies following the fall in oil prices in 2014 continues to affect the industry. In recent years, the industry has undergone very extensive restructuring, including sales and significant recycling in the fleet in both rigs and offshore service. Increased oil prices and increased activity in oil and gas production have already resulted in increased rates, and Lorentzen & Stemoco expect that rates will continue to rise in 2022.

The offshore segment is highly divided in expectations for 2022. Offshore service companies expect a significant growth in turnover, about eight percent. This would lead to the segment rising again to pre-pandemic levels, with a total turnover of about NOK 61 billion.

Rig companies expect a further decline in turnover in 2022, about seven percent. This is seen in connection with the large number of rigs that have been recycled and taken out of activity on the Norwegian Continental Shelf. Turnover is thus reduced as a consequence of fewer rigs in activity, and not directly as a result of lower rates. Lorentzen & Stemoco expects that more contracts and the current strong oil price will make the available fleet smaller, and send rates upwards in this market. This may explain why this segment expects turnover to decline while profitability improves.

The transport segments anticipate growth in 2022

There is significant optimism among short sea shipowners. As many as three out of four shipowners expect growth in 2022, while none anticipate reduced turnover. Overall, they expect a growth of seven percent, which would match last year's growth. This would be the second largest growth in turnover since the financial crisis in 2008.

By far the greatest optimism is to be found among passenger shipowners, where all companies expect growth in 2022. In total, passenger shipowners expect turnover to more than double, giving growth of 111 percent. This is due to the fact that the passenger shipping companies envisage a normalization of the market situation in 2022. Such growth would lift the turnover of passenger shipowners to above pre-pandemic levels.

The deep sea segment is divided in its expectations for 2022. Fifteen percent of companies state that they have expectations of significantly reduced turnover, explained by the restructuring of the fleet through the sale of vessels. The remaining companies expect about the same or somewhat higher turnover as a result of stronger markets. Improved markets for deep sea are the result of a record strong container ship market that also generates better markets for car carriers, bulk carriers and the dry cargo market. An example of this is that used cars, previously transported in containers, are now to a greater extent

transported on car ships. Overall, expectations are for a reduction of about one percent in turnover in 2022, which is related to changes in the number of ships in the fleet.

Shipowners are divided on profitability expectations

There is increasing optimism in the industry related to profitability in 2022. Overall, about three out of five state that they expect increased profitability in 2022 compared with 2021. This is a significant improvement from last year, when less than half reported such expectations.

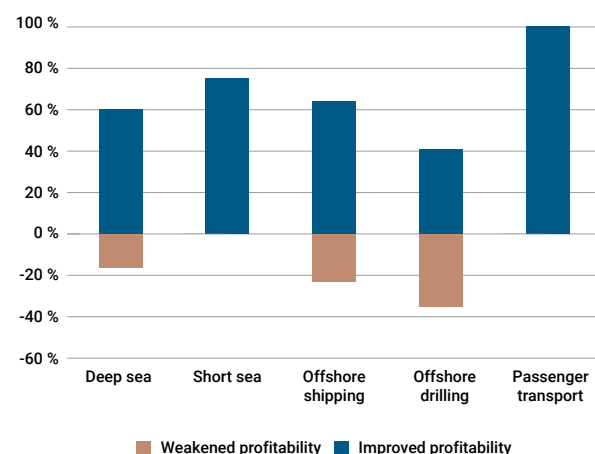
Also among offshore service and rig companies, more companies expect increased profitability than those anticipating reduced profitability. Sixty-four percent of offshore service companies and 41 percent of rig companies expect increased profitability in 2022. This is the first time that both offshore segments expect stronger profitability. These segments have operated in very weak markets since the fall in oil prices in 2014, with a number of shipping companies incurring large losses and write-offs. Increased profitability in the offshore service and rig companies does not mean large profits or sustainable finances, but may mean that the industry can now take some steps towards a brighter future. At the same time, one in five offshore service and one in three rig companies state that they expect a further reduction in profitability in 2022.

Within deep sea, three out of five shipowners state that they expect profitability to improve in 2022. Only one in seven expects reduced profitability this year. Twice as many shipowners - eight percent - expect significantly improved profitability, compared with the four percent who expect significantly reduced profitability.

Among short sea shipowners, none expect reduced profitability in 2022, and as many as three out of four expect increased profitability. One in four companies in this segment state that profitability is likely to remain unchanged in 2022. This overall optimism in the short sea segment may indicate that shipowners expect the positive markets they have experienced over the past year to continue into 2022.

Within the passenger ship segment, all shipowners have expectations of improved profitability in 2022. This is due to the fact that large parts of passenger ship operations were halted as a result of the corona pandemic, leading to a significant reduction in operating profit for these companies in 2020 and 2021. As with offshore, it is not a given that increased profitability in this context means a positive operating result. Also in this context, increased profitability can mean reduced negative operating profit.

Shipowners' expectations for development in 2022 compared with 2021



Source: BDO AS / Norwegian Shipowners' Association

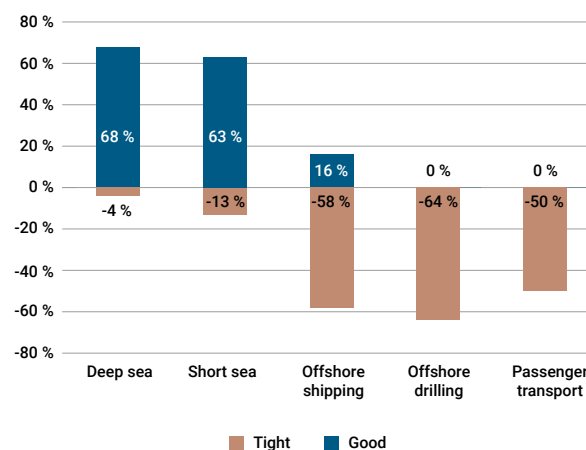
Tight access to capital for offshore

The maritime industry is affected by the world around us. Since the financial crisis in 2008, the Norwegian and international economies and trade have been characterized by lower and unstable growth. The sharp fall in oil prices in 2014 has had major ripple effects in the maritime industry. In addition, the instability created by the pandemic has greatly affected shipowners' access to capital, especially in the passenger ship segment.

Shipowners' access to capital has been weak since 2015. The proportion assessing access to capital as good has been around 15 to 25 percent. Correspondingly, the proportion experiencing tight capital access has been around 40 to 60 percent.

In 2022, we see signs of improved capital access. Three out of ten shipowners state that they experience good access to capital, with four out of ten experiencing tight access. All segments are experiencing an improvement in access to capital compared with last year. There is a significant improvement in capital access for deep sea and short sea. The offshore segments and the passenger ship segment state that access is still demanding, but with a slight improvement from 2021.

Perceived access to capital, January 2022



Source: BDO AS / Norwegian Shipowners' Association

The segments vary greatly in their assessment of access to capital. The most demanding situation is for the offshore segments. As many as 64 percent of rig companies experience access to capital as tight or very tight. No rig companies can report good or very good capital access. Offshore service shipping companies also experience demanding access to capital, and close to six out of ten report tight or very tight access to capital. Only 16 percent state that they have good access to capital, and only three percent state that they have very good access to capital.

The demanding access to capital in offshore has persisted since the fall in oil prices in 2014, and has led to restructuring and significant refinancing efforts in shipping companies. The fact that access to capital remains demanding in this segment shows that the challenging market in which the segment has operated will continue into 2022.

Within the transport segments, companies are significantly better off in terms of access to capital. Among deep sea shipowners, almost 70 percent state that they have good or very good access to capital. At the same time, only four percent state that access to capital is tight. Over 60 percent of companies in short sea consider capital access to be good. At the same time, 13 percent state that access to capital is tight. The good access to capital in the transport segments reflects their strong market situation. Good access to capital in these segments is an important prerequisite for being able to make the necessary investments in new technology and environmentally friendly solutions to take the next steps towards the green shift in shipping.

Passenger shipowners report demanding access to capital. Half of shipowners consider access to capital to be tight, while none consider capital access to be good. There is good reason to assume that the weak inflow of capital is closely linked to the significant fall in turnover and profitability in this segment.

Anticipated improvement in access to capital

Expectations for access to capital in 2022 are uplifting, with three out of ten shipping companies anticipating better access to capital. Fifteen percent expect weaker access to capital, and just over half expect access to capital similar to that today. Here, too, there is a clear distinction between the transport segment (deep sea and short sea) and the offshore segment (offshore service and rig companies).

In deep sea, there is an expectation of further improvement in capital access. Thirty-six percent of companies expect better access to capital in 2022 than in 2021. Only four percent expect weaker capital access. In the short sea segment, there are high expectations for better access to capital in 2022. In this segment, about six out of ten expect access to capital to improve in 2022, while none anticipate weaker capital access. This is good news for the ability to realise fleet renewal in this segment, and thus also positive news for the potential to develop and implement new and more climate-friendly solutions in shipping.

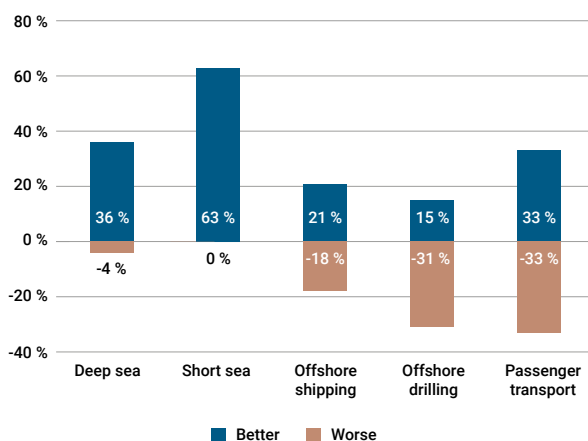
Among the passenger shipowners, about one in three state expectations of better access to capital, with as many expecting somewhat poorer access to capital.

Offshore service and rig companies are clearly most pessimistic about the development in capital access for 2022, but there is still significant improvement from last year. About two out of ten offshore service companies expect a further tightening in the supply

of capital. Last year, more than half stated the same. More than two out of ten shipping companies in this segment expect that access to capital will improve in 2022. These are positive signals that may indicate that the capital markets are also beginning to see bright spots in offshore.

Rig companies have low expectations for 2022, but here too we see a slight improvement from last year. About three out of ten rig companies expect access to capital to be more difficult in the coming year. Last year, more than four out of ten stated the same. This year, 15 percent of rig companies state that they expect an improvement in capital access. This is a significant improvement from last year, when none expected an improvement in capital access in the coming year.

Expectations for access to capital in 2022



Source: BDO AS / Norwegian Shipowners' Association

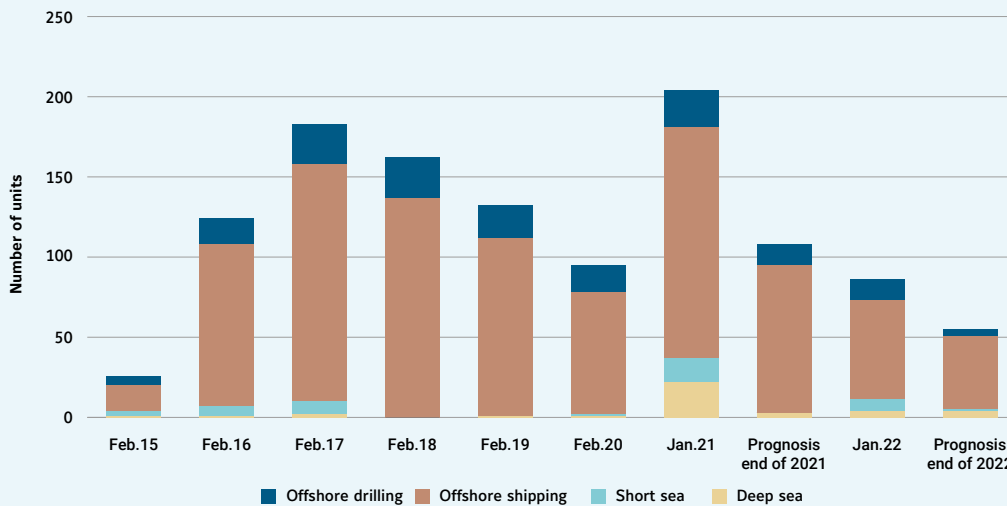
Significantly fewer ships in layup

Ships in layup lose value and incur ongoing costs for their owners. Following a very demanding 2020, it is clear that activity picked up significantly in 2021. Layup figures have gone from 204 ships and rigs in layup in January 2021, to 86 ships and rigs in layup in January 2022. This is significantly better than the forecast from last year's survey, where shipping companies stated that they expected to have 108 ships and rigs in layup by the end of the year. All segments still have ships in layup, which shows that the downturn has hit across the segments.

Layup figures in January 2022 are significantly better than expectations from last year's survey. At that time, expectations were that 108 ships and rigs would be in layup by the end of the year, which meant cutting layup figures roughly in half. Shipping companies now report 86 ships and rigs in layup. This indicates that 2021 could offer a better market situation than the shipping companies expected.

Offshore service shipping companies still report high layup figures. Sixty-two offshore service vessels are in layup, 52 of them in Norway and ten abroad. This is a significant decrease from last year, when 144 offshore service vessels were in layup. The situation is also better than the offshore service companies expected in 2021. Last year, they stated that by the end of 2021, they expected to have 92 vessels in layup, significantly higher than the 62 vessels currently laid up.

Layup figures from 2015 to 2022



Source: BDO AS / Norwegian Shipowners' Association

Rig companies have also significantly reduced their layup numbers. Rig companies entered 2021 with 23 ships in layup. The expectation that by the end of the year there would be 13 rigs in layup has proven to be accurate.

Deep sea shipowners also have ships in layup. As of January 2022, deep sea shipowners had a total of four vessels in layup. This is a significant reduction from last year, when this segment had 22 vessels in layup. This reflects the current strong deep sea market.

Short sea shipowners have seven vessels in layup. These ships are exclusively related to passenger transport, and indicate how demanding the market has been for the passenger ship companies the last two years.

Further reduction in layup figures anticipated

All segments expect a further reduction in layup figures in 2022. In total, shipping companies expect layup to be reduced by more than a third. In particular offshore reports significant and positive expectations for 2022. Passenger shipowners expect that only one ship will be in layup by the end of 2022.

Within offshore service, it is expected that 16 vessels will be taken out of layup, a decrease from 62 vessels to 46 vessels. Among rig companies, there is an expectation that nine rigs will be taken out of layup, lowering the number from 13 to four rigs in layup.

Some of this reduction can be explained by the fact that tonnage is being removed from the market through recycling, and that the companies have sold tonnage.

Continued recycling offshore

Ten percent of shipping companies state that they have plans to recycle ships or rigs in 2022. The highest number of ships planned for recycling is found in offshore service. Here plans entail recycling of a total of 18 ships. One rig and four deep sea vessels are also scheduled for recycling in 2022. At the opposite end of the scale, no short sea shipping companies plan to recycle ships in 2022. Nor are any passenger ships scheduled for recycling in 2022.

More than half of shipowners will order new ships over the next five years

In this year's survey, 54 percent of shipping companies state that they plan to order new ships or rigs over the next five years. Shipping companies estimate that they will order a total of 162 ships and eight rigs over the next five years. In particular the transport segments (deep sea and short sea) have the largest proportion of companies stating that they intend to sign contracts.

Within deep sea, almost six out of ten state that they will contract ships over the next five years. This segment accounts for almost half of the estimated contracts over the next five years, with its estimated 81 newbuildings.

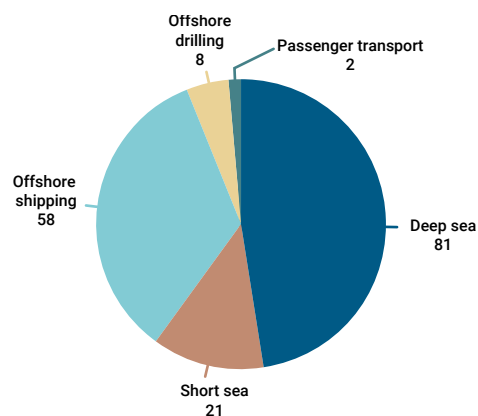


We also see a great need and a strong desire for fleet renewal in short sea shipping. Nine out of ten short sea shipowners plan to order new vessels over the next five years. This means that the potential for renewal in short sea is great, and that the average age of short sea vessels will be reduced. The potential for testing new climate and environmental technology is great in short sea shipping, with shorter distances and more frequent calls than for ships in deep sea and offshore service. In total, this segment expects to contract 21 vessels over the next five years.

Almost half of offshore service companies are planning to build new ships over the next five years. In total, offshore service companies state that they estimate to contract a total of 58 vessels. Close to four out of ten rig companies state that they anticipate building a total of eight rigs.

New construction is also expected in the passenger ship segment. It is estimated that two new ships will be contracted over the next five years.

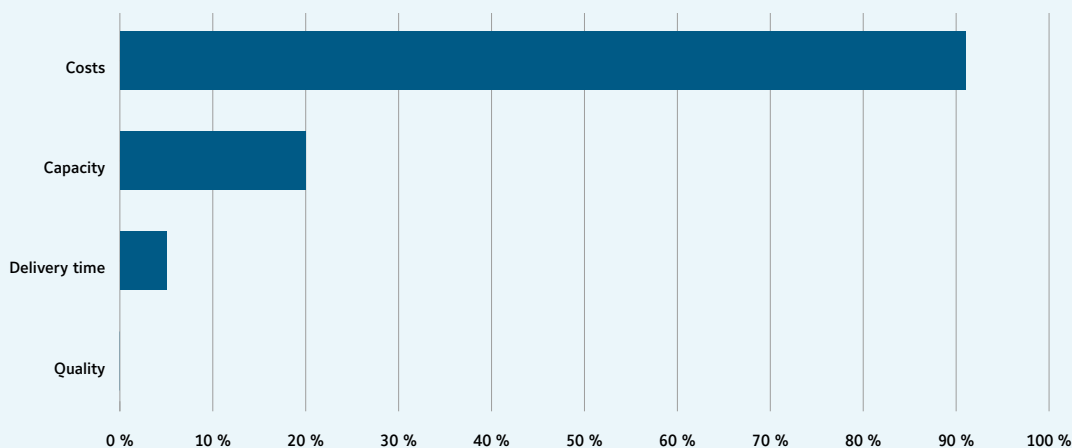
Number of new ships that shipowners anticipate building in the coming five years



Source: BDO AS / Norwegian Shipowners' Association

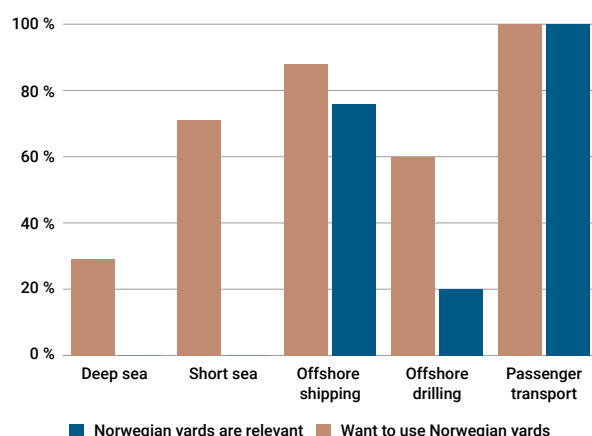
Norwegian shipowners are very important to Norwegian shipyards and the supplier industry. Contracting new ships will mean improving the order book for both Norwegian shipyards and equipment suppliers in the maritime cluster. Around two out of three shipping companies want to use Norwegian shipyards when building their vessels. But unfortunately, only one in three believes that Norwegian shipyards will be relevant.

Shipping companies' assessment of barriers that prevent the use of Norwegian yards when ordering new vessels



Source: BDO AS / Norwegian Shipowners' Association

Share of shipping companies that want to use Norwegian yards, respectively, and consider Norwegian yards to be relevant when ordering new vessels



Source: BDO AS / Norwegian Shipowners' Association

Among short sea shipowners, none consider Norwegian shipyards to be relevant. The figure is significantly higher in offshore service, where three out of four state that Norwegian shipyards will be relevant when building ships. Within the passenger segment, Norwegian shipyards are seen as both desirable and relevant for shipbuilding. Within the deep sea, no shipowners consider Norwegian shipyards to be relevant.

When shipping companies are asked which barriers prevent them from choosing Norwegian shipyards, more than 90 percent reply that costs are an obstacle. For deep sea shipowners, it is a combination of costs and capacity. Part of the explanation lies in the size of the docks at shipyards and Norwegian shipyards' inability to deliver large bulk or tankers.

For the short sea segment, costs are the only barrier. This shows that there is a great potential for building short sea vessels in Norway, if construction costs are reduced. If more ships are built in Norway, it will mean ripple effects for the maritime clusters along the coast, and an increase of activity at the shipyards, which have faced a very demanding situation since the fall in oil prices.

For offshore service shipping companies, Norwegian shipyards are still relevant for shipbuilding, and a growing order book from offshore service shipping companies is welcome news for the shipbuilding industry and the rest of the Norwegian maritime industry.

An aerial photograph of a ship's wake in the ocean. The water is dark blue, and the wake is a series of white, frothy waves that curve and spread out from the ship's path. The text "FLEET IN FIGURES" is overlaid in a light blue box in the top right corner.

FLEET IN FIGURES

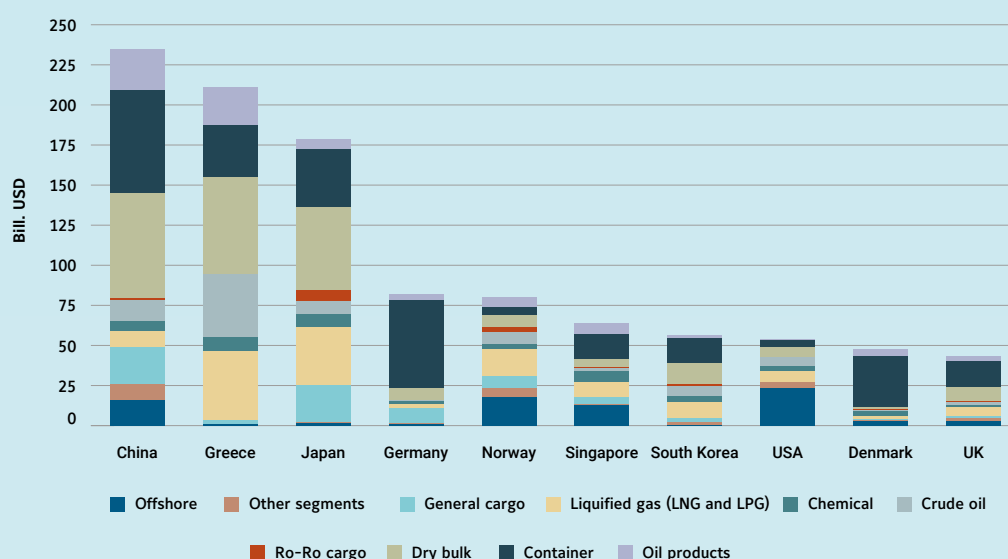
Photo: Anne Lise Norheim

Norway in fifth place among the world's shipping nations

The value of the total world fleet in 2022 is estimated at USD 1.530 billion, of which the ten largest shipping nations hold 70 percent. Norway is fifth on the list. China, Japan and Greece are the three largest

nations by far, followed by Germany and Norway. In the Norwegian fleet, the gas tanker and offshore segments have the highest market value.

Top ten merchant fleets of the world by market value by segments as of 2022. Bill. USD



Source: Clarksons World Fleet Register/Menon Economics

The corona pandemic has over the last two years led to major economic challenges for the international supply chain in freight transport. These challenges range from inefficient port operations to a shortage of raw materials. Changes in world trade have led to a significant increase in freight rates for container and dry bulk carriers. Freight rates for container ships have over the last couple of years been up to seven times higher compared to 2019, while dry bulk has seen freight rates more than double.¹ These price changes have had a major impact on fleet value.

Until this year, data from IHS Markit has been used to calculate the size and composition of individual countries' fleets, while price data has mainly been taken from Clarksons Platou. As of 2022, the data basis for calculating the composition and size of the fleets is taken from Clarksons World Fleet Register.

These two data sources are not identical, meaning that the results in this year's valuation are somewhat different from previous years. The biggest difference in the database is that Clarksons has broader coverage of vessels across nations. IHS Markit had around 11,000 vessels with unknown ownership nationality, while Clarksons has just over 1,000 vessels with unknown nationality.

Changes in the data source and the degree of coverage, in combination with more precise ownership information and updating of the valuation basis, lead to strong increases in the fleet value for some nations within certain segments. The sharp increase in value in the gas and dry bulk segment in the Norwegian fleet in particular are examples of this. Nevertheless, this year's analyses are based on a stronger database than previously, with fewer uncertainties.

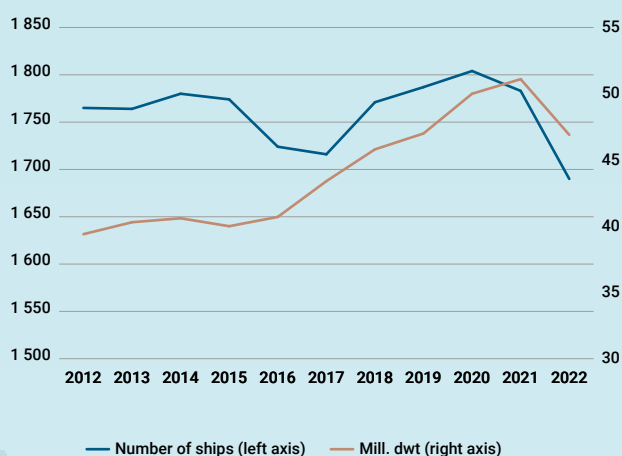
¹ Clarksons Research - World Fleet Monitor Volume 13, No. 1 January 2022

The Norwegian controlled foreign-going fleet

The Norwegian controlled foreign-going fleet has in recent years experienced good growth in both number of ships and tonnage, but has seen a decline over the course of 2021. As of January 2022, the fleet numbers a total of 1,690 ships with a total tonnage of 46.9 million deadweight tonnes. At the same time last

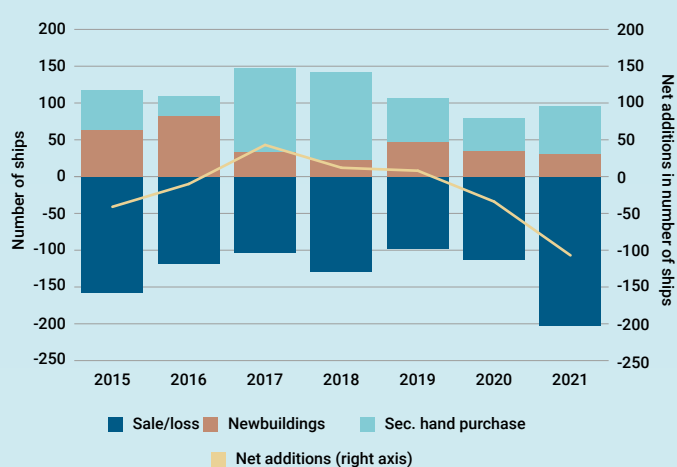
year, the fleet consisted of 1,783 ships with 51.1 million deadweight tonnes. During the year, around 200 ships were sold, while 100 ships were added. We find the largest decline in the offshore service segment, with almost 50 fewer ships in 2022 than a year ago.

Development in the Norwegian controlled foreign-going fleet 2012–2022



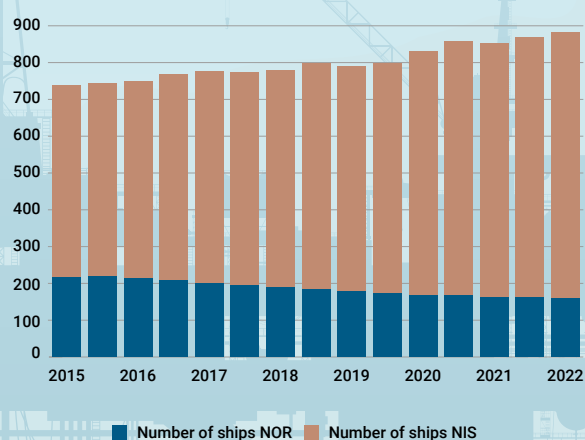
Source: Norwegian Shipowners' Association

Additions and removals by number of ships – Norwegian controlled foreign-going fleet



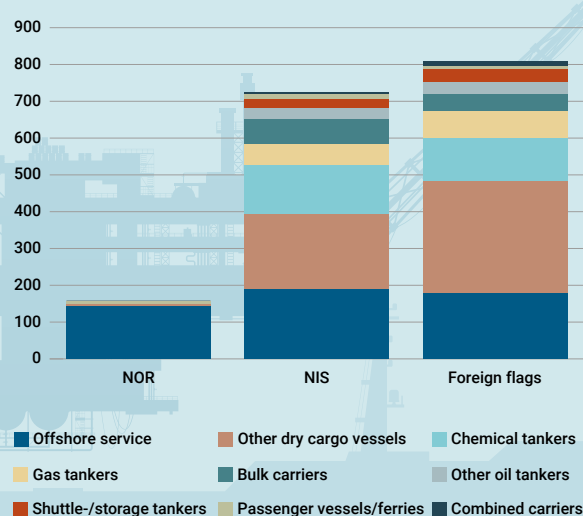
Source: Norwegian Shipowners' Association

Development in the Norwegian controlled foreign-going fleet – NIS and NOR registered vessels 2015–2022



Source: Norwegian Shipowners' Association

The Norwegian controlled foreign-going fleet by flag and ship type as of 1 January 2022



Source: Norwegian Shipowners' Association

The Norwegian flag is attractive

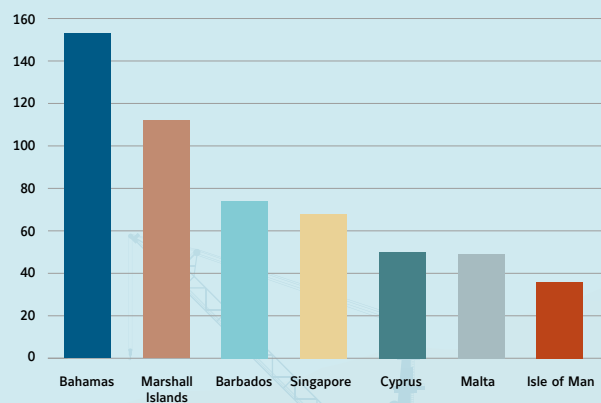
The Norwegian International Ship Register (NIS) has grown over the past year, with an increase of 33 ships, numbering 724 ships as of 1 January 2022. The Norwegian Ordinary Register (NOR) has weakened somewhat among foreign-going shipowners in the same period, but overall the Norwegian flag has strengthened significantly, growing by more than 100 ships in the last three years. Many shipowners have chosen the Norwegian flag for their vessels and are flagging home, and several newbuildings are being delivered with the Norwegian flag. When asked in this year's survey whether it is relevant to flag ships home this year, members of the Norwegian Shipowners' Association reply that the potential is close to 50 ships.

The composition of the Norwegian controlled foreign-going fleet shows that offshore service ships have been overtaken by the dry cargo segment, now the largest segment in the fleet measured in number of ships. In the Norwegian Ordinary Register (NOR), the composition is almost unchanged, consisting primarily of offshore service vessels and passenger ships.

The Norwegian controlled order book

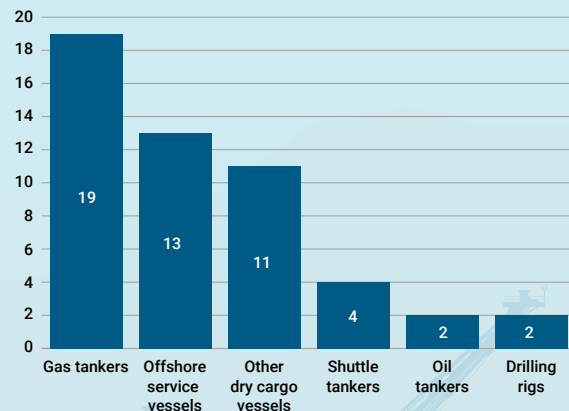
The foreign-going shipowners' order book now consists of 49 ships and two drilling rigs. In 30 years, the order book has not been as lean as it has been the last three years. In 2008, the order book counted nearly 400 ships. Most vessels in today's order book will be delivered in 2022 and 2023. In the first months of this year, several vessels have also been contracted for the offshore wind service market, in addition to a series of modern car transport vessels.

The Norwegian controlled foreign-going fleet with foreign flags as of January 1, 2022



Source: Norwegian Shipowners' Association

Ships on order for the Norwegian controlled foreign-going fleet as of January 1, 2022



Source: Norwegian Shipowners' Association



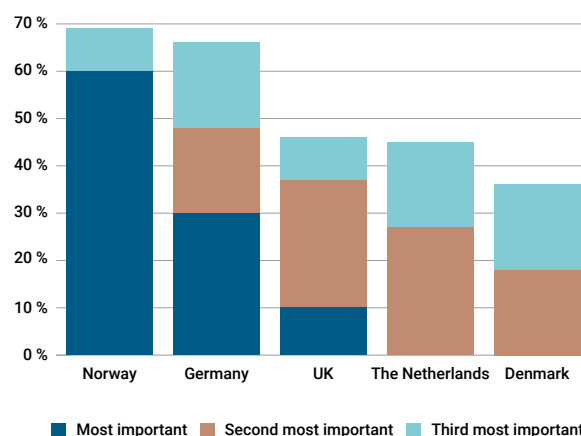
Short sea

Shipowners in the short sea segment, also called coastal shipping, transport all types of goods and passengers. These operate between Norwegian and European ports, and between ports in Europe. A significant amount of internal transport in Europe is moved by ship, and this means that short sea shipping plays a crucial role in the business transport needs and the competitiveness of Norwegian industry. Norwegian Shipowners' Association members in short sea shipping control about 120 ships. The industry contributes to efficient logistics and transport solutions, and one single ship in short sea shipping can, with a single load, take volumes equivalent to 200-400 trucks off the road. Several shipowners in this segment are positioning themselves for the green shift, with ships on order. Common to them all is that the new vessels will be delivered with environmentally friendly solutions, which will reduce climate emissions.

For shipowners operating in short sea shipping, Norway, Germany and the United Kingdom are highlighted as countries of particular interest. Sixty

percent of the shipowners rank Norway as by far the most important country, up from last year's 40 percent. Thirty percent reply that Germany is most important, with ten percent naming The United Kingdom. These countries have remained stable as the most important countries for short sea shipping in addition to Norway, although this year the order has changed.

Countries of particular interest for short sea shipowners



Source: BDO AS / Norwegian Shipowners' Association

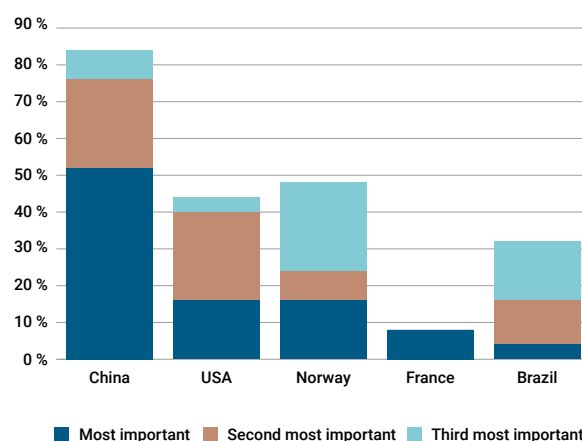


Deep sea

The deep sea fleet consists of several segments where Norwegian shipping companies are world leaders and have solid market shares. Segments such as auto freight, LNG, shuttle tankers and chemicals are among these. These ships sail over large distances and between continents. Norwegian Shipowners' Association members in the deep sea segment control over 600 ships calling at ports around the world on a daily basis. The companies have a number of offices abroad, giving Norwegian shipowners a strong presence on all continents.

Deep sea shipowners highlight China as their largest country of particular interest, followed by the United States and Norway. Fifty percent of shipowners in this segment rank China as most important. This is a slight decrease from last year. Nearly 50 percent state the US as one of the most important countries.

Countries of particular interest for deep sea shipowners



Source: BDO AS / Norwegian Shipowners' Association

Offshore service and rig companies

Norway is one of the world's largest maritime offshore nations. Shipping companies participate in all phases of petroleum activity, from the initial seismic surveys and exploration, to the production and eventual decommissioning of depleted fields. Offshore service shipping companies also see opportunities in the offshore wind market, where Norwegian shipowners have a clear advantage with their existing expertise. Several shipping companies are already providing services to offshore wind, and more are now investing in tonnage specific to this market.

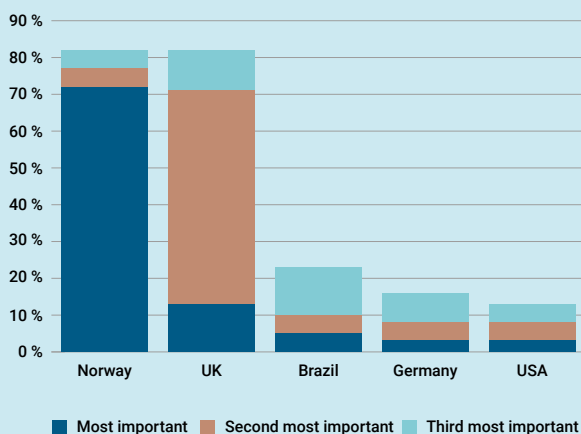
The Norwegian offshore fleet has a high proportion of vessels for transporting supplies and equipment to and from offshore installations. The North Sea and especially the Norwegian continental shelf is the most important market for the Norwegian offshore industry, and is a highly important arena for securing the basis for international competitiveness of offshore

companies. They also have significant presence on other countries' continental shelves. Norwegian Shipowners' Association members control 50 mobile offshore units, and a large offshore fleet consisting of close to 500 vessels.

Countries of particular interest for offshore service and rig companies

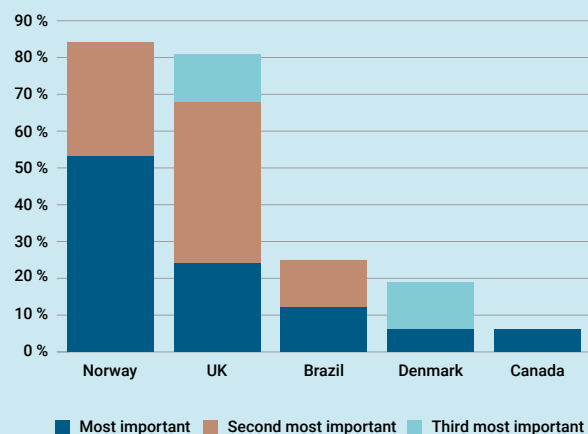
For offshore service shipping and rig companies, Norway, the United Kingdom and Brazil maintain their positions as countries of particular interest. More than 70 percent of companies in offshore service name Norway as the most important country. More than 50 percent of rig companies say the same. This clearly shows the importance of the North Sea for these companies. The UK and Brazil rank next for both offshore service and rig companies.

Countries of particular interest for offshore shipping companies



Source: BDO AS / Norwegian Shipowners' Association

Countries of particular interest for offshore drilling companies




Source: BDO AS / Norwegian Shipowners' Association




Photo: Anne Lise Norheim

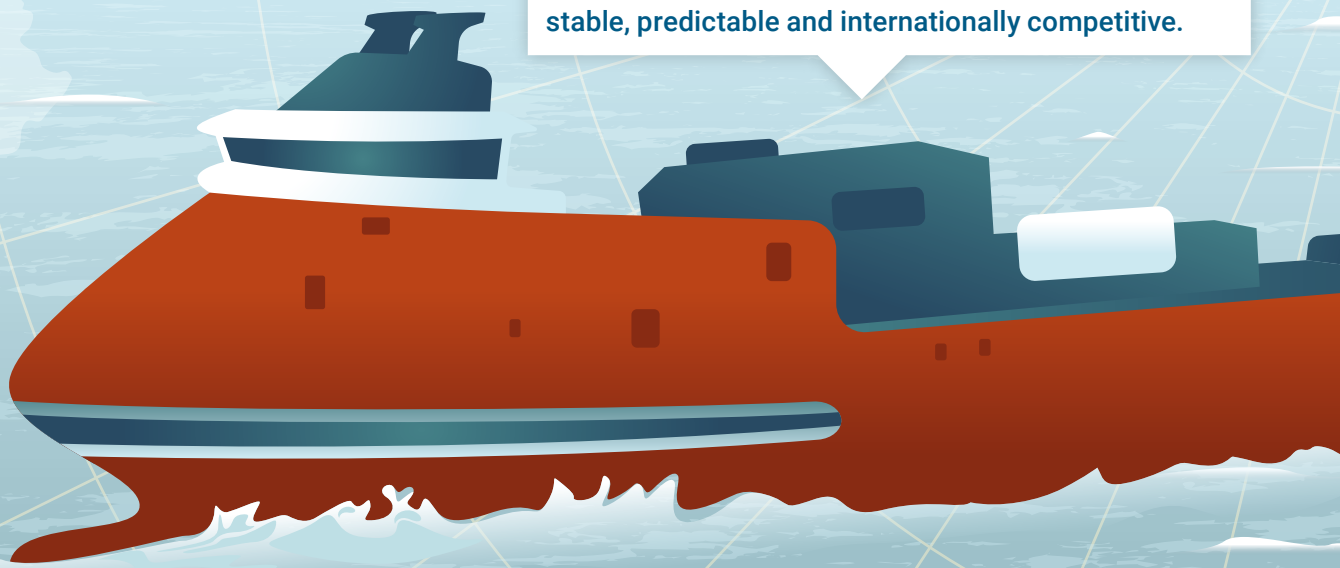
The Norwegian Shipowners' Association believes...



Active maritime policies work. Norwegian shipping faces tough international competition. The attractiveness of Norway as a maritime location country depends on framework conditions remaining stable, predictable and internationally competitive.



Shipping will become climate neutral. A CO₂ fund can accelerate the development of new technology and alternative forms of energy in the maritime industry.





World energy production is undergoing rapid change. There is an urgent need for further clarification to realize offshore wind power development - and a new era for Norwegian industry.



It is crucial that the Norwegian authorities support the international legal order and multilateral governance systems at a time when globalization is increasingly being challenged by regional advances, national interests and protectionist forces.



Private ownership provides welfare and drives the green shift

In many local communities along the Norwegian coast, maritime companies account for more than half of private sector employment, which in turn is the mainstay of our welfare. All this is driven and financed by local, private owners with a commitment to long-term thinking and value creation.

"We need good framework conditions that create a more investment-friendly Norway, ensuring that Norwegian owners are on equal terms with foreign competitors. If we do not remove the extra cost of Norwegian ownership, we cannot complain when Norwegian companies are sold abroad," says the president of the Norwegian Shipowners' Association, Paul-Christian Rieber.

Paul-Christian Rieber is CEO of GC Rieber AS and Chairman of the Board of GC Rieber Shipping ASA. GC Rieber is headquartered in Bergen and is a privately owned company with operations in shipping focused on offshore and renewable energy, real estate development and various industrial companies.

"Norwegian owners compete with foreign owners, and the wealth tax on working capital in enterprises is a significant competitive disadvantage for Norwegian-owned companies. Competitive framework conditions for Norwegian private ownership are central to the further development of the maritime cluster in Norway, among other things," says Rieber.

The wealth tax is a special tax on Norwegian ownership that systematically discriminates against Norwegian private owners as opposed to state



Photo: Camilla Waage

and foreign ownership groups. It also drains companies of capital that might have gone to innovation, the green shift and new jobs. The Norwegian Shipowners' Association is therefore working to reduce and eventually eliminate the wealth tax on working capital.

"We have put two very demanding years for Norwegian business behind us, with major liquidity challenges as a result of the Covid-19 outbreak and a demanding global market. In addition, offshore service companies have faced major challenges for several years, with many ships in layup today."

"It is therefore necessary to abolish wealth tax on working capital, ensuring that Norwegian companies are still Norwegian-owned when we return to a more normal market situation. This will facilitate long-term ownership, secure jobs and further value creation and welfare along the entire coast," Rieber concludes.



Photo: Wikimedia Commons

Maritime policies work

In order for Norway to maintain its position as a maritime superpower, internationally competitive framework conditions are needed. The Norwegian maritime industry employs nearly 85,000 people in Norway and creates value for NOK 154 billion annually.

Norway is one of only a few countries with a complete maritime cluster. The cluster consists of internationally leading companies that design, build, operate and sell ships, and supply equipment and services. At the core of this cluster are the shipowners. They make up the largest segment of the maritime industry, measured in both value creation and employment. For the maritime industry, a competitive tonnage tax scheme, a net wage scheme for seafarers and an attractive ship register are the most important framework conditions for facing fierce international competition.

Active maritime policy leads to flagging home

As a shipping nation, it is important for Norway to have a large share of the fleet under the Norwegian flag. This helps to maintain and further develop the competence of the maritime administrations in Norway and strengthens Norway's impact in international fora such as the UN International Maritime Organization, IMO. The most important factor for choosing NIS over foreign registers is that shipowners are provided with stable and competitive framework conditions in Norway, in addition to a well-functioning Norwegian maritime administration.

In the last five years, almost 200 ships have been enrolled in the Norwegian registers. This is the result of predictable Norwegian maritime policies. In the membership survey, shipowners state that they are considering flagging 49 vessels to the Norwegian registers this year, NOR or NIS, divided among 22 deep sea vessels, 11 short sea vessels and 16 offshore service vessels. In order to realize and increase this potential, continued predictability is crucial.

- Ninety-four percent of shipowners believe that it is important or very important to repeal the wealth tax on working capital in order to strengthen Norwegian private ownership

Private ownership is important for innovation, employment and the green shift

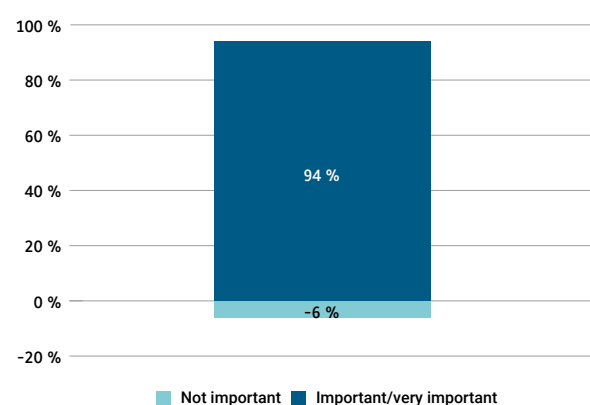
The attractiveness of Norway as a maritime location country depends on framework conditions as a whole being stable, predictable and internationally competitive. A special feature of the Norwegian shipping industry is that it has a very high proportion of private Norwegian owners.

The wealth tax weakens the competitiveness of this ownership by systematically discriminating against Norwegian owners in favour of foreign ownership groups and publicly owned companies.

The wealth tax drains companies of capital that could otherwise have gone to investments in new technology, measures for the green shift and new jobs. In addition, the wealth tax is regularly levied on ownership, regardless of the company's profitability and liquidity, which makes companies particularly vulnerable in times of recession. Dividends often have to be taken out of companies to cover the owners' expenses for wealth tax. This also drains companies of capital.

The most important thing that can be done to strengthen access to competent and patient capital and create opportunities here in Norway is to repeal the wealth tax on working capital.

How important is it to repeal the wealth tax on working capital in order to strengthen Norwegian private ownership?



Source: BDO AS / Norwegian Shipowners' Association

The net wage scheme ensures the competitiveness of Norwegian seafarers

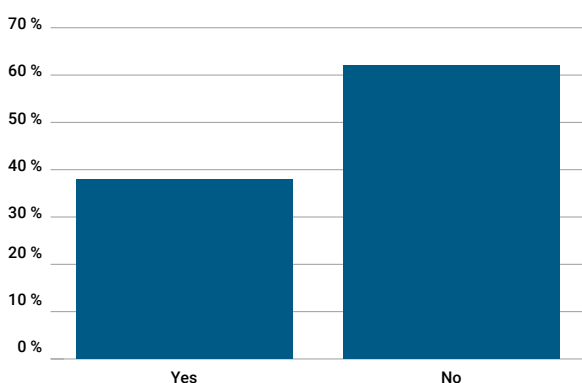
In order to secure Norwegian operational maritime competence and contribute to the recruitment of Norwegian seafarers on Norwegian-registered ships, a competitive net wage scheme for seafarers is crucial. The scheme provides subsidies based on payment of Norwegian withholding tax, social security contributions and employer's contributions, limited by an upper payment ceiling per person. The tax refund scheme is a good investment in Norwegian innovation and expertise, and shipowners benefit greatly from seafaring experience in their land-based organizations.

■ **Ninety-one percent of shipowners experience that the wealth tax has negative consequences for investments and further growth in their companies**

The scheme was weakened in the state budget for 2022. Almost 40 percent of shipowners report that this means they are now considering having to replace Norwegian seafarers with foreign crew.

Norwegian seafarers work primarily on Norwegian ships. A more competitive scheme will help ensure the recruitment of Norwegian seafarers on Norwegian-registered ships. In addition, recruitment can also be strengthened through increased use of apprentices and other training positions on board.

Due to the weakened tax refund schemes in 2022, do you consider replacing Norwegian seafarers by non-Norwegians?



Source: BDO AS / Norwegian Shipowners' Association

Norwegian wage and working conditions send jobs out of the country

The government has signalled legislation requiring ships sailing in Norwegian waters to pay Norwegian wages, regardless of in which country the ship is registered.

Ships in international trade sail all over the world, with crews from different countries. It is not feasible to replace international crews with Norwegian seafarers for the short period the ship is operating in Norwegian waters. On the contrary, higher costs in Norwegian waters will lead to Norwegian seafarers currently employed by shipowners being phased out to cover the cost, as the Norwegian wage level is not competitive anywhere else in the world.

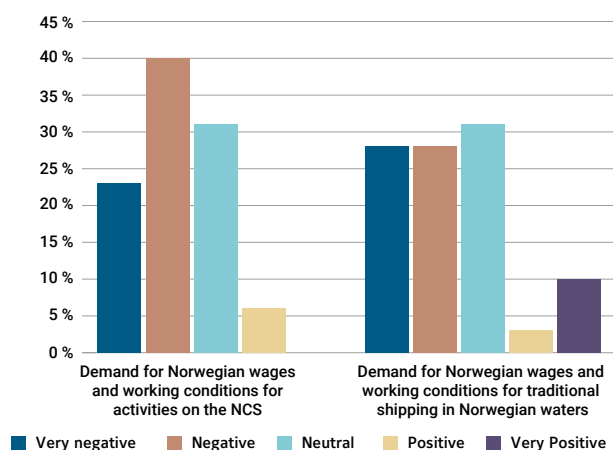
Shipping is based on the Flag State principle, i.e. that the regulations of the ship's country of registration govern the ship. When Norwegian ships sail internationally, Norwegian law applies. As a maritime nation, Norway would not accept that other countries override the regulation of Norwegian ships when they operate in foreign waters. In addition to these fundamental challenges, there are practical ones, such as the lack of control and sanction options.

Employees on board Norwegian ships, no matter where they are in the world, must have good and safe conditions. The Norwegian Shipowners' Association negotiates collective agreements for seafarers from all over the world, with the seafarers' respective employee organizations. Norwegian employee organizations contribute to this work.

■ Half of shipowners experience that the wealth tax has negative consequences for the green shift

The Norwegian Shipowners' Association believes that Norwegian seafarers' competitiveness can be strengthened through a statutory and improved subsidy scheme for seafarers, through an industry agreement for wages and working conditions on the Norwegian continental shelf, and by the public sector setting requirements for Norwegian wages and working conditions in public procurement.

Impact of changes in political framework conditions on businesses



Source: BDO AS / Norwegian Shipowners' Association

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- The tax refund scheme for seafarers must be legislated and strengthened to ensure competitive companies and Norwegian jobs
- The wealth tax on working capital must be repealed
- Legislation of Norwegian pay and working conditions in Norwegian waters would be contrary to the Flag State principle, EU rules, and would probably lead to fewer Norwegian seafarers in shipping
- A competitive tonnage tax scheme is a crucial framework condition for Norwegian shipping
- The extraordinary Norwegian delineation of the tonnage tax scheme must be changed, so that ships under the regime can also be used for assignments that are taxed ordinarily. Such a change in the scheme would not provide a tax advantage, but ensure that shipping-taxed vessels in the Norwegian scheme can be used for more types of assignments than today
- Access to use NIS must be allowed in areas where there are currently no shipping companies that have ships in NOR, for example shuttle tankers operating on the Norwegian continental shelf



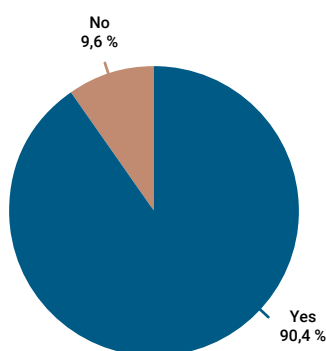
Photo: Sindre Krane Olsen, KO Foto

Shipping to be climate neutral

The Norwegian shipping industry has high ambitions to become climate neutral in 2050, and from 2030 Norwegian shipping companies will only order ships based on zero-emission technology. This means that we only have the rest of this decade to develop and scale solutions that are both climate neutral and profitable in the market.

The government can help increase the pace and scope of the fuel revolution. The industry lists high investment costs, lack of technology and availability of alternative fuels as the biggest barriers today.

Share of shipping companies that believe their business will be climate neutral by 2050



Source: BDO AS / Norwegian Shipowners' Association

■ Over 90 percent of shipping companies say that they believe they will be climate neutral by 2050, in line with the Norwegian Shipowners' Association's climate strategy

International climate requirements affect Norway. In order to reduce emissions while maintaining the industry's international competitiveness, the Norwegian Shipowners' Association believes that shipping should be subject to a global CO₂ tax on fossil fuels through the IMO. Fees paid should go to the establishment of a CO₂ fund for green initiatives in the industry, and to reduce the price difference between fossil fuels and alternative climate-neutral energy carriers. In order to drive the green shift in shipping, we are completely dependent on coordinated international climate measures.

- Eighty-two percent believe they will cut climate emissions by 50 percent per unit by 2030 compared to 2008, in line with the Norwegian Shipowners' Association's climate strategy

A global tax applied equally to all contributes to a level playing field and predictability for the industry. A global CO₂ fund for restructuring in the industry would also contribute to increased demand for climate technology, a field in which Norway is already well advanced. This also opens up new export opportunities. The industry has proposed this in the IMO through the International Chamber of Shipping (ICS) and is working to gain support from IMO member countries. Unfortunately, the Norwegian authorities have so far not supported the industry's proactive proposals for measures for a green shift.

In Europe, the Norwegian Shipowners' Association supports the goals of the EU's Green Deal and has participated in the design of measures now under review in the Fit for 55 package. When shipping is included in the EU's quota trading system, it is important that fees collected go toward green initiatives in the maritime sector.

Alternative fuels must be as profitable as fossil fuels

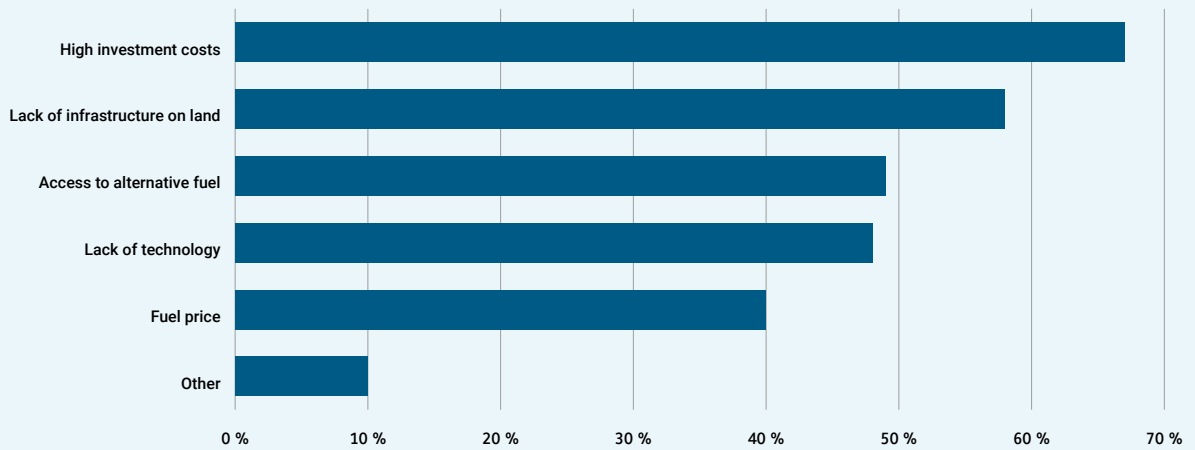
Today, traditional fuels are significantly cheaper than more climate-friendly alternatives. In an industry facing fierce competition, it is crucial that the price difference between fossil and climate-friendly fuel be reduced if the green shift is to be accelerated. Therefore, there is a need for a CO₂ fund that can accelerate the development of new technology and alternative forms of energy in the maritime industry.

- More than six out of ten shipping companies reply that they are willing to pay more for climate-friendly fuel, and among short sea shipping companies the number is eight out of ten

Assets from the fund should, among other things, be used to finance contracts for differences, a scheme where, in a transitional phase, companies receive grants covering the price difference between traditional fuel and fuels such as hydrogen or ammonia.

This will help more companies to use alternative fuels, which in turn will lead to more rapid development of infrastructure and production of alternative fuels.

The largest barriers for using alternative fuels



Source: BDO AS / Norwegian Shipowners' Association

The industry has highly positive experience in reducing NO_x emissions through technology development supported by the NO_x Fund. The Norwegian Shipowners' Association believes that a supplementary agreement should be prepared for the NO_x Fund so that this fund structure can also be used to finance CO₂-reducing measures

The fund should be financed by part of the income from the increased CO₂ tax. In addition, money that Norwegian shipping companies will pay into the EU Emissions Trading Scheme (ETS) and which revert to the Norwegian authorities, should be used as financing. Using funds that the industry pays through these fees will indirectly mean that the industry finances its own green shift.

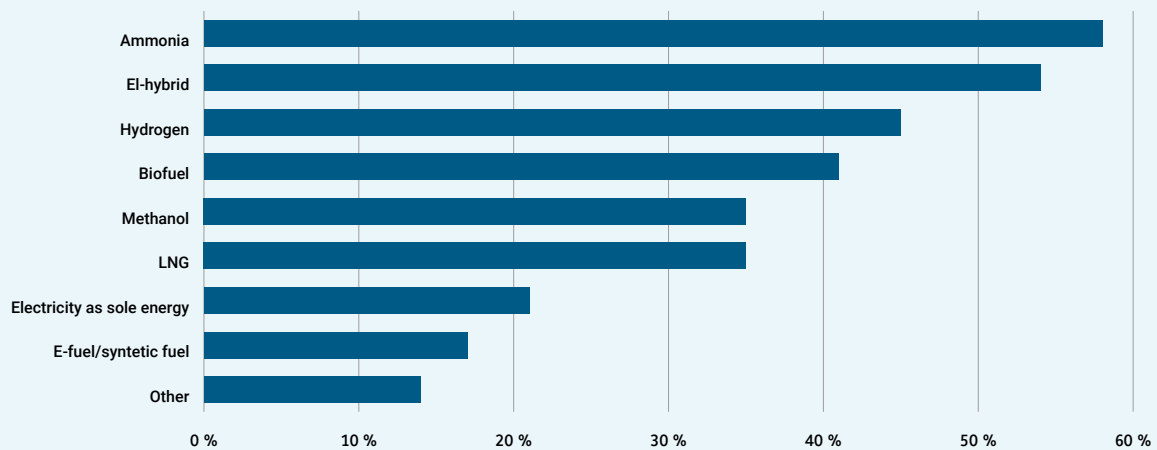
Cooperation between the government and industry is key

The government has stated that they will make Norway a driving force for a more ambitious international climate policy, among other things by establishing mutually binding climate partnerships between the industry and the government, and by launching a green restructuring package for climate-friendly ships.

The Norwegian Shipowners' Association welcomes these efforts. There is a great need to review the toolbox and the policy instruments in order to intensify climate work in the Norwegian maritime sector. We aim to contribute constructively to the work on the restructuring package.

■ Ammonia is the preferred energy carrier when shipping companies are asked which solutions they would use to achieve emissions targets by 2050

Fuel types and energy carriers the shipping companies are considering to achieve emission targets by 2050



Source: BDO AS / Norwegian Shipowners' Association

Enova must be equipped to enable scaling of technology

Developing new climate solutions is very capital intensive. Enova has been an important source of funding for pilot projects in the hybridization of maritime transport and the offshore fleet. However, Enova lacks effective and targeted schemes for scaling up solutions that are reaching market maturity.

It is a challenge today that technologies are considered mature for the market before they actually are. In reality, loss of support slows down the green shift because cargo owners, operators and customers are not willing to pay the additional cost for new technology and alternative fuels.

This means that new technologies are not being scaled up, and that fossil energy outperforms greener solutions. This can be resolved by the authorities requiring operators and product owners to use low or zero-emission solutions for shipping, as well as by introducing contracts for differences to even out the price gap between conventional and alternative fuels.

In addition, Enova's mission and mandate must be revised to allow support for new technologies to be extended beyond today's scheme, until the technologies are in reality mature for market and able to outcompete less climate-friendly solutions.

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- A mutually binding climate partnership must be entered into between the maritime industry and the state
- There is a need for a CO₂ fund to develop new climate solutions for shipping
- Contracts for differences must be introduced to reduce the price difference between alternative and fossil fuels
- The IMO must establish a global CO₂ tax for shipping, where funds are channelled back to green initiatives in the industry
- The terms of risk and top up financing loans granted for ship financing should be extended, and the risk and top up loan schemes should be lifted out of the policy instruments and placed in the banking system through government guarantee schemes.



Photo: Odfjell Oceanwind

The era of offshore wind must be initiated

Norwegian Shipowners' Association members are already embarking on the era of offshore wind, but it is happening in other countries. Norwegian industry and shipping have significant deliveries to bottom-fixed offshore wind today. Norway's strong position in maritime and land-based industry gives us a unique starting point for taking a leading role also in the development of floating offshore wind.

The Norwegian-based offshore wind industry can potentially reach a turnover of nearly NOK 85 billion in 2050, but the necessary support must be in place to allow this potential to be reached.

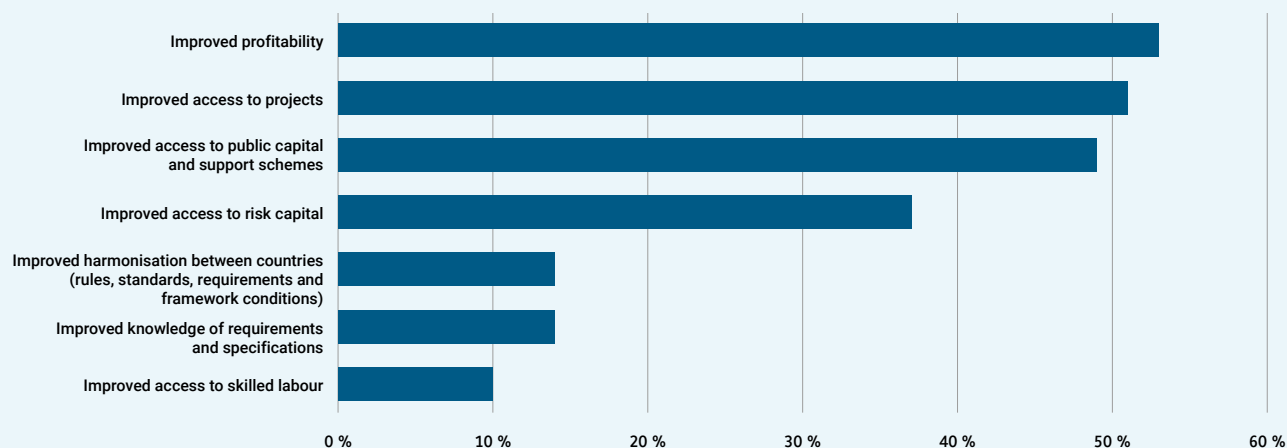
The most important factor is establishing a domestic market for offshore wind. This is a critical prerequisite for the supplier industry, making it possible to develop and test technology and operating solutions on a large scale.

As many as 85 percent of Norwegian Shipowners' Association members believe that a domestic market for floating offshore wind is a prerequisite for being able to compete internationally. We believe that the government's strategy for offshore wind does not provide the necessary momentum that offshore wind development should have, and fear that this could lead to Norway continuing to lag behind its European competitors.

A national goal should be set to install three gigawatts of capacity on the Norwegian continental shelf by 2030. It is important that the government quickly provide clarifications for phase II of Sørlige Nordsjø II. We consider a target of a ten percent share for Norwegian companies in the global offshore wind market by 2030 to be both realistic and ambitious.

About 30 percent of shipowners state that they have turnover related to offshore wind, amounting to NOK 4.9 billion. This is expected to increase to 5.3 billion in 2022.

Shipping companies' perception of the most important factors for further growth in the offshore wind market



Source: BDO AS / Norwegian Shipowners' Association

In particular offshore service companies see opportunities in the offshore wind market. Just over half of companies in this segment have activity in offshore wind. Within five years, this share will increase to two out of three offshore service companies.

For the industry, further clarifications are urgent if we are to realize offshore wind power development – ushering in a new Norwegian industrial era.

Stable oil policies ensure transition

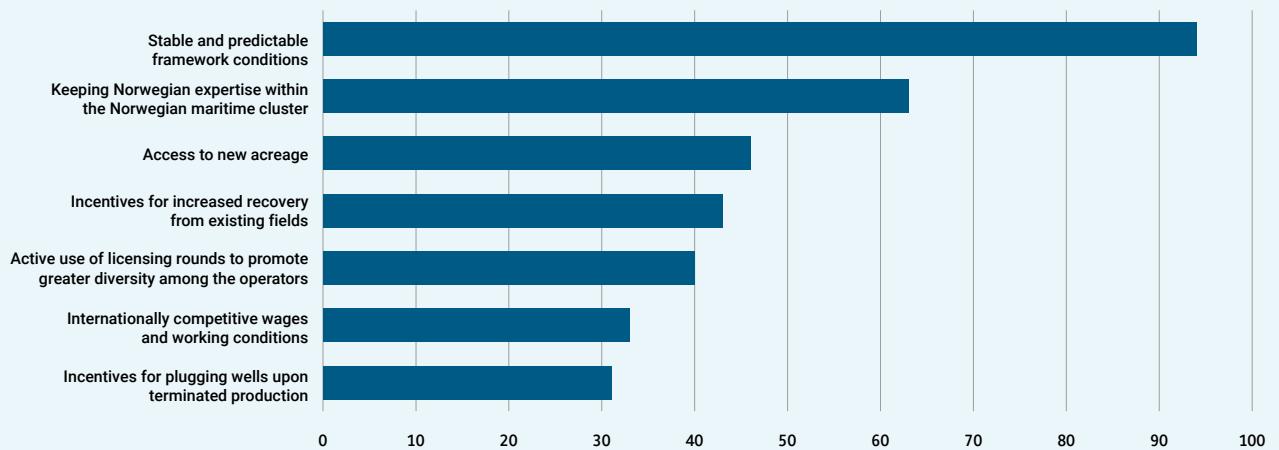
Norway is the world's most advanced maritime offshore nation, with the world's second largest fleet of offshore vessels.

The oil and gas industry must be further developed within the framework of climate policy. The expertise and development capacity of the petroleum industry is also needed to develop new industries on the Norwegian continental shelf, including offshore wind, hydrogen, carbon capture and storage and mineral extraction.

Predictability and stability are ranked by fully 94 percent of shipping companies as clearly the most important factor in ensuring an attractive Norwegian continental shelf. Good framework conditions are crucial for the energy industry in order to maintain Norwegian competence in the maritime cluster and to secure new areas.

Norwegian shipping companies had NOK 130 billion in total turnover from the petroleum sector in 2021. This constitutes a share of total revenues for shipping companies of 60 percent. Rig companies derive all their income from the petroleum sector. Offshore service companies report 74 percent petroleum-related revenues in 2021. Deep sea shipping companies report that half of their revenues are related to deliveries to oil and gas companies and the offshore supplier industry, while the corresponding figure for short sea shipping companies is only twelve percent.

Percentage of shipowners naming the following measures as the most important for ensuring an attractive NCS



Source: BDO AS / Norwegian Shipowners' Association

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- Norway must have a national goal of three gigawatts of installed capacity on the NCS by 2030 in order to make the era offshore wind a reality
- The predictability of allocation of new areas for petroleum activity, both in terms of licensing rounds and allocation in predefined areas (APAs), must be maintained
- There is a need for better infrastructure for transport and storage of CO₂
- The government must provide clarifications for phase II of Sørliche Nordsjø II as soon as possible

Freight transport must be moved from land to sea

Seaborne transport is the cornerstone of Norwegian freight transport and constitutes by far the most important means of transport in and out of the country. Every day, several hundred Norwegian ships call at European ports. These transport about 85 percent of all goods to and from Norway.

In recent years, a unified Parliament has shown great willingness to facilitate the transfer of goods from land to sea. Thirty percent of road transport exceeding 300 km will be transferred to sea and rail by 2030.

This transfer of goods will result in, among other things, reduced climate emissions, less road wear, fewer accidents and major socio-economic gains. In order to achieve the objective, measures must be implemented that strengthen the relative competitiveness of maritime transport.

Fees and charges must be reduced and simplified

Seaborne transport is the only mode of transport affected by almost all costs associated with infrastructure and contingency planning. This is a competitive disadvantage that does not impact other modes of transport. Fees can be reduced with more efficient operation of pilotage service, and co-location of maritime traffic centers and the pilotage coordination service. This will strengthen the competitiveness of shipping and help move more goods from land to sea. A realistic goal should be to halve the tax burden on the industry by the end of 2030.

In addition to the fee burden being greater, the tax regime for maritime transport is also much more comprehensive than for, among others, road transport. Seaborne transport has more than twice as many fees and charges as road transport. Therefore, the tax regime must be simplified to ensure fewer and lower overall charges for maritime transport.



Photo: Dan Ove Håndstad, Arriva Shipping AS

The incentive scheme for freight transfer must be revised and strengthened

Revision and strengthening of the incentive scheme for freight transfer is necessary to achieve Parliament's goals. The scheme provides grants to create new routes that take freight off the roads and over to sea. Allocations to the scheme must be increased.

The feedback from our members is that both the amount of support for individual shipping companies and the total allocation from the state budget are too low to trigger significant new projects. The current amount of support in the scheme is limited to the socio-economic benefit of the presumed transfer of goods for the first three years.

Experience with the scheme shows that this limitation makes it challenging to realize significant projects with large freight volumes, as the cost of establishing a new offering in very many cases exceeds the amount of support.

The National Transport Plan must be adhered to

Parliament has pointed out the need for appropriations exceeding the National Transport Plan in order to achieve the established freight transfer targets. Despite this, the state budget for 2022 proposes that maritime transport receive the lowest level of support between road, rail and sea.

This follows a pattern that has taken hold over the last 12 years, where the actual allocations in state budgets have been below or far below the state framework as outlined in the NTP. In contrast, actual allocations for rail and road have been consistently higher than proposed in the NTP.

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- Fees and charges for maritime transport must be reduced and simplified in order to strengthen the competitiveness of maritime transport
- The pilotage service must be streamlined and modernized, among other things by developing more robust and high-tech environments, as well as continuing to facilitate increased use of pilot exemption certificates.
- The incentive scheme for transfer of freight from road to sea must be revised and strengthened
- The National Transport Plan must be adhered to

- The Norwegian fleet is the world's fifth largest in terms of value, and is a world leader in many ship segments

Shipping is an international industry

Shipping represents the most important infrastructure for trade between the continents. More than 80 percent of all trade in merchandise is transported by ship. A global industry is dependent on a global regulatory framework. The Norwegian Shipowners' Association therefore works to support global rules drafted through the UN's Maritime Organization IMO and the UN labor organization, ILO. In order to ensure that shipping can operate on equal terms, adopted regulations must in fact be implemented by IMO member states and practiced equally, across national borders.

The Norwegian authorities must oppose protectionism

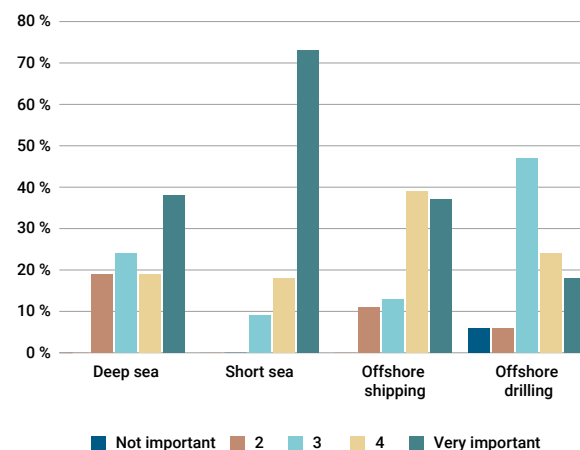
It is crucial that the Norwegian authorities support the international legal order and multilateral governance systems at a time when globalization is increasingly being challenged by regional advances, national interests and protectionist forces. More than half of shipping companies report that they are negatively affected by global protectionism.

One important tool in the fight against protectionism is the use of free trade agreements. Such agreements ensure market access and create predictability.

The EEA agreement is important for Norwegian competitiveness

The EEA agreement is Norway's largest and most important free trade agreement, and European countries represent the maritime industry's largest and most important trading partner. Uncertainty related to our most important market will hit Norwegian export-oriented businesses hard.

Shipowners' perception of the importance of the EEA agreement



Source: BDO AS / Norwegian Shipowners' Association

In the membership survey, the EEA agreement is named as important for all shipowning segments. This comes perhaps as no surprise, as Norwegian ship calls at ports in the EU amount to close to 40,000 a year, over 100 calls every single day. The agreement is particularly important for short sea shipowners, of whom 91 percent state that it is important or very important for their businesses.

- Norwegian shipping companies' revenue from markets outside Norway amounted to approximately NOK 130 billion in 2021. This makes up 60 percent of total turnover in the industry for that year
- In 2022, growth in foreign markets of NOK 10 billion is expected, putting the foreign share of turnover for shipping companies at 61 percent. This clearly illustrates that the maritime industry is global

An international threat scenario demands international contingency planning

The Norwegian fleet represents a formidable contingency planning resource for the Norwegian authorities and our allies. International presence in the form of ships and the network of people is significant. With 1,700 ships worldwide at any given time, Norwegian shipping is also confronted with all the challenges and threats facing the world.

Member companies in the Norwegian Shipowners' Association report that cybercrime is the biggest threat to their activities. The industry is working purposefully to improve security, including through the cyber security center NORMA Cyber. In order to be best equipped, there is a need for close cooperation with relevant state actors. At the same time, the business community can be invaluable controllers and competence partners for the authorities.

Geopolitical tensions and piracy also impact shipping. In 2021 alone, numerous Norwegian ships been exposed to threats and situations in different parts of the world. Several waters and ports in areas of armed conflict are challenging to world trade. Areas such as West Africa and the Middle East in particular are challenging for Norwegian and international shipping today.

The challenges are complicated and demanding, but through coordinated and strategic use of government instruments and international cooperation, the Norwegian authorities can contribute to increased security and stability.

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- The Norwegian authorities must work for harmonized global implementation and uniform practice of international rules
- The authorities must counteract protectionist forces in foreign markets by, among other things, concluding free trade agreements
- The authorities must support Norway's most important free trade agreement, the EEA agreement, and good cooperation with EU institutions
- A comprehensive national strategy is called for to improve the maritime security situation in vulnerable and prioritized regions
- Piracy must be criminalized and prosecuted in coastal states in vulnerable regions
- Arenas must be created where the industry and regional partners can meet to build trust and share information and experiences regarding the security situation
- Stability in the Middle East and West Africa must be a priority, and military efforts that can de-escalate the security situation should be considered
- NORMA Cyber contributes to national defence in the cyber domain

Research and competence are the keys to the industry's future

Norway is at the forefront of research, innovation and development of future environmentally friendly and sustainable transport solutions for shipping.

In order to maintain this position, investments must be allocated accordingly. Funds for research and development of new technology must be increased. The maritime cluster in Norway has great opportunities to develop transport solutions that the world needs, through interdisciplinary collaboration and increased research efforts.

Groundbreaking research depends on modern infrastructure

Private industry's access to physical infrastructure for development and innovation is crucial for competitiveness in Norway. Investments in future-oriented R&D and infrastructure are needed to maintain our position as a nation of knowledge.

Facilitating a green infrastructure along the coast is a prerequisite for mobilising new technology, and for participation in international research projects.

Today's research infrastructure is unfortunately outdated in many contexts. Our most important tools for innovation and new development are in danger of disappearing, and this is critical. It is therefore

absolutely crucial to complete work on the Ocean Space Centre as soon as possible.

Norway is also a world leader in research and development of autonomous ships, with several strong regional clusters. We also face particular transport challenges that are well suited for autonomous ships. The Norwegian Shipowners' Association encourages continued investment in autonomy by creating specialized test arenas for use by companies and research communities.

Digitization and competence are linked

Our goal is for Norway to continue to lead the digital transformation of the maritime industry. This requires using technology to ensure efficient operations, reduce costs, increase security and create new services and markets. If we as a nation take the lead in developing new digital technology, we can at the same time create value and jobs.

Three areas in particular can contribute to the realization of a paperless maritime industry: requirements for standards, development of rules based on a digital society, and opportunities for effective digital reporting. The authorities should work toward international standards adapted to a digital world.



Photo: Anne Lise Norheim

In this year's member survey, almost 80 percent report that IT and digital competence will be most important for their business in the coming years, while 54 percent believe that this competence will be difficult to come by.

With a lack of competence, there is a risk of underutilizing the potential that lies in digitization. It is therefore absolutely crucial that digital knowledge and competence are incorporated in the educational process. In addition, a good selection of flexible continuing and further education opportunities is important for employees in all life situations to be able to keep pace with technological development.

Experience-based competence

Experience-based competence is an important driving force for future technology development, innovation and growth in a world-leading maritime cluster.

Shipowners agree that technical competence and operational experience from sea will be among the most important for them over the next ten years. At the same time, they believe that such competence will be most difficult to acquire.

Companies also report an increased need for apprentices and cadets. Almost three out of ten shipping companies will have an increased need for apprentices, and two out of ten for cadets. Remaining respondents report an unchanged need.

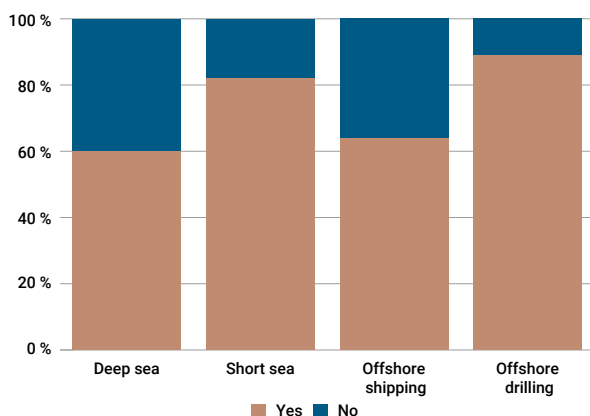
Universities and colleges today struggle to offer continuing and further education that satisfies the business community's and individuals' need for short courses and modules of high academic quality and relevance. The authorities must ensure good schemes and incentives for both the institutions and the companies to prioritize continuing and further education.

The Maritim21 strategy must be followed up

The Maritim21 strategy for research, development and innovation in the maritime industry targets sustainable growth and value creation, increased competitiveness and exports from the maritime industry, and realization of maritime potential in the development of green shipping and digital solutions.

The strategy states that there is a strong need for a comprehensive investment in digitization for increased competitiveness and efficient operations and operations. In particular, research efforts related to the digitalisation of the maritime sector within artificial intelligence, autonomy and digital twins for shipyards, ships, fleets and logistics systems must be strengthened. The government must continue to follow up the strategy.

Is your business experiencing an increased need for continuing and further education?



Source: BDO AS / Norwegian Shipowners' Association

THE NORWEGIAN SHIPOWNERS' ASSOCIATION BELIEVES THAT:

- The government must follow up the Maritim21 strategy for research, development and innovation in the maritime industry
- The government must continue to improve the quality of Norwegian maritime professional education through further funding of the collaboration MARKOM2020
- The Ocean Space Centre must be fully funded and realized
- Offshore research and innovation must have a significant place in the EU's research and innovation program
- A "digital cleanse" of maritime regulations is needed, in particular internationally
- Maritime education must be placed in cost category C in the financing model for higher education



DATA BASIS AND METHODOLOGY

Data sources used in this report are quoted in the text, tables, and figures. Sources and methodology are described below. The Norwegian Shipowners' Association has worked in collaboration with BDO AS on the analysis. Shipbrokers and consultants Lorentzen & Stemoco have contributed external market analysis to this year's report. It is clearly indicated in the text where this material has been used. The market analysis can be found in its entirety at www.maritimpolitikk.no (only in Norwegian).

Member survey on the shipping companies' prospects and framework conditions

The Norwegian Shipowners' Association conducted a survey of its members in the period from January 4 to January 18, 2022. Members were sent an electronic questionnaire to survey their expectations of developments in key economic figures, growth markets, access to capital and competence, and political framework conditions. 92 out of 123 current member companies responded to the survey, giving a response rate of 75 percent. Respondents in the survey are representative of the Norwegian Shipowners' Association's members, both in terms of fleet size and ship segment. The material therefore provides a sound basis for extrapolating from sample to population. Almost without exception, responses were provided by owners and senior management.

Calculation of shipping companies' growth in turnover in 2021 and 2022

BDO AS has access to accounting data for Norwegian shipping companies' turnover in 2020. In the survey, shipping companies were asked to indicate turnover in 2020, estimated turnover for 2021, and expected percentage of growth in turnover for 2022. Since BDO AS does not have complete turnover figures for all shipping companies in 2021, these have been calculated as follows:

- a) The companies' self-reported turnover in 2020 has been compared with information from official sources (such as audited turnover and the companies' own annual reports, including consolidated accounts) for the same year. This is in order to determine whether the self-reported turnover in the survey can be used as a basis for calculating the turnover of the total population of shipping companies in Norway.
- b) Self-reported turnover for 2021 has been adjusted for the proportion of total turnover in each of the four ship segments included in the data basis.
- c) Forecasts for 2022 have been calculated by multiplying the 2021 turnover of each member company by the self-declared growth for 2022. The estimated turnover was then summed up for the four ship segments. Estimated turnover is also adjusted for the share of total turnover in each of the four segments included in the data basis.

Valuation of the world's shipping fleet

Menon Economics has estimated the value of the world's merchant fleet from 2001 to the present, divided into 14 ship segments and all the world's countries. Selected segments have been merged, giving a total of ten segments presented in the report. Within each segment, the calculations are based on newbuilding prices, freight rates, age, number of ships, life expectancy, gross tonnage, and deadweight tonnage.

Until this year, IHS Markit's data has been used to calculate the fleet value, in addition to price data from Clarksons Platou. This year's data is taken from Clarksons World Fleet Register. These two data sources are not exactly alike, meaning that the results in this year's valuation vary somewhat from previous years. The biggest difference in the database is that Clarksons features broader coverage of vessels among nations. Consequently, this year's report lacks fewer values compared to previous years. IHS Markit had around 11,000 vessels with unknown ownership nationality, while Clarksons only has just over 1,000 vessels with unknown nationality. This means that tonnage data at ship level varies across the data sources, but at the same time this year's data provides a more complete picture. Cruise ships have been removed from the fleet figures, and historical figures have also been adjusted for this.

The corona pandemic has over the last two years presented major economic challenges for freight transport in the international supply chain. The challenges range from inefficient port operations to a shortage of raw materials. Changes in world trade have led to a significant increase in freight rates for container and dry bulk carriers. Freight rates for container ships have in the last couple of years been up to seven times higher compared to 2019 levels. Similarly, dry bulk has seen its freight rates more than double¹. These price changes have a major impact on the fleet value, and are central to understanding the significant change from 2021 to 2022. However, we also see an increase in the fleet value as a result of keeping prices constant with only updated ship data, which in turn is due to classification differences between Clarksons and IHS Markit.¹.

Changes in the data source, and thus coverage, in combination with more precise ownership information, lead to strong increases in the fleet value for some nations within some segments. Nevertheless, this year's analyses are based on a stronger database with fewer uncertainties.

Norwegian controlled foreign-going fleet – definitions and parameters

The Norwegian Shipowners' Association maintains statistics on the Norwegian controlled foreign-going fleet. The parameters for inclusion of ships in the Norwegian controlled foreign-going fleet are based on the following principles:

- All ships registered in the Norwegian International Ship Register (NIS)
- Ships registered in the Norwegian Ordinary Ship Register (NOR) and engaged in foreign trade
- Ships sailing under foreign flags, owned by Norwegian-controlled shipping companies (stipulating 50 percent Norwegian ownership or higher) and engaged in foreign trade

¹ Clarksons Research – World Fleet Monitor Volume 13, No.1 (January 2022)





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