



Norges
Rederiforbund
Norwegian
Shipowners'
Association

MARITIME OUTLOOK

2021



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FOREWORD

At this time one year ago, we were ready to launch a Maritime Outlook Report characterized by optimism in all segments. Suddenly, the world around us took a completely different turn. The corona pandemic changed the future of the industry overnight, and last year's Outlook Report was never published. A thoroughly globalized industry, shipping was faced with tremendous challenges when the world literally shut down. This year we present an updated market picture describing both how the events of last year unfolded, and what we expect from 2021.

No one can claim that we were prepared to deal with a pandemic of this dimension. The past year has shown us some of the best in international cooperation, through an impressively rapid development of vaccines against Covid-19. At the same time, we have experienced the serious consequences of a lack of international cooperation, with closed national borders, travel restrictions and frequent changes in rules that have impacted everyone who has to travel. Especially seafarers and other specialized personnel, those making a fantastic effort every day to keep supply lines open during the pandemic, have paid a high price in the last year. Great uncertainty, long periods on board, loneliness, no opportunity to go ashore and often double quarantine regimes have been the rule. Nevertheless, thanks to the efforts of seafarers and shipowners, we have received the goods, medicines, infection control equipment and everything else that we, society and businesses, are completely dependent on to keep the wheels in motion.

The last year has shown us how closely-knit the world is, and how dependent the world's economies are on interaction with each other. We have seen it proven emphatically that no one operates in a vacuum. And we have all experienced first-hand that isolation makes our lives, and our days, poorer.

At the same time, the past year has shown us the strength of the world community that global trade has helped to build. The power that lies in all nations pulling in the same direction has proven to be formidable. Together, we have succeeded in pushing the boundaries of what we thought was possible. This is uplifting when we think of the known, and unknown problems we in the global community will face in the years to come. The last year has shown us that where there is a will, there is a way. With this realization also comes responsibility.

The clear message from the younger generation to politicians and businesses has shaped recent years: climate change must be taken seriously, and human impact on the planet's climate must be reduced. I am therefore proud to lead an organization with members who demonstrate serious commitment to climate issues, and who are taking important steps to find new solutions to reduce their climate footprints.

Norwegian shipping companies are taking the lead in developing green technology. We have a world-leading maritime cluster that has pioneered



the development of outstanding technology for decades. We have conquered ever-deeper oceans and more inhospitable waters, all with unsurpassed precision and capacity. New climate demands are therefore not a threat to the Norwegian industry, they represent enormous opportunities.

With the industry's combined knowledge and innovative power, we can create solutions that the world needs, while at the same time creating value and jobs along the entire Norwegian coast. This requires that we pursue an active policy to ensure that the entire cluster can survive extremely challenging markets in the segments hardest hit by the corona crisis.

One of the most important prerequisites for sustainable innovation and investment with a generational perspective is long-term and patient capital. Norwegian shipping companies have a very high proportion of private Norwegian owners. The high degree of private ownership means that these companies dare to have longer time horizons than the next quarterly or annual report. This enables Norwegian shipowners to make investments that may not be profitable in the short term, but which are of great importance in the long term.

Shipowners are at the hub of the maritime cluster, connecting shipyards, equipment suppliers, insurance companies, class societies, ship designers and other service providers. It is therefore crucial for the Norwegian maritime industry that shipowning remain in Norwegian hands. To ensure this, predictable and competitive framework conditions are needed for Norwegian private ownership.

This year's Outlook Report is a story about Norway's most global industry, offering good examples of the challenges and opportunities we face. We know that maritime policy works. If Norway is to maintain its position as one of the world's foremost maritime nations, competitive framework conditions, predictability and competence are required.

The Norwegian maritime industry aspires to lead the way, to elevate standards and move borders. We will search beyond the horizon and below the surface to help solve the greatest global challenges of our time. By pursuing these goals, we can ensure the future of Norway as a maritime nation.

Harald Solberg

SUMMARY

Shipowners' activities are largely connected to developments in the world economy. This applies in particular to overseas, intercontinental transport. 2020 has been greatly affected by the handling of the worldwide corona pandemic. The negative development in shipping demand in 2020, like the financial crisis of 2009, was in direct conflict with market expectations. Expectations for 2020 were in fact optimistic in all shipping markets, and the merchant fleet was preparing for growth. While demand for tonnage fell by 1.8 per cent in 2020 due to the corona pandemic, the fleet expanded by 2.9 per cent, leading to a reduction in utilization of ship capacity from 87.8 to 83.8 per cent.

Shipowners' total revenues were reduced by eight per cent, from NOK 235 billion in 2019 to NOK 218 billion in 2020. All segments experienced reduced turnover. The short sea segment in particular saw the largest decline, but there are large differences within this segment. Where the passenger segment fell by about 46 per cent, the transport segment increased its turnover by eight per cent. Deep sea shipowners have experienced a reduction of about six per cent. Both offshore segments - offshore service and rig companies - experienced a reduction in turnover of five per cent in 2020.

A degree of increased optimism is reported for 2021, with modest positive expectations for the year. Overall, shipowners state that they expect an increase in turnover of three per cent in 2021. There is great discrepancy between the segments, with the bulk of expectations for growth driven by the transport and passenger segments. If the forecast is correct, shipowners' total revenue will end up at around NOK 242 billion in 2021.

There is a large gap in shipping companies' expectations for profitability in 2021. Overall, about one in three companies state that they expect weaker profitability in

2021 compared with 2020. Among the offshore service and rig companies, more anticipate reduced profitability than those expecting increased profitability. Thirty-eight per cent of offshore service companies and 36 per cent of rig companies expect reduced profitability in 2021.

In deep sea, about one in three companies state that they expect reduced profitability in 2021. At the same time 42 per cent expect increased profitability. Additionally, equally large proportions of eight per cent expect significantly weaker and significantly improved profitability.

The short sea segment in particular has high expectations for 2021. Within the transport segment, 60 per cent of shipowners expect improved results in 2021, while only ten per cent anticipate weaker results.

In the passenger segment, three out of four shipowners have expectations of increased operating profit in 2021. This is probably closely related to the fact that passenger ship operations were largely halted as a result of the corona pandemic, leading to a significant reduction in operating profit in 2020.

Shipowners' access to capital has been weakened significantly since 2015. Since that time, the proportion viewing access to capital as good has been between 15 and 25 per cent. Correspondingly, the proportion experiencing access to capital as tight has been from 40 to 60 per cent.

In 2021, only two out of ten shipowners experience access to capital as good, and as many as six out of ten experience tight capital access. Only one per cent of members experience very good access to capital. Access to capital is now about as demanding as it was during the most challenging period of the offshore crisis.

The offshore segments are experiencing the most demanding situation. As many as 91 per cent of rig

companies experience access to capital as tight or very tight. No rig companies report good or very good access to capital. Offshore service shipping companies also report demanding access to capital, and close to three out of four shipowners report tight or very tight access to capital. Only eight per cent of shipping companies state that they have good access to capital, and none report very good access to capital.

For 2021 as well, there is a clear distinction between the transport segment (deep sea and short sea) and the offshore segment (offshore service and rig companies) regarding expectations for access to capital. In deep sea, expectations for an improvement in capital access exceed fears of austerity. In the short sea segment, expectations are somewhat lower regarding 2021. In this segment, about twice as many shipowners expect worsened access to capital as those expecting improvement. More than half of offshore service companies anticipate a further tightening of capital access. Nearly half of rig companies expect access to capital to tighten further in the coming year.

As of January 2021, there were 204 ships and rigs in layup. This exceeds the highest layup figures during the offshore crisis of 2016 - 2017. It is also worth noting that all segments state that they have ships in layup. This indicates that the downturn in 2020 impacted all segments.

Norwegian shipping companies are taking the lead in the fight against climate challenges. By 2050, the goal is for the entire Norwegian fleet to be climate neutral. To achieve this goal, large ships with zero-emission technology must be available by 2030. A large majority of shipping companies say that they believe they will be climate neutral by 2050, in line with the Norwegian Shipowners' Association's climate strategy.

Norway's strong position in maritime and land-based industry gives us a unique starting point for taking a

leading role in the development of floating offshore wind. This is an energy source with great potential for all countries in the world with abrupt continental shelves and deep oceans.

There are significant deliveries from Norwegian industry and the shipping industry to bottom-fixed offshore wind today. About 30 per cent of shipping companies state that they have turnover related to offshore wind, corresponding to NOK 6.3 billion. This is expected to increase to NOK seven billion in 2021.

However, significant Norwegian activity in offshore wind requires rapid realization of offshore wind farms. Eighty percent of Norwegian Shipowners' Association members believe that a home market for floating offshore wind is a prerequisite for being able to compete internationally.

Climate and environmental challenges, technological developments and strong demand for restructuring mean that Norway's competence requirements will undergo significant changes in the future.

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 this competence will be the most difficult to come by.

In recent years, we have seen repeated examples showing the effectiveness of maritime policies. As a result of an offensive maritime policy in recent years, 170 ships have flagged in to the Norwegian register during the last five years. In the member survey, 24 shipowners state that they are considering flagging ships to the Norwegian register, NOR or NIS. The flagging-in potential in 2021 totals 61 vessels, divided among 31 deep-sea vessels, 21 offshore vessels and nine short-sea vessels.



Photo: Fred. Olsen Windcarrier

Norwegian shipping climate neutral by 2050

Shipping accounts for 2.9 per cent of global greenhouse gas emissions. Norwegian shipping companies are leading the way in the fight against climate challenges. By 2050, the goal is for the entire Norwegian fleet to be climate neutral.

The goal of the Paris Agreement is to limit global warming to 1.5 degrees. The Intergovernmental Panel on Climate Change (IPCC) gives us ten years to halve greenhouse gas emissions and believes they must be reduced to zero by 2050. If we are to succeed in slowing down the effect, we must adapt quickly.

In the spring of 2020, Norwegian shipowners took action by adopting four ambitious climate goals, set out in the Norwegian Shipowners' Association's climate strategy. The four goals entail that members will cut their climate emissions by 50 per cent per unit transported by 2030, measured against 2008. From 2030, Norwegian shipping companies will only order ships based on zero-emission technology. From 2050, the Norwegian fleet will be climate neutral. The strategy also entails an international ban on non-climate neutral fuels from 2050.

– Norwegian shipping is at the forefront of setting high ambitions for the development of new and profitable green technology, says Harald Solberg, CEO of the Norwegian Shipowners' Association. – We have high ambitions, also in areas that currently do not have commercially available technological solutions. We believe that ambitious goals will help accelerate a necessary development. This means that the entire

industry, in collaboration with the authorities, both nationally and internationally, must get involved in developing new solutions, he continues.

Norway commands a unique maritime competence through its complete maritime cluster. We see business opportunities in taking the lead in the large-scale development of new solutions that both we, and the world, require. This will reduce global warming and provide cleaner air, healthier oceans and a basis for exporting new solutions. In this way, we can contribute to a better environment, at the same time as we create new green jobs along the entire coast.

– We need new technologies and new sustainable solutions, and development must take place quickly, says Solberg. – We can both reach the world's climate goals, and realize business opportunities for the shipping nation Norway. We have already accomplished a lot, and now we want to do even more, he says.

Both this report and www.maritimpolitikk.no contain examples of how Norwegian shipowners and other maritime stakeholders are working in practice to realise these ambitions.

»» Investing big in offshore wind

Edda Wind, a company owned 75 per cent by the Østensjø group in Haugesund and 25 per cent by Wilh. Wilhelmsen, has ordered four specialty vessels for use in the offshore wind market. Two of these have already secured work, for 10 and 15 years, respectively.

The company has placed great emphasis on the environmental aspect, aiming to reduce emissions as much as possible. In addition to lower operating costs and more efficient operation, it is estimated that greenhouse gas emissions will initially be reduced by more than 30 per cent on newbuildings equipped with battery packs for hybrid operation.

The vessels are already being prepared for future use of zero-emission technology based on hydrogen operation. Enova is supporting preparations with a view to a later transition to zero emissions.

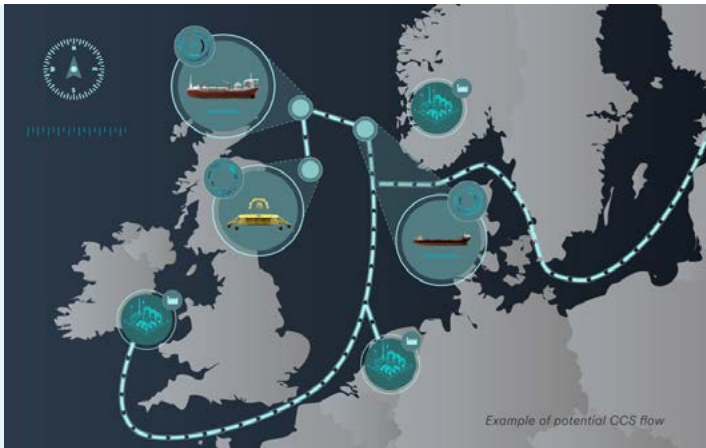
– We are very excited about this newbuilding program. Significant growth in the offshore wind market is expected in the coming decades, and we are confident that these vessels will be the optimal and preferred tools for our charterers. We are proud

to introduce these low-emission vessels to the market. For Edda Wind it is important to continuously participate in the development of environmentally friendly technology. We have great faith that these vessels will be the first zero-emission vessels in the offshore wind market, says CEO Kenneth Walland in Østensjø Rederi and Edda Wind.

Salt Ship Design at Stord has designed and developed the ships in close collaboration with the owner. The ships will be built at Spanish shipyards, with delivery in the second quarter of 2022.

Østensjø, a family-owned company in Haugesund, has worked in offshore wind since 2016 and took delivery of its first two specialty vessels for the wind power market in 2018. The vessels, completed two years ago, now operate on long-term contracts for Ørsted at wind farms on the English coast. Østensjø's offshore wind activity was outsourced in 2020 to a separate company, Edda Wind, focusing on the segment and offering the two existing vessels plus the four vessels under construction. All vessels will be operated by Østensjø Rederi.





»» Returning CO₂ to the seabed

The Stella Maris project is a good example of how Norwegian North Sea expertise accelerates the green shift.

In order to achieve the goals of the Paris Agreement, technology that makes it possible to capture and store CO₂ is required. Norwegian expertise from the offshore and maritime industries is helping to apply elements of the value chain from oil and gas production to depositing greenhouse gases back into the seabed. With the Stella Maris project, Altera Infrastructure will be able to inject up to ten million tonnes of CO₂ into suitable reservoirs.

Together with numerous partners, they have carried out a feasibility study to realize large-scale transport and injection of CO₂. In the study, the flow of oil is 'reversed' by transporting CO₂ back to the oil fields. The feasibility study will receive NOK four million from Gassnova, with the partners matching that amount.

- The preliminary results are very good. Large-scale transport and injection of CO₂ under low pressure and temperature is both technically possible and economically quite favourable. Now the concept will be matured and optimized, says Frank Wettland, Project Manager at Altera Infrastructure.

Further development and scaling of the technology will make it possible to transport large amounts of CO₂ from various sources in Europe to a floating reception and injection facility in the North Sea. The floating injection platform will receive ships with a cargo capacity of 50,000 m³ cooled, pressurized CO₂. The platform will be able to inject up to ten million tonnes of CO₂ a year.

According to calculations made in connection with the Northern Lights project, 65-75 million tonnes of CO₂ will need to be deposited annually in Europe. Stella Maris will be an important contributor toward meeting this need.

»» Breakthrough fuel solutions

New and flexible fuel cell technologies can reduce emissions from shipping by 40–100 per cent.

About 90 per cent of world trade is transported by ship. Ship transport is still the most environmentally efficient way of transporting goods, but in order to achieve the goal of becoming climate neutral by 2050, new, energy-efficient solutions must be introduced.

One such solution is the fuel cell project from Odfjell SE, Prototech, Wärtsilä and Lundin Energy Norway. The goal is to develop a technology that can provide emission-free operations over long distances. Hydrogen and battery solutions are currently not suitable for operating ships that sail long distances. There are around 50,000 such ships worldwide - a significant proportion of international shipping. It is impossible to achieve the goal of climate neutrality without finding solutions for this segment.

- Ships operate for 20-30 years, and we need flexible solutions that can meet future requirements for emissions. We do not have time to wait, we have to think zero emissions right now, says Erik Hjortland, VP Technology at Odfjell SE.

- The fuel cell project is one of the leads we are following. We are focusing on machinery rather than on one type of fuel. Fuel cell technology gives us flexibility that ensures environmentally efficient operations regardless of changes that may occur in fuels in the years ahead.

The technology allows for many different types of fuel, including ammonia and LNG, to be used on a single vessel. In the long run, scaling up such solutions will be of great importance for the ability to achieve climate goals, in addition to the fact that these solutions have commercial value and will be able to create jobs in Norway.

The project has so far been funded with support from Gassnova, the Research Council of Norway, and by the partners themselves. Now a 1.2 MW prototype is under construction and will be tested at the Sustainable Energy Catapult Centre in Stord. It will then be mounted and tested on one of Odfjell's newest chemical tankers.

Cargo owners are crucial for the green shift

Cargo owners are being challenged to take greater initiative and demonstrate willingness to invest in green shipping through long-term commitments and clear prioritization of climate-friendly ships. More and more owners are now heeding the call.

– As one of the largest transport purchasers in Norway, we see that we have a role in shaping the transport solutions of the future. Now we want to collaborate with other players to make the technology both sustainable and economically viable. The project to build emission-free ships is an example of this, says logistics manager at HeidelbergCement, Lars Erik Marcussen.

When Felleskjøpet Agri and HeidelbergCement issued the call last summer for shipping companies and energy suppliers who wanted to develop the world's first zero-emission bulk carrier, the parties hoped that five or six serious stakeholders would sign up. When the deadline expired in October, 31 shipping companies and twelve energy suppliers had expressed their interest. Now the project has received NOK 12.3 million in support from the Pilot-E program, and in March they will choose partners from shipping and energy supply.

– We are very happy with the contract, and not least for the great interest both shipping companies and energy suppliers have shown in our project. This shows that the interest and knowledge is out there, but that the

shipping companies needed a supplier of goods who is willing to commit in the form of a long-term contract. Together with HeidelbergCement, we are the customer they need to be able to build such a ship, says Logistics Manager at Felleskjøpet Agri, Per-Kenneth Øye.



Halfdan Blytt, Director of Production and Supply of Goods in Felleskjøpet Agri, Minister of Climate and Environment Sveinung Rotevatn and Per Brevik, Director of Sustainability in HeidelbergCement.



The Norwegian government is also enthusiastic about the green shift taking place in coastal shipping. Minister of Climate and Environment Sveinung Rotevatn points out that the government has initiated a targeted investment in green shipping, both through new support schemes for fleet renewal, the Green Shipping Program, and the Pilot-E program that connects Enova, the Research Council and Innovation Norway.

– Green shipping is an area where the government is investing heavily, and where Norway has a leading position. This means both emission cuts and Norwegian jobs. It is positive to see cargo owners, shipowners and energy suppliers coming together to create the green shipping of the future. From the government's side, we will help maintain and strengthen schemes that stimulate green fleet renewal, Rotevatn has previously stated.

» Significant investments in offshore wind vessels

OHT ASA currently owns and operates five open deck semi-submersible heavy transportation vessels. Early next year, OHT will take delivery of their first heavy lift crane installation vessel, Alfa Lift, the world's largest and most efficient custom-built vessel for installing offshore wind foundations. This will be followed by the recently ordered specialist jack-up installation vessel designed to install the future generations of wind turbines.

The company, which with its five heavy transport vessels mainly has transported enormous oil and gas-related installations, will now be able to both transport and install the next generation of wind turbines.

– We view the offshore wind market as one of the few markets with very long-term and predictable growth. There are ambitious plans at both national and EU level. Many other regions around the world are also coming at full speed. Our goal is to become a leading renewable player for the transportation and installation of offshore wind foundations and turbines. We are building new vessels, ready for the next generation of turbines and foundations, says CEO of OHT, Torgeir E. Ramstad.

Even though the company's entry into turbine installation has only been known for a short while, customers are already lining up.

– There has been a tremendous response. We have already received several requests for wind turbine installation projects for these vessels. We also have

Torgeir E. Ramstad,
CEO in OHT.





customers who want to discuss capacity reservations well into the future. This is only the beginning of the adventure, Ramstad says.

In 2021-22 OHT will take delivery of the largest and most innovative, custom-built offshore wind foundation installation vessel in the world. Alfa Lift will feature a 3,000 ton main crane, a 10,000+ m² smart deck, capable of carrying and installing up to 14 XL monopiles or 12 jackets per voyage, and will be able to fully submerge the main deck to a depth of 15 m. The vessel may also be used for transport, installation or decommissioning of topside and subsea modules.

OHT have ordered one firm unit of Gusto MSC NG-14000XL-G self-propelled jack-ups with a second conditional order.

The vessel will be amongst the largest self-propelled jack-up installation vessel in the world. Designed specifically to transport and install the next generations of offshore wind turbines and XL monopile foundations, to the highest environmental standards.

Vind 1 will be capable of installing wind turbine components in water depths of >65m, to a height of up to 182m above the sea and will feature a telescopic leg-encircling crane with a maximum lifting capacity of 2,500 tonnes in retracted mode - 124m above the deck, and 1,250 tonnes in extended mode - 156m above the deck.

The vessels have been prepared for fuel cells powered by hydrogen to be installed to cut emissions even further when such technology becomes available. The first unit will be delivered in Q2 2023.

Carbon tax can speed up the green shift

Emission cuts in shipping can be financed by the value chain itself through taxes on fossil fuels and the establishment of a CO₂ fund for new technology.

The targets for emissions reduction on land are regulated through the Paris Agreement. However, since no country 'owns' international shipping emissions, the cuts in shipping are regulated through the United Nations International Maritime Organization (IMO).

The IMO is aiming to halve CO₂ emissions from shipping by 2050, compared to 2008. This means reducing emissions per ship by 70–90 per cent, depending on the growth of the world fleet by 2050. To achieve such an ambitious goal, effective measures that develop, scale and distribute alternative climate-neutral energy solutions must be quickly established. There is an urgent need for good alternatives for the longest voyages, which also have the highest emissions.

The Norwegian-controlled foreign-going fleet has established very high ambitions, with the goal of being climate neutral by 2050. Since ships have a long lifespan, shipping companies must only order ships with zero-emission technology from 2030 onwards. This means we have only one decade left to develop and scale climate-neutral and profitable solutions. To achieve this, framework conditions are needed that stimulate investment in new and climate-friendly technology.

The EU and the IMO are both working on separate climate measures. The EU wants to incorporate shipping into the European quota trading system, and from 2023 the IMO will introduce a combination of

»» Developing the world's first ammonia-powered tanker

Grieg Maritime Group in Bergen is looking to develop the world's first tanker vessel powered by ammonia. In partnership with Wärtsilä Norway, the ship will both transport and be powered by green ammonia.

Grieg Maritime Group established Grieg Edge as its innovation hub one year ago, and the MS Green Ammonia project is its first major investment.

– We feel confident that this project represents the future of the maritime sector. Getting support from the Research Council of Norway and Innovation Norway is an important step towards completion, says head of Grieg Edge, Nicolai Grieg.

MS Green Ammonia will distribute green ammonia from a planned factory in Berlevåg, Norway, to various locations and end users along the coast. The ship's eventual design, size and volume will all depend on market and end user requirements.

One group of potential customers are the owners of ships using LNG as fuel today. Depending on the design of the engine, they can mix ammonia into the LNG fuel, or

upgrade their propulsion systems to use ammonia.

– Norway, with its high number of ships using LNG or alternative fuels, and with large amounts of green energy and the cheapest electric power in Europe, is probably the perfect arena to establish the world's first market for green ammonia, says Chief Business Development Officer in Grieg Star Group, Vidar Lundberg.

The project receives support from the Research Council and Innovation Norway through Pilot-E.



technical and operational requirements. The ambitions to implement measures that stimulate lower emissions are commendable, but the proposals also have their weaknesses.

In order to accelerate shipping's emission reduction, the Norwegian Shipowners' Association believes that international shipping must act quickly in unison to promote an efficient market mechanism that makes it profitable to develop new solutions, invest in unfamiliar technology and equalize the price between alternative fuels and current fuels, making it commercially feasible to employ climate-neutral alternatives.

Such a measure can be financed by the industry itself. The model can be one price for fuel for anyone bunkering fossil fuels, no matter where in the world. Simply a "price at the pump" as we know it from motoring. The money must go back to the industry through grants to cover the additional costs of investing in new, unfamiliar and expensive emission reduction technology. The funds can also be used to establish price equalization mechanisms to ensure that the price of an alternative climate-neutral energy solution is not higher than ordinary fossil fuel.

Many will argue that this is difficult or impossible to achieve, because tax policies are the domain of each individual country's finance authorities. But it is impossible to achieve ambitious climate goals without the will to think in new and untraditional ways about the instruments we know work quickly and effectively - also at an international level.

»» NEL delivers the solutions of the future

Hydrogen will play a key role in the green shift, says Jon André Løkke, CEO of Nel ASA. The company provides solutions for the production, storage and distribution of hydrogen.

What can hydrogen do for shipping?

– Shipping is one of the most important transport modes for people and goods, and new regulations require zero emissions for international shipping. Hydrogen will be the main ingredient in virtually all new fuels that can meet zero emissions, either as hydrogen directly or as the raw material in ammonia, synthetic products, and so on. Hydrogen technology is here already, and with increasing volumes, the price will become competitive.

Why are you doing this?

– We have strong expertise in shipbuilding in Norway, and the hydrogen community is strong. Nel works closely with Hexagon and PowerCell through the company HYON to develop hydrogen technology for ships, and we see a great interest in these solutions. Norway has comparative advantages for becoming a leading hydrogen nation, with the largest and most complete fleet, a maritime cluster with broad hydrogen expertise, and hydrogen companies throughout the value chain including production, distribution, storage and bunkering.

What have the biggest challenges been so far?

– We have prioritised developing compact and modular solutions that can easily be integrated on ships of different types and operating profiles. One challenge in being a pioneer is that regulations have not yet been developed. We are therefore in close contact with classification societies and yards. The next step is to get the shipping companies and shipyards to use hydrogen on a large scale. To do this you have to cooperate with the industry and the authorities. We are working together with stakeholders who can ensure the availability of hydrogen at a competitive price, since customers want green shipping, and hydrogen is an essential part of the solution.



The EU's offshore wind initiative is good news for Norway

European shipping companies control over a third of the world's offshore fleet and have played a key role in realizing many global offshore wind projects. The EU is now launching an ambitious strategy for marine energy that will accelerate development even more – also in Norway.

The ocean energy strategy is part of a major EU investment, Green Deal, a green growth strategy that spans all policy areas and which will be of great importance for Norwegian business and industry in the years to come. The EU highlights offshore wind in particular as a sector that will be scaled up. This can mean a twenty-fold increase in capacity by 2050, from the current 12 GW to 300 GW. For Europe, which is largely dependent on coal and gas, this green news is good news.

– The EU initiative makes it even more important that the Norwegian authorities quickly establish and clarify the framework conditions for a domestic market for the development of solutions and expertise in Norway, says Harald Solberg, CEO of the Norwegian Shipowners' Association. – We now have the opportunity to position ourselves for international growth in offshore wind.

The European Commission foresees investments of EUR 800 billion in offshore energy by 2050. Offshore wind projects require specialized equipment and

significant maritime expertise. As many as 18 different types of vessels may be involved in the project life cycle, from early studies to installation of foundations, turbines and cables, to transport of personnel and equipment, and possible decommissioning.

Norwegian Shipowners' Association members are also pleased with news of the investment. – The EU's investment is good news for the climate and green jobs, and I hope Norway will aspire to ambitions that can create a basis for an industry, says Sofie Olsen Jebesen in Fred. Olsen Ocean. The company is a leading service provider in offshore wind, with turbine installation and maintenance, jack-up installation vessels (Fred. Olsen Windcarrier), technicians (Global Wind Service), and logistics (United Wind Logistics). – We intend to achieve the same position in floating offshore wind. At the same time, Fred. Olsen Renewables is a significant developer, operator and owner of onshore and offshore wind farms, and we look forward to taking part in the development of wind farms in Norway.



A recent report from Menon Economics also confirms major opportunities for Norwegian players in the offshore wind market. The baseline scenario indicates a market share of ten per cent, with the high-end scenario showing 17 per cent. Significant potential for competence transfer from the oil and gas industry is highlighted as a competitive advantage.

– Norwegian stakeholders are well placed to take a strong position in the market for floating offshore wind, says Solberg. – However, certain success criteria must be in place if Norway is to succeed. An active domestic market is needed, Norwegian players must start early compared to the competition, and clear vision with appropriate support measures from the authorities is needed, he continues.

High ambitions in the EU are positive for Norwegian stakeholders due to their proximity to the market. In addition, ambitious plans in other parts of the world such as China can help bring down costs more rapidly. In the most optimistic scenario, Menon Economics believes that a Norwegian-based offshore wind industry could generate revenues of almost NOK 85 billion by 2050.

»» Changing name to move from oil to offshore wind

Ocean Installer was established in 2010 and has for the past ten years been engaged in construction work for the oil industry on the continental shelf, in particular with subsea. Now the company is focusing on the growing offshore wind market, changing their name to Havfram.

– Offshore wind will be a large, global industry. It is important that the Norwegian supplier industry secures a position here, and our company will do that. The train is leaving the station now, says CEO Odd Strømsnes in Havfram.

Strømsnes believes it is important to transfer knowledge from the work with oil installations to offshore wind. – Both involve demanding, maritime offshore operations. We will be able to use much of our expertise in the work with installing offshore wind systems – both floating and bottom-fixed.

In the summer of 2020, the company entered into collaboration with the Norwegian shipyard group Vard for the development of a new type of ship for the installation of offshore wind turbines. The new ship will be able to install turbine components of 1,000 tonnes and a height of 150 meters.

In 2021 the company will have a turnover of around NOK 2.5 billion, and an ever-increasing share will come from offshore wind.



Great interest in maritime cyber security

Shipowners' threat assessments show that the threat from cyber attacks has bypassed physical threats from pirates. A new cyber security centre will provide services to Norwegian shipping, and several shipping companies have already become members.

– We have experienced great interest from the maritime industry, and the ambition is to give Norwegian shipping an international competitive advantage when digitalisation in shipping reaches full capacity, says Lars Benjamin Vold, General Manager of NORMA Cyber, formally opened on 1 January 2021.

Nearly all maritime operations are dependent on global networks. On the ship, in the harbour, during the voyage and while navigating, and in planning. These connections can be compromised by cyber attacks, and it is necessary to detect and limit these attacks in order to avoid major consequences.

– We offer our members efficient information sharing, as well as various proactive cybersecurity services. Within this area, it is obvious that we can be more efficient if we are able to interact on the safety work. Norwegian shipping and the maritime industry have long traditions when it comes to cooperation and information exchange within security and emergency preparedness, and I am convinced that we will be able to continue that work within cyber security, says Vold.

Several shipowners and maritime companies have now become members of NORMA Cyber, which is a joint initiative of the Norwegian Shipowners' Association and the Norwegian Shipowners' Mutual War Risks Insurance Association (DNK). NORMA Cyber is the first of its kind in the world. The team consists of five people with a broad background from the Armed Forces, the maritime industry and cyber security.

– We want to strengthen our team further and the plan is to have a total of between 10 and 14 employees in the centre by the end of 2021, says Vold.

NORMA Cyber has offices and an advanced operations room in Oslo, and works closely with the existing professional environment for safety and emergency preparedness in DNK and the Norwegian Shipowners' Association, located in the same building.

Norwegian shipowners a contingency resource when crisis strikes

One thousand eight hundred vessels operating globally constitute a unique emergency aid resource when major crises strike. The Norwegian Shipowners' Association has for long had an agreement with the Norwegian authorities to assist during crises and disasters.

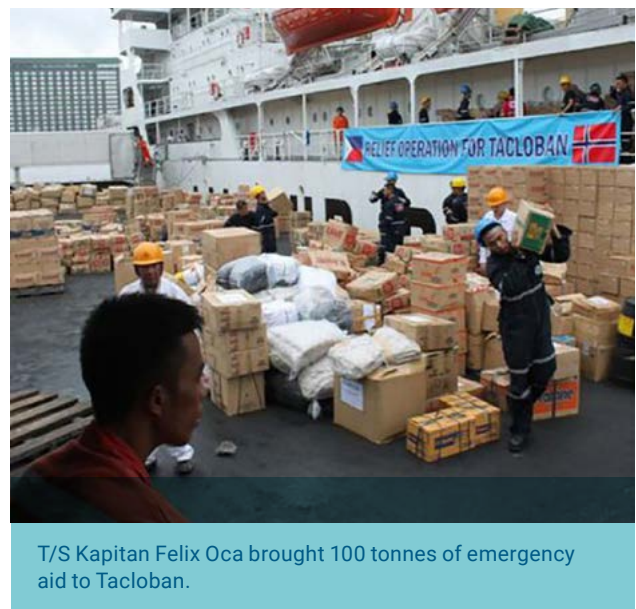
In 2013, the Norwegian Shipowners' Association began formal collaboration with the World Food Program (WFP). The Norwegian Shipowners' Association assists the WFP by identifying vessels that can provide rapid assistance during an emergency.

– The collaboration came about as a result of the typhoon in the Philippines in 2013. There are many Filipino seafarers on board Norwegian ships, and many came from areas that were hardest hit. This triggered a great desire to be able to assist in bringing emergency aid to these areas, says CEO of the Norwegian Shipowners' Association, Harald Solberg.

The Norwegian Shipowners' Association redeployed a ship from the training centre in the Philippines, and this ship was the first to reach Tacloban, one of the areas hardest hit by the typhoon's destruction. Another ship was also made available to assist in the relief work. At the same time, Wilhelmsen assisted with a survey of the status of all relevant ports in the region, which became a very important planning tool in the upcoming operations.

– Norway, as one of the world's largest maritime nations, has a long tradition of assisting when disasters occur. At the same time, close ties with the Philippines made the situation in 2013 very special, and it became clear that the Norwegian fleet could be an important emergency preparedness resource beyond cooperation with the Norwegian authorities, says Solberg.

The result was a collaboration agreement with the World Food Program. Since the agreement took effect, Norwegian shipping companies have assisted



T/S Kapitan Felix Oca brought 100 tonnes of emergency aid to Tacloban.

several times when emergency aid was needed due to conflicts or natural disasters, including the evacuation of UN personnel from Yemen in 2015. At that time, the Norwegian ship Hawk Explorer was central in the mass evacuation of foreign aid workers, diplomats and guest workers.

The Norwegian Shipowners' Association is often asked to assist when there is little time and an urgent need to locate available tonnage. Experience shows that shipowners are willing to go to great lengths to be able to help.

– We are proud to be a WFP partner and the only shipping organization in the world that has formalized such a commitment, says Solberg.



– Digitalisation must come from within

Odfjell has its own interdisciplinary team working on the company's digital solutions.

– Defining digital solutions is not something one can farm out to IT consultants.

It must come from within, explains COO Harald Fotland.

A man with virtual reality (VR) glasses on his head and control panel in his hand stands in a room in Bergen. This is VP Corporate IT in Odfjell SE, Torbjørn Lussand. With a few clicks and a glance at the big screen, he takes us aboard one of Odfjell's tankers. He heads to the forward deck, does a bit more manoeuvring, and in the next picture we look down into the empty tanks.

The VR room is a visible sign of Odfjell's digital commitment and is mainly used to show customers and partners the dimensions of ships, and the complexity of how they are built and operated. VR can also be used to practice various tasks. Recently, the

digital twin – a 1:1 digital model of the ship – was used to test a complicated loading operation.

Effective routing, reduced emissions

Higher-level effects of the digitisation team's work are less visible, but equally important. Odfjell operates general vessel monitoring, and as with most modern shipping companies, large amounts of data are continuously sent from the ships to control rooms on land. The information is analysed and the knowledge used to provide more efficient operations through better and simpler route planning, logistics operations, service and repairs, as well as optimisation gains in fuel consumption.

– For several years, we have monitored the consumption of our ships from land. Adjustments have yielded great gains in energy efficiency and reduced our carbon footprint, says Tom Hagesæther, Manager Digital Products.

For the crew on board, digitisation means new tasks. Instruments can be read automatically, reducing the need for manual reporting. It can also increase security. Odfjell's so-called 'weather routing' allows the captain to receive optimised route suggestions on the safest and most effective sailing routes in weather-exposed areas, for example during tropical storms. Data is also collected to track loading and unloading times at various ports, making it easier to calculate time spent on the operation. For these solutions, Odfjell has used its own development team.

What are the crew's attitudes towards the digital transformation?

– In general, we have experienced goodwill. New solutions that relieve burdens and improve efficiency are welcomed, says Harald Fotland, emphasising the

importance of good training and support along the way for all employees.

Testing new solutions

The digitisation team meets weekly. They make decisions on improvements, new opportunities and, not least, inquiries about technological innovations. Some ideas lead to testing, others are rejected outright. According to Fotland, the team serves as a good buffer between top management and all the hype. – New digital solutions must work for us is the mantra, for Odfjell's employees and for their business model.

What is your advice to smaller companies that cannot establish their own digitisation team?

– If the alternative is one IT person deciding on the company's digital development, then I doubt it will be more effective in the long run. You need to understand the operation to see what needs to be done. When decisions are made in an internal team, employees also gain ownership of the solutions, Torbjørn Lussand says.

»» Kongsberg Digital offers solutions for the digital journey

Kongsberg Digital wants to provide shipping companies with a complete digital overview of the fleet using Vessel Insight, explains CEO Hege Skryseth.

Tell us briefly about Vessel Insight

– Vessel Insight is a cost-effective solution for ship owners and operators who want to start their digital journey. The solution allows them to extract quality data from the ships, which they must have in order to use value-added software and applications to analyse and improve operations. For example, it allows them to monitor and

optimise fuel consumption and equipment repair, plan bunkering, do automatic reporting and much more.

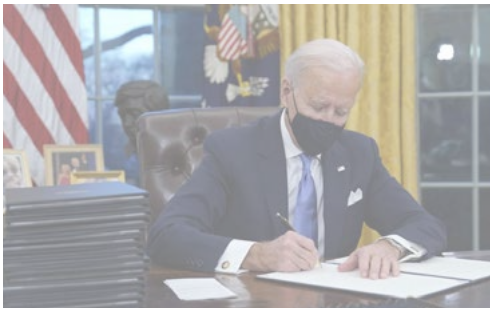
Why did you create this product?

– Because data and software provide insight into what needs to be done to make ships and the fleet safer, more efficient and sustainable. Many operators are already collecting data, so the next step is to connect the ships and make sure the data is structured so that it may be used in applications and software. Vessel Insight gives maritime sector customers the

ability to connect ships, stream quality data to the cloud, and access applications to extract value from the data. In other words, the solution ensures that customers are both digital-ready and can extract value from day one.

What have been the biggest challenges so far?

– Demand for Vessel Insight has been strong. Now it is important to make the delivery and implementation process even smoother, so that we can get our customers up and using the solution as quickly as possible.



Espen Barth Eide, MP, Norwegian Labour Party

Global spheres of influence, or a liberal world order?



Few industries are as directly affected by geopolitical changes as shipping. A well-functioning world economy does not happen by itself. For three decades, we have benefited from a globalized trade regime.

The end of the Cold War, and not least China's entry into the WTO, led to the world becoming increasingly one. Global growth led to increased transport on the oceans, and a significant part of this is moved on Norwegian ships.

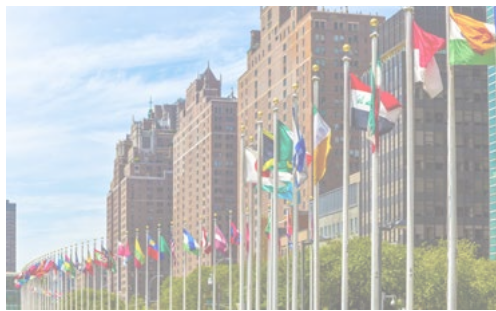
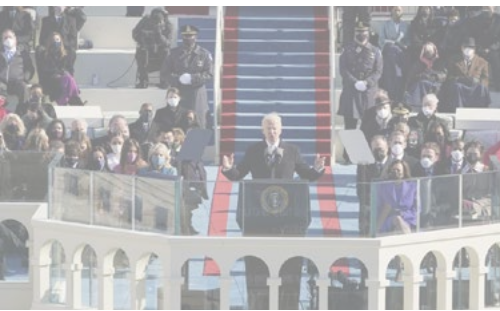
The liberal order served Norway exceptionally well. For a small, open economy like ours, it is particularly important that we continue to succeed in securing an open, rule-based international order.

We are now seeing increasing tensions, not least between the United States and China. The United States accuses China of taking advantage, exploiting the rules of the game that suit them, but without respecting principles such as free competition or intellectual property rights. Seen from China, the opposite appears true. First they are invited into the capitalist system of the West, and when they actually succeed, they are criticized for it. The dispute over

deliveries to the 5G network is just the tip of a much larger iceberg.

Basically, we can view this as tension between "the West and the rest". During Donald Trump's four years in the White House, however, unity within the West was put to the test. "America First" weakened the United States' traditional role as a defender of the system. The EU and the US each pursued their own trade, climate and security policies.

With President Joe Biden in office, we will once again have a US that puts friends and allies first, and that believes in the value of international cooperation. This will strengthen the community within the West, something we as a transatlantic-oriented European country should be happy about. At the same time, this does not mean that geopolitical tensions between the USA, China and Russia are thereby settled - in fact, the opposite may prove to be true. The new US administration has signalled the same determination to settle up with both China and Russia - but this time with increased emphasis on building alliances with like-minded democracies. European and Asian countries alike are encouraged to take a stand. Many will initially refuse, as the cost of confronting one side or the other is perceived as very high. But it will also cost not to do so.



There is a real risk of once again ending up with several parallel economies, rather than one. Not necessarily as a new Cold War, but as a form of a world with alternative spheres of interest, competing for economic, technological and political power. In a historical perspective, this is in fact a more common condition than the short epoch of Western omnipotence that opened when the Soviet Union folded. The story, it turned out, did not end there.

The stakes are high now. Heading into the 2020s, Norway's perhaps most important foreign policy task will be to make our contribution to the defence of a predictable international order, and to strengthen and renew the norms and institutions needed to maintain this order. In order to do this, we must be able to

hold two parallel thoughts: We must stand with our closest allies in the defence of the rule of law and democracy, while at the same time strengthening global cooperation on the many issues that can only be resolved if everyone is involved. Not least, this should apply to that part of Earth that binds the world together - the sea. There is scarcely any arena where Norway has greater credibility, more relevant experience or stronger interests in the outcome than here. A comprehensive foreign, trade and climate policy commitment to the oceans - in all dimensions - should therefore be high on the agenda.

Norway can indeed look forward to some interesting years as a new member of the UN Security Council.



Øivind Bratberg, Senior Lecturer, Department of Political Science, University of Oslo

Brexit – across the finish line, but what now?



On 31 January 2021, the United Kingdom's withdrawal from the EU finally came into force. The week before, the parties agreed on a trade agreement that will ensure their future relationship. It marked the end of a year in which the British membership conditions continued as before

while the parties negotiated exit terms.

The trade agreement between the EU and the UK is a wide-ranging free trade agreement, but compared to seamless trade terms within the EU's internal market, it is a big step backwards. It ensures duty and quota-free access for industrial goods. But the agreement says little about trade in services, and the financial sector in London is living in uncertainty with regard to future certificates and market access in Europe. Veterinary control has been introduced for trade in seafood and other food products. Delays for trailers crossing the English Channel are also expected to hamper trade over time. And finally, citizens crossing the border must apply for health insurance, as well as visas and work permits for those going to work.

What about Norway's trade relations with Great Britain? The Norwegian authorities want a trade agreement that in most areas will reflect what the British are negotiating with the EU. The agreement is expected to be negotiated during the spring of 2021, and until then a temporary transitional agreement will ensure trade in

goods without customs duties. But many other areas of our trade relationship have been set back to WTO terms, which means new kinks in the line of trade in services and investment. For employees and students starting up in 2021, the new reality has already taken hold.

Negotiations between the EU and the UK have long been hampered by such issues as fishing rights and a level playing field. In both areas, the parties succeeded in finding suitable compromises, and the agreement took the drama out of Brexit. What awaits now are the actual consequences.

The British government has balanced between the desire to become a free player in the global market and the desire for an effective trade agreement with the EU. The trade agreement has left that question hanging in the air. The British have acquired room to manoeuvre, for example in connection with the EU's common standards for the environment and workers' rights. But where the room to manoeuvre is used, it can also mean new trade barriers in the agreement with the EU.

For the Norwegian economy, market access for gas and seafood products is of the utmost importance, and the agreement for seafood in particular will be examined carefully. But our trade relationship with the UK is also made up of many smaller contacts and relationships where Brexit will be felt in the form of small obstacles, more forms to fill out, and more bureaucracy.



Ole Jacob Sending, Research Director, NUPI

The climate paradigm



Norway's closest allies - the EU and the US - are in the middle of a turnaround in climate policy. The European Green Deal - launched at the end of 2019 - is not just a climate strategy, but a strategy for economic growth and competitiveness: the so-called taxonomy will

turn investment towards green energy, and the Carbon Border Adjustment Mechanism (CBAM) is a climate tariff to prevent countries with less ambitious climate measures from gaining competitive advantage. One of President Biden's first actions in office was to sign the United States back into the Paris Agreement. He has made former Secretary of State John Kerry his climate envoy and placed him on his National Security Council and has established a new White House office to coordinate a «whole-of-government» approach to climate change.

Both the US' and the EU's climate policies represent something new, positioning climate as a defining goal for all policy. For Norway, the EU's Green New Deal will have the greatest significance. The EU is now in the process of reviewing all rules, procurement and subsidy schemes with a view to revising them with a green focus. Some of these will have an impact directly via the EEA agreement, while others will have consequences through Norway's cooperation with the EU on energy and climate. The consequences will be felt in all policy areas and will challenge how the Norwegian administration handles climate issues, not least by making climate applicable in almost all policy areas.

This political shift is also reflected in how market participants have already changed their behaviour, with a distinct upswing in investments in green technology and adaptation to an emerging paradigm of circular economy and green energy. In many countries, the distribution of burdens and adjustment costs between groups in the population will be the source of lingering political conflict. For example, in several EU countries where the energy mix still consists of large amounts of coal, this will characterize official policy, which may also delay elements of the EU's Green Deal.

There is a geopolitical dimension in the climate policy of both the EU and the USA. Although the EU has recently concluded a trade agreement with China and is more cautious in its criticism than the United States, the emphasis on circular economy and green technology is also intended to reduce economic dependence on China. A key question will therefore be whether climate can be an issue where the EU, USA and China can come together and agree on ambitious policies, or whether climate issues can also be politicized and read into an already ongoing rivalry (especially between China and the USA).

For Norway, this change of pace in climate policy in the EU and the US means increased economic and political risk. When climate becomes more important for other countries, the position of an oil and gas producer becomes more vulnerable. The EU will eventually run out of gas, and Norway will then lose its most important market for gas exports. In order to maintain good relations with close allies, and capture the attention of key EU countries, Norway will have to adapt to a world where green transition and technology are traded as hard currency.



Norwegian maritime cluster

Norway is one of only a few countries with a complete maritime cluster comprising world-leading companies that design, build, operate, and trade in ships, as well as deliver equipment and services. With shipping companies acting as the cluster drivers and innovators, and with good links to the research and development community, competent individuals are being educated to work in all segments of the cluster.



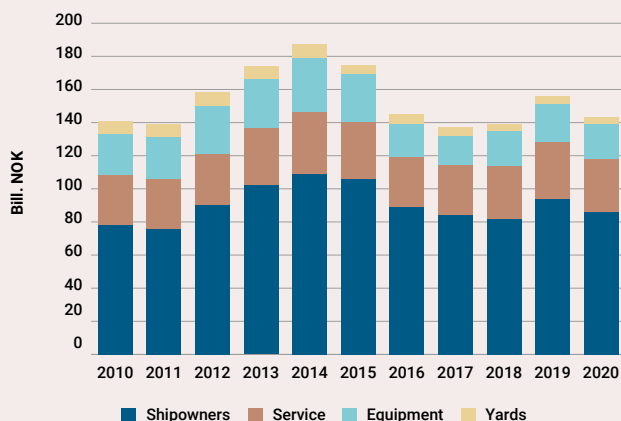
During 2020 we see a reduction in both value creation and the number of employees. Recent figures show that the total industry employed around 82,700 people in 2020 and contributed value creation of NOK 144 billion. From the peak year of 2014 to 2017, value creation was reduced by more than 25 per cent. In the following years, value creation increased again,

and 2020 was set to be another year of growth. After a year of a worldwide pandemic, this growth has now slowed down. Updated figures now indicate a fall in value creation of around eight per cent for the overall maritime industry.

The number of employees in the industry has been reduced by more than 5,000 people from 2019 to 2020. The largest reduction in employment has been in the shipbuilding industry, with a reduction of ten per cent, while equipment suppliers have seen a reduction of around seven per cent. Shipping companies and service providers have experienced a somewhat smaller loss of employees, between five and six per cent. It is worth noting that employees placed on leave are part of these statistics, and that the decline would have been even greater without these included in the primary data. For the maritime industry, the effect of the pandemic will be more long-term negative, regardless of further infection development. At worst, we will see an employment decline of almost 20 per cent by the end of 2022 compared to 2019.

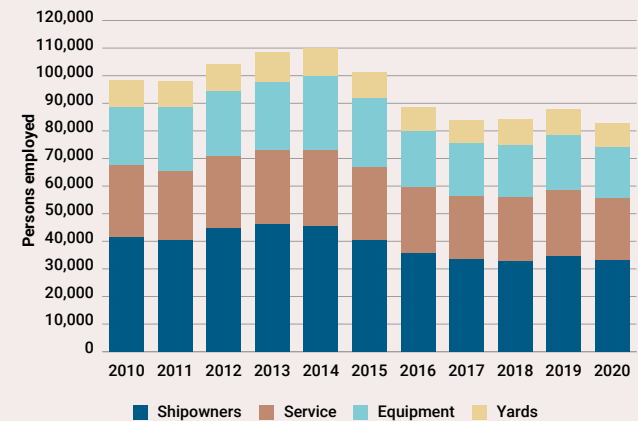
Source: Maritimt Forum / Menon Economics

Value creation in the maritime industry 2010-2020 by main groups



Source: Maritimt Forum / Menon Economics

Employment in the maritime industry in Norway 2010-2020 by main groups



Source: Maritimt Forum / Menon Economics

Opportunities in new markets

Norwegian shipowners and maritime companies have been technology leaders for many years. Among other accomplishments, 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 in the forefront. Norwegian maritime companies use technology and expertise from the offshore industry, among other sources, to establish themselves in new markets. This knowledge transfer is crucial for success in other ocean industries. The offshore floating wind market 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 the exploitation 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.

Shipping is increasingly becoming part of complex international logistics systems requiring advanced databases, monitoring systems and means of communication. Stricter requirements are also being placed on safety and the environment, leading to continuous innovations and technology development, for example related to ship design, propulsion systems and ballast water.

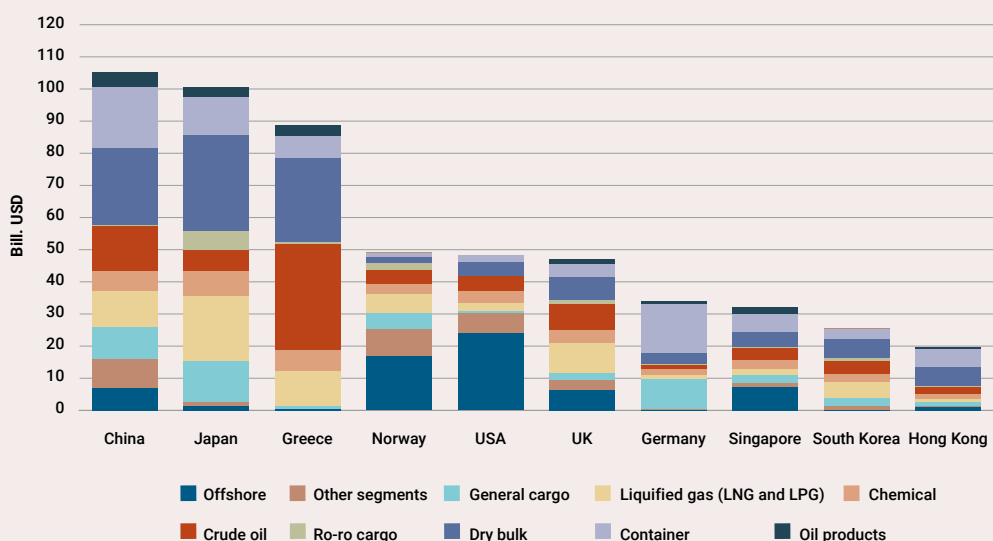
Norway is the world's fourth largest shipping nation measured by value

When measuring the international position of the shipping industry, it has been common to take cargo capacity as a starting point. For years, Norway was the world's third largest shipping nation, behind Japan and Greece, measured in total cargo capacity. However, cargo capacity does not always provide a correct picture of the shipping industry's international position or the industry's value creation. There are several reasons for this, the main one being that the size of a ship's cargo hold provides only limited information about its contents and value. The Norwegian fleet consists largely of advanced and expensive vessels

that are not designed to maximize freight volumes, but to perform advanced operations.

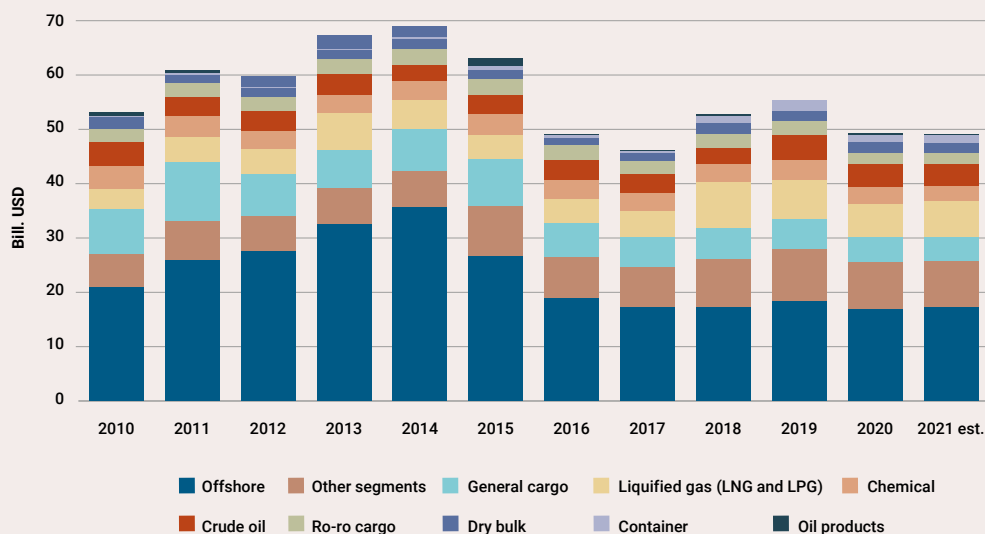
The value of the total world fleet in 2020 is estimated at USD 890 billion. This is a decrease of around six per cent from the previous year. The value of the total world fleet has been rising since 2017, and at the beginning of 2020 it was assumed that the world fleet would continue to increase in value. This has not been the case following a year with the pandemic, falling oil prices and erratic rate developments.

Top ten merchant fleets of the world by market value by segments as of 2020



Source: IHS / Menon Economics

Development in the Norwegian fleet market value by segments



Source: IHS / Menon Economics

Norway still holds fourth place, as in the previous year. China, Japan and Greece are by far the three largest nations, followed by Norway and the United States. In the Norwegian fleet, the offshore segment has the highest market value, and only the USA has an offshore fleet of higher value. Estimates for 2021 indicate that the value of the world fleet will be virtually unchanged, including the Norwegian fleet.

The Norwegian-controlled foreign-going fleet is growing

The Norwegian-controlled foreign-going fleet has in recent years experienced good growth in both the number of ships and tonnage, showing a slight decline in the number of ships during 2020. Measured by tonnage, the fleet has seen moderate growth. As of January 2021, the fleet numbers a total of 1,783 ships with total tonnage of 51.1 million deadweight tonnes. Through 2019 and 2020, the fleet has grown by almost nine per cent measured in deadweight tonnes.

Seen separately, the Norwegian International Ship Register (NIS) has experienced growth in the same period, increasing by 79 ships, numbering 691 ships as of 1 January 2021. The Norwegian Ordinary Ship Register (NOR) has been weakened somewhat among foreign shipping companies in the same period, but overall, the Norwegian flag has strengthened its position, with an increase of over 60 ships in the last two years. Over the past year, several shipowners have

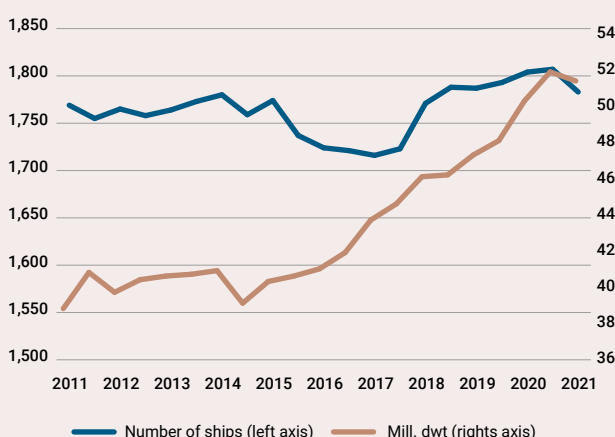
chosen to flag their fleets home to Norway, and several newbuildings have been registered under the Norwegian flag. When asked in this year's member survey whether it is of interest to flag ships home this year, the members of the Norwegian Shipowners' Association answer that the potential for this is more than 60 ships.

The composition of the Norwegian-controlled foreign-going fleet shows that offshore service vessels are still the largest segment in terms of number of vessels, closely followed by the dry cargo segment.

The Norwegian-controlled order book

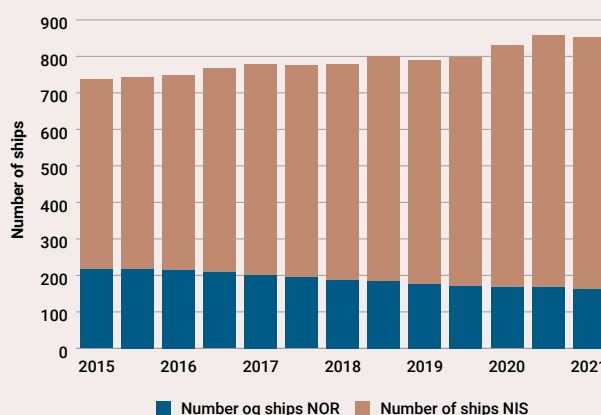
The order book for foreign shipowners now consists of only 49 ships, having not seen such low levels for nearly 30 years. Five years ago, the order book was twice as large, and in 2008 the order book counted up to 400 ships. Most of the ships on order will be delivered this year, or in 2022.

Development in the Norwegian-controlled foreign-going fleet 2010-2021



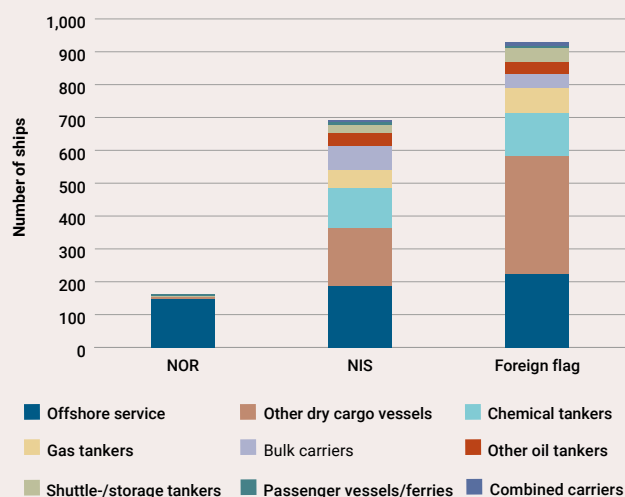
Source: Norwegian Shipowners' Association

Development in the Norwegian-controlled foreign-going fleet – NIS and NOR registered vessels 2015-2021



Source: Norwegian Shipowners' Association

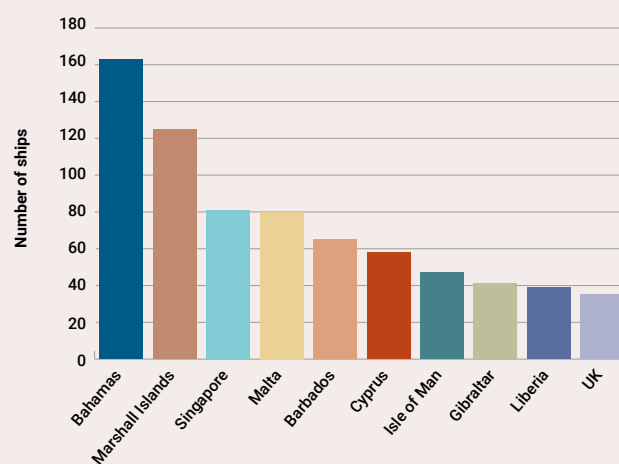
The Norwegian-controlled foreign-going fleet by flag and ship type as of January 1, 2021



Source: Norwegian Shipowners' Association

The Norwegian-controlled foreign-going fleet with foreign flags as of January 1, 2021

Largest flag states



Source: Norwegian Shipowners' Association



Short sea

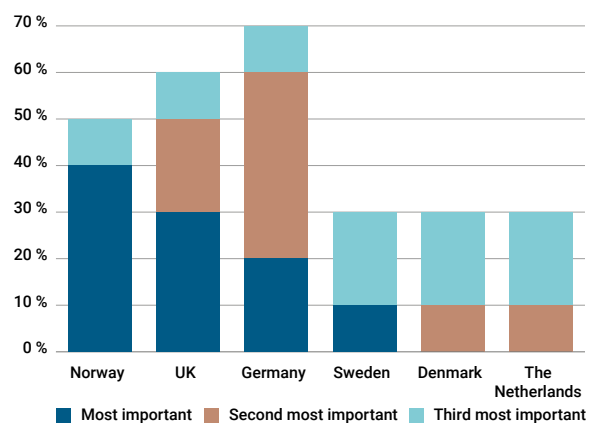
Shipping companies in the short sea segment, also called short sea shipping, transport all types of goods and passengers. These operate between Norwegian and European ports, and between ports in Europe. As much as 40 per cent of internal trade in Europe is transported by keel. This means that short sea shipping plays a crucial role in meeting the business community's transport needs, and in the competitiveness of Norwegian industry. Norwegian Shipowners' Association's members in short sea shipping control about 130 ships. The industry contributes to efficient logistics and transport solutions, and one ship in the short sea trade can, with a single cargo, take volumes equivalent to 200-400 trucks off the road.

Countries of particular interest for short sea shipowners

For shipowners in the short sea trade, Norway, the United Kingdom and Germany are highlighted as countries of particular interest. Forty per cent of shipowners rank

Norway as by far the most important country, while 30 per cent reply that the United Kingdom is most important, with 20 per cent naming Germany. These countries have remained stable as the most important countries for short sea shipping for several years.

Countries of particular interest for short sea shipowners



Source: BDO AS / Norwegian Shipowners' Association



Deep sea

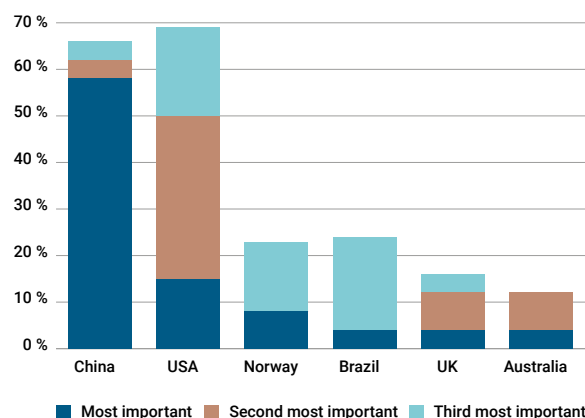
The deep sea fleet consists of several segments where Norwegian shipping companies are world leaders and command solid market shares. Segments such as car carriers, LNG, and chemicals are among these. Vessels sail over long distances and between continents. Norwegian Shipowners' Association's members in the deep sea segment control around 700 ships calling at ports around the world on a daily basis. The companies have a number of offices abroad, giving the Norwegian shipping industry a strong presence on all continents.

Countries of particular interest for deep sea shipowners

Deep sea shipowners highlight China and the USA as by far the two most important countries, followed by Norway, Brazil, and the United Kingdom. Over 60 per cent of shipping companies in this segment rank China as most important. This is a decrease from last

year, when 80 per cent of shipowners stated the same. Nearly 70 per cent listed the United States 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

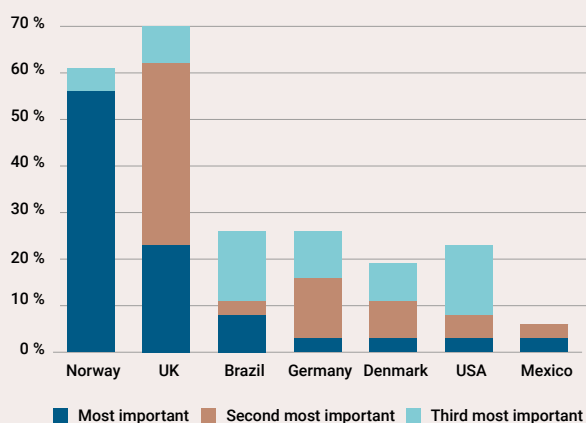
Norway is one of the world's largest maritime offshore nations. Shipping companies participate in all phases of petroleum activity, from initial seismic surveys and exploration, to production and decommissioning. Offshore service shipping companies also see opportunities in the offshore wind market, where Norwegian shipowners have a clear advantage with their existing expertise. 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 are the most important markets for the Norwegian offshore industry and comprise a very important arena for securing a basis for the international competitiveness of offshore companies. They also have a significant presence on other countries' continental shelves. Norwegian Shipowners' Association members control

more than 50 mobile offshore units and a large offshore fleet consisting of almost 500 vessels.

Countries of particular interest for offshore service and rig companies

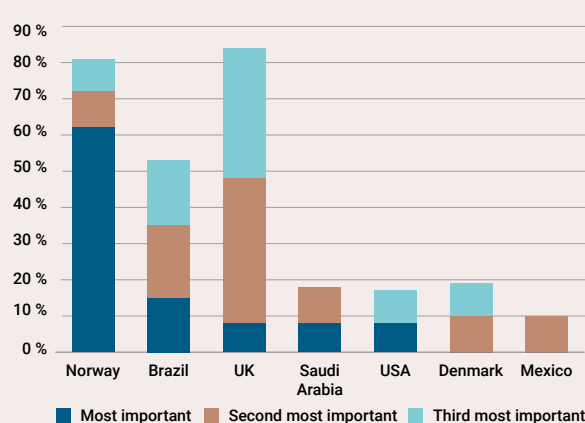
Norway and the UK continue to be countries of particular interest for Norwegian offshore service companies and rig companies. This clearly shows the importance of the North Sea market for these companies. Nearly 60 per cent of shipowners in both segments state Norway as the most important country. This is a decrease from last year's survey, where Norway had a share of over 70 per cent. For offshore service shipping companies, the United Kingdom is still the second most important country, while among rig companies, Brazil follows Norway as the most important country.

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



Outlook report

2021

Probably the biggest drop in demand for shipping services in modern times

Shipowners' revenue is largely dependent on developments in the world economy. This applies in particular to overseas, intercontinental transport. 2020 has been greatly affected by the handling of the worldwide corona pandemic. One month after the WHO declared Covid-19 a global pandemic, almost half of the world's population was in some form of lockdown, and 3.9 billion people were instructed by the authorities to stay at home. Many companies have asked their employees to work from home, schools and universities have had to close, public transport services have been restricted, and travel restrictions have been introduced both domestically and internationally.

In its report "Global Economic Prospects" published in January 2021, the World Bank estimates that the world's gross national product was reduced by about 4.3 per cent in 2020.¹ In the January issue of "World Economic Outlook", also published in January 2021, the International Monetary Fund IMF reports that the world economy shrank by 3.5 per cent in 2020. Common to these reports is the conclusion that large economies in particular, such as the United States, Russia, India, and

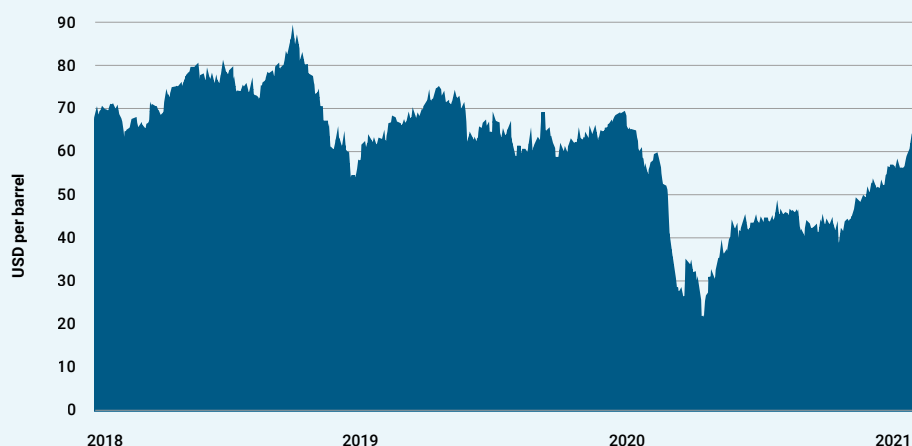
Saudi Arabia, as well as countries in the Eurozone, have been hit hard. China has seen a significant reduction in its economic growth but remains positive, including 2020. The World Bank forecasts for the world economy indicate growth of about four per cent in 2021. The IMF is somewhat more positive and expects the world economy to grow by 5.5 per cent this year and 4.2 per cent in 2022. Emerging markets are expected to experience the fastest growth.

In April 2020, when the corona pandemic hit the world economy full force, the World Trade Organization (WTO) estimated that world trade would be reduced by up to a third of the level prior to the pandemic. However, since the economy recovered sharply in the third and fourth quarters of last year, the WTO has changed its assumptions to a reduction in world trade of 9.2 per cent in 2020. Forecasts for 2021 point to an increase of 7.2 per cent, but estimates are highly uncertain, and depend on both the development of the corona pandemic and countries' response during the crisis. In any case, it is very unlikely that world trade in 2021 will reach pre-pandemic levels.

Analysis from shipbrokers and consultants Lorentzen & Stemoco shows that shipping markets are growing after a year in which demand for maritime transport fell by around 1.8 per cent on an annual basis due to the

¹ The World Bank, January 2021: Global Economic Prospects
<https://openknowledge.worldbank.org/bitstream/handle/10986/34710/9781464816123-Ch01.pdf>

Oil price Brent crude 2018–2021



Source: Nasdaq

corona pandemic. Last year's decline in demand for tonnage is the first since 2009, when the aftereffects of the financial crisis took hold. The downturn last year was greater than during the financial crisis, when the decline was 0.2 per cent, and was probably the largest decline in demand for shipping in modern times.

Oil prices strengthen offshore activity

Developments in oil prices greatly affect Norwegian shipping companies. The price of oil generally determines offshore activity, and thus constitutes the most important prerequisite for activity for about one-third of the Norwegian foreign fleet. In addition, oil prices are an important factor for the transport segment, as fuel costs make up a significant part of vessel 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.

Demand for oil has fallen sharply during the corona pandemic. Since two thirds of oil is used for transport, consumption of refined products such as petrol and diesel has fallen as a result of transport restrictions enacted to control the spread of the virus. The price of North Sea oil fell dramatically from January to May, also hitting lower levels than during the most demanding period of the oil crisis. On April 21st, the price of oil fell below USD 20 a barrel.

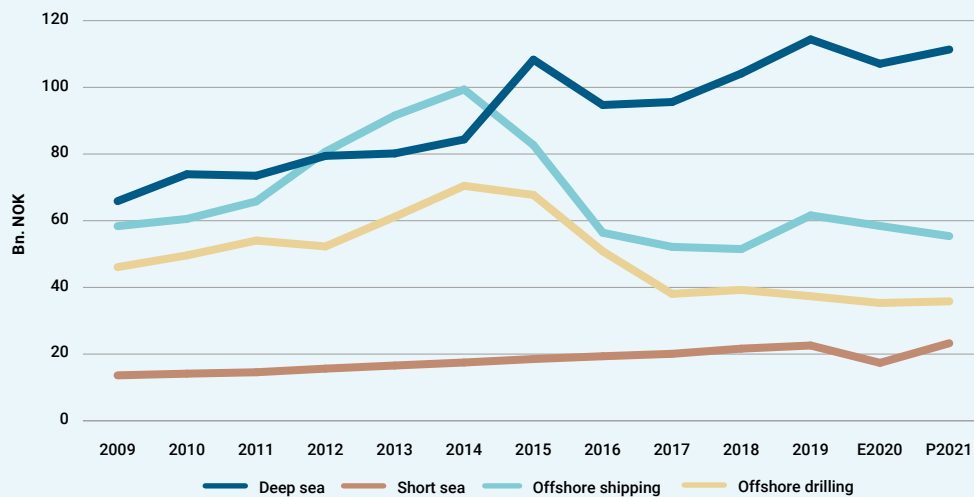
This has led to a rapid downscaling of activity, and further deterioration of the situation for offshore companies. Last year, the industry reduced expenses by around 25 per cent by cutting oil and gas exploration and sharply reducing oilfield services. This year, it appears that global oil companies are planning for increased expenditure in oil and gas exploration, and it is expected that expenditures on production and oil and gas exploration will increase by around seven per cent internationally.

Reduced turnover in all segments

The negative development in demand for shipping in 2020, as during the financial crisis in 2009, was in direct conflict with market expectations. Expectations for 2020 were quite optimistic in all shipping markets, and the merchant fleet was preparing for growth. However, even though demand for tonnage fell by 1.8 per cent in 2020 due to the corona pandemic, the fleet expanded by 2.9 per cent, leading to a reduction in utilization of ship capacity from 87.8 per cent to 83.8 percent.

Total revenues for shipowners in the Norwegian Shipowners' Association fell by eight per cent, from NOK 235 billion in 2019 to NOK 218 billion in 2020. The transport segments, including deep sea and short sea shipowners, have since the financial crisis hit the industry in 2008 gradually increased their turnover,

Norwegian shipowners' turnover 2009-2021 (including 2020 estimates and 2021 prognosis)



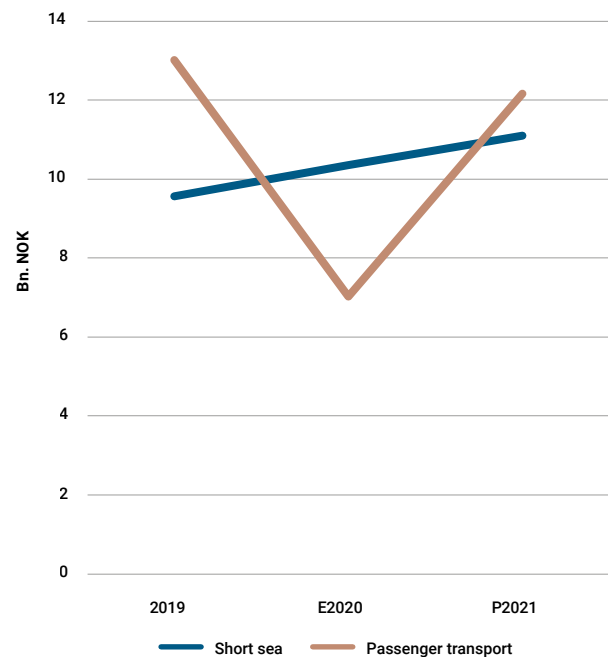
Source: BDO AS / The Norwegian Shipowners' Association

now accounting for 59 per cent of total turnover among shipping companies.

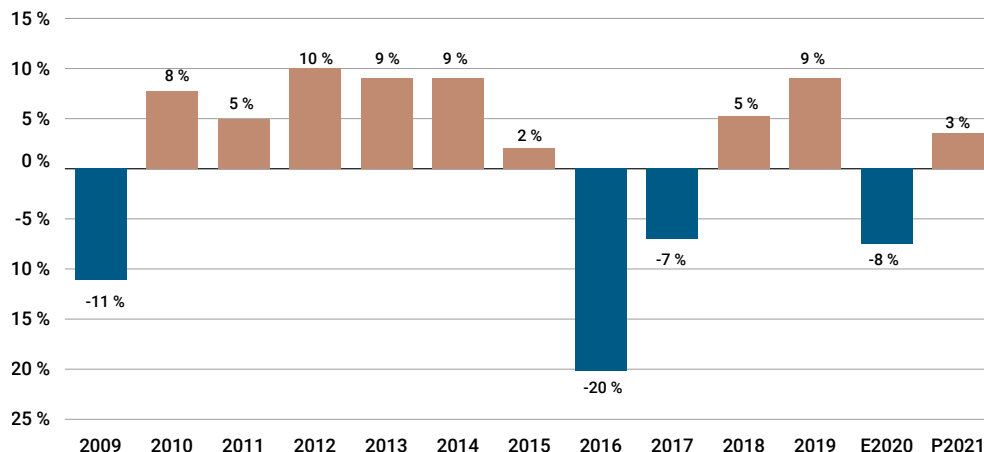
The offshore segments have experienced very demanding times since 2014. Turnover and profitability are still far lower than before the fall in oil prices and have so far not returned to sustainable levels. In 2019, total turnover in the offshore segments accounted for about 41 per cent of total turnover 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 per cent of shipping companies' total turnover.

All segments experienced reduced turnover in 2020. The short sea segment in particular saw the largest decline, but there are large differences within this segment. Where the passenger segment saw a decline of about 46 per cent, the transport segment has increased its turnover by eight per cent. Deep sea shipping companies have experienced a reduction of about six per cent. Both offshore segments - offshore service and rig companies - experienced a reduction in turnover of five per cent in 2020.

Turnover in short sea split by segment

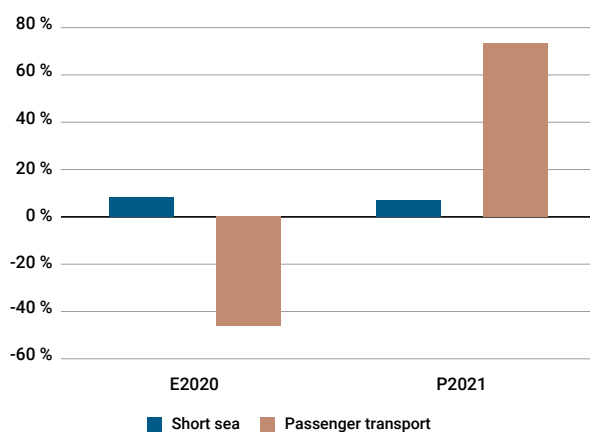


Change in Norwegian shipowners' turnover from the previous year (including 2020 estimates and 2021 prognosis)



Source: BDO AS / Norwegian Shipowners' Association

Annual growth rates for short sea split by segment (2020 estimates and 2021 prognosis)



Source: BDO AS / Norwegian Shipowners' Association

Shipowners expect an increase in turnover in 2021

Increased optimism is reported for 2021, with modest positive expectations for the year. Overall, shipowners state that they expect an increase in turnover of three per cent in 2021. There is great discrepancy between the segments, with the bulk of expectations for an increase coming from the transport segments and passenger ships.

There is great optimism among short sea shipowners. As many as four out of five expect growth in 2021, and only ten per cent expect reduced turnover. Internally in the segment, the greatest optimism is to be found among passenger ship companies, where all anticipate significant growth in 2021. This is due to the fact that passenger shipowners were hit very hard by restrictions on activities due to the pandemic in 2020, but foresee relief over the course of 2021. The deep sea segment is more divided in its expectations for 2021. About 40 per cent of shipowners expect growth in 2021, while almost 30 per cent expect reduced turnover.

In the offshore segment, shipping companies are nearly equally divided when it comes to expectations for 2021. Among the offshore service and rig companies, about 40 per cent state that they expect growth in turnover in 2021, while approximately the same share in both segments anticipate a reduction.

If the forecast is correct, the shipowners' total revenue will end up at around NOK 242 billion in 2021, up three per cent from 2020.



Still demanding in offshore

The large drop in revenue among the offshore service and rig companies after the fall in oil prices in 2014 still affects the industry to a large extent. Globally, there has been lower activity in exploration, extraction and maintenance, combined with efficiency measures in the oil companies.

The offshore segments still face a demanding situation, with high layup figures, low rates and a short time horizon on new contracts. The situation is not sustainable, and the offshore segments may be characterized by further restructuring and refinancing again in 2021.

The rig market suffered a sharp setback in 2020. Rig companies' revenues have been cut almost in half since 2015. In 2015, rig companies had a total turnover of NOK 67 billion. In 2020, this was down to about NOK 37 billion. For 2020 alone, the decline in turnover was almost five per cent, amounting to a decrease of about NOK 2 billion.

OPEC's regulation of oil prices gives cause for guarded optimism. The start of 2021 has been marked by several interesting rig contracts in Norway, the UK and Brazil, while the market has high expectations for further activity in Guyana, Angola, Mozambique and Malaysia. These drilling rigs will go to assignments that were previously postponed, some of which have returned much faster than expected.

The impact of the corona pandemic on the oil market will also affect much of 2021 for offshore service, but

there are some bright spots. Lorentzen & Stemoco estimates that we will see increased demand for offshore services with lower emissions in 2021, as both owners and operators must reduce their emission profiles. They also point out that the offshore wind market may see an increased need for floating housing units and "walk to work" services, which can be a bright spot especially in the supply ship market.

Offshore service shipping companies had a turnover of approximately NOK 100 billion in 2014, but in the period from 2014-2018 this was halved to NOK 52 billion. In 2019 the segment reported growth in turnover of almost 20 per cent before revenue fell again in 2020, by five per cent. For 2021, the forecast is for a further reduction of five per cent.

The transport segments expect growth in 2021

Deep sea shipping companies experienced a reduction in turnover of about six per cent in 2020. For 2021, they expect growth of four per cent. If the forecasts prove accurate, this will give them a total turnover of NOK 111 billion in 2020. This makes the deep sea shipping companies the largest single segment of the Norwegian Shipowners' Association's members measured in turnover, with about the same turnover as the other segments combined.

Short sea shipowners traditionally experience steady and stable growth. Annual growth in recent years has been around five per cent. The corona pandemic has hit the various parts of the short sea segment very differently. The passenger segment has had a significant decline in turnover, with a loss of about

46 per cent. This amounts to about NOK 6 billion in reduced turnover.

Conversely, the transport segment saw good growth in 2020, reporting a growth in turnover of eight per cent. This represents a growth of about NOK 1 billion.

Both the passenger and transport segments expect solid growth in 2021. The passenger segment expects growth of 73 per cent, corresponding to NOK 5 billion. However, this is not enough to make up for the total reduction experienced in 2020, which means that losses as a result of the corona pandemic will extend beyond 2021 and into 2022. The transport segments expect growth of about seven per cent. This corresponds to a growth in turnover of about NOK 1 billion.

Shipowners divided on expected profitability

There is a large gap in shipping companies' expectations for profitability in 2021. Overall, about one in three shipowners state that they expect weaker profitability in 2021 compared with 2020. Among the offshore service and rig companies, more expect reduced profitability than those expecting increased profitability. Thirty-eight per cent of offshore service shipping companies and 36 per cent of rig companies expect reduced profitability in 2021. This indicates that the offshore segments expect a further deterioration of the market situation. This is despite the fact that 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 among offshore service and rig companies does not mean profit or sustainable profitability, but may mean that the deficit is being reduced somewhat.

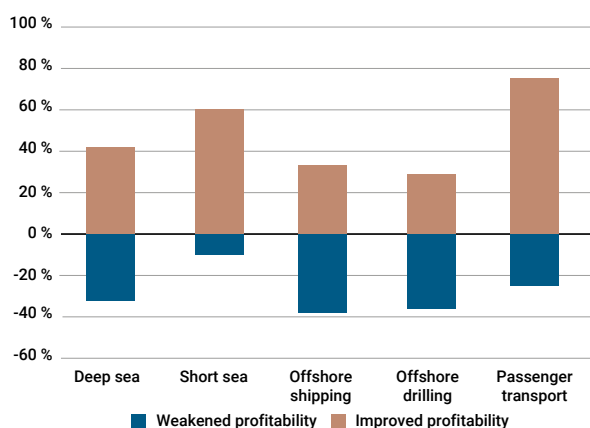
Also in deep sea, about one in three shipowners state that they expect reduced profitability in 2021. At the same time, a larger proportion of shipowners in this segment - 42 per cent - anticipate increased profitability. The share of those expecting significantly weaker and significantly improved profitability is equally divided, at eight per cent each.

The short sea segment in particular has high expectations for 2021. Within the transport segment, 60 per cent of shipowners expect improved results in 2021, while only ten per cent anticipate weaker results. This may indicate that shipowners expect the strong markets they experienced toward the end of December to continue into 2021.

In the passenger segment, three out of four shipowners have expectations of increased operating profit in 2021. This is probably closely related to the fact that passenger ship operations were largely halted as a result of the corona pandemic, leading to a significant reduction in operating profit in 2020. As with offshore, it is not a given that an increase in profitability in this context means a positive operating result. In this context, it can also mean reduced negative operating profit.



Shipowners' expectations for development in 2021 operating results compared with 2020



Source: BDO AS / Norwegian Shipowners' Association

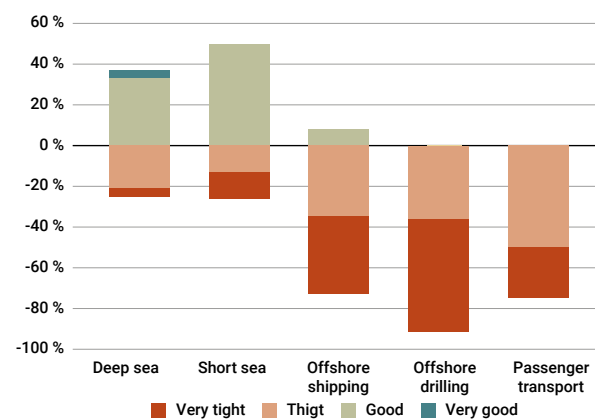
Tight capital access for offshore

The maritime industry is greatly affected by the world around us. Since the financial crisis in 2009, Norwegian and international economics 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. We see this primarily through reduced oil and gas activity in Norway and internationally. Shipping companies' access to capital is greatly affected by this.

Shipowners' access to capital has been weakened significantly since 2015. The proportion viewing access to capital as good has, since 2015, been around 15 to 25 per cent. Correspondingly, the proportion experiencing access to capital as tight has been around 40 to 60 per cent.

In 2021, only two out of ten shipowners experience good access to capital, and as many as six out of ten experience tight capital access. Only one per cent of members experience very good access to capital. Access to capital is now about as demanding as it was during the most challenging period of the offshore crisis.

Perceived access to capital, January 2021



Source: BDO AS / Norwegian Shipowners' Association

Variations between the segments are significant when assessing access to capital. The offshore segments are experiencing the most demanding situation. As many as 91 per cent of rig companies experience access to capital as tight or very tight. No rig companies report good or very good access to capital. Offshore service shipping companies also experience demanding access to capital, and close to three out of four shipping companies report tight or very tight access to capital. Only eight per cent of shipping

companies state that they have good access to capital, and none report 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 among shipping companies. The fact that demanding capital access will persist into 2021 presents further challenges for this segment.

Within the transport segments, companies are significantly better off in terms of access to capital. Among deep sea shipowners, almost 40 per cent state that they have good or very good access to capital. At the same time, one in four state that access to capital is tight or very tight. Half of the companies in the short sea transport segment consider capital access to be good or very good. At the same time, one in four state that access to capital is tight or very tight. More than one out of ten in this segment experience access to capital as very tight.

Passenger shipping companies report very demanding access to capital. Half state that access to capital is tight, and one in four characterize access as very tight. None of these believe access to be good or very good. There is good reason to assume that weak capital access is closely linked to the significant fall in turnover and profitability in this segment.

Further worsening of capital access

Regarding expectations for access to capital in 2021, there is a clear distinction between the transport segment (deep sea and short sea) and the offshore segment (offshore service and rig companies).

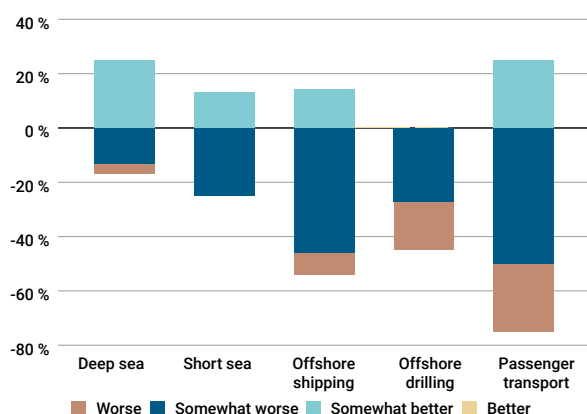
In deep sea, expectations of an improvement in capital access exceed fears of austerity. One in four shipowners expect better access to capital in 2021 than in 2020. About 17 per cent expect weakened access to capital. In the short sea segment, expectations are somewhat lower for 2021. In this segment, about twice as many shipping companies expect poorer capital access than those expecting improvement. Every fourth shipping company expects weaker capital access in 2021 than in 2020. Only one in eight shipowners are optimistic about access to capital.

Offshore service and rig companies are clearly the most pessimistic about the development of capital access in 2021. One reason for this may be that the offshore industry will continue to be characterized by further restructuring and refinancing.

More than half of offshore service companies expect a further tightening of capital access. This is particularly noteworthy, as this is one of the segments where access to capital is already perceived as tight. Only one in seven companies in this segment expect access to capital to improve in 2021.

Rig companies also have low expectations for 2021. Nearly half expect access to capital to tighten further in the coming year. No rig companies expect improvement in access to capital.

Expectations for access to capital in 2021



Source: BDO AS / Norwegian Shipowners' Association

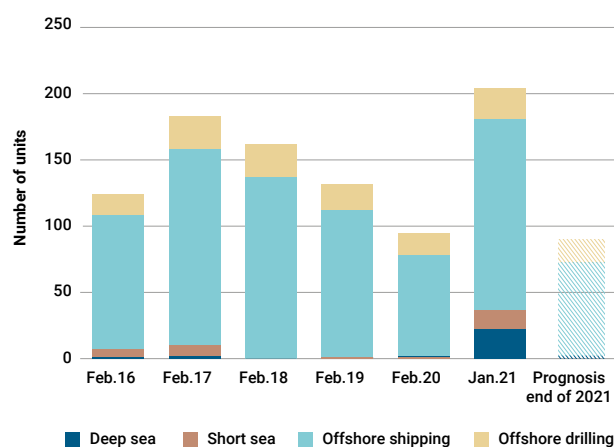
Record number of ships in layup

Ships in layup lose value and incur ongoing costs for their owners. That 2020 was a demanding year for shipping is very clear from the layup figures. As of January 2021, there were 204 ships and rigs in layup. This exceeds the highest layup figures during the offshore crisis of 2016 - 2017. It is also worth noting that all segments state that they have ships in layup. This indicates that the downturn in 2020 impacted all segments.

When we look at the gap between the actual layup figures in January and the forecast for the end of 2020, based on the member survey conducted in January 2020, the shock that hit shipping in 2020 becomes clear. Expectations at the beginning of 2020 were that layup figures would further decline, to 14 rigs and 57 offshore service vessels. The final result for the offshore service companies was about two and a half times as high.

Fully 144 offshore service vessels are in layup, of which 100 are located in Norway and 44 abroad. This is close to the record year of 2017, when 148 offshore service vessels were in layup. These figures clearly indicate the crisis facing offshore service companies.

Layup figures from 2016 to 2021



Source: BDO AS / Norwegian Shipowners' Association



Wallenius Wilhelmsens Porgy is reactivated after layup in the Sognefjord.

Rig companies have also had a significantly more demanding year than anticipated at the beginning of 2020. Rig owners entered 2020 with 17 vessels in layup, and the expectation that this number would be reduced to 14 during the year. The final result shows that another six rigs have gone into layup, with 23 rigs now laid up. This is close to the number of rigs in layup at the height of the offshore crisis in 2016 - 2017.

New to this year are both deep sea and short sea ships in layup. As of January 2021, deep sea shipowners have fully 22 vessels in layup. These ships are largely linked to the ro-ro segment. Short sea shipowners currently have 15 ships in layup. Layup figures in the short sea segment are mainly related to passenger transport.

All segments expect a significant reduction in layup figures in 2021. In total, shipping companies expect layup figures to be reduced by nearly half. In the transport segments (deep sea and short sea), there is an expectation that the end of 2021 will see a decrease from 37 vessels to three in layup, with all of the remaining vessels in the deep sea segment.

The offshore segment also has high expectations for 2021. In offshore service, it is expected that as many as 52 ships will be taken out of layup, down from 144 to 92 ships. Among the rig companies, there is an expectation that ten rigs will leave layup, nearly halving the number from 23 to 13 rigs in layup.

When asked whether they have plans to recycle ships or rigs in 2021, 20 per cent of shipowners replied in the affirmative. The largest percentage of owners with recycling plans in 2021 is found among rig companies. One in three rig companies have plans to recycle rigs in 2021, for a total of eight rigs altogether.

The highest number of ships planned for recycling is found in offshore service. Here, about one in six shipping companies plan to recycle ships, giving a total of 16 ships. Four deep sea shipping companies plan to recycle a total of 12 ships. On the opposite end of the scale, only three short sea vessels are planned to be recycled in 2021, and no passenger ships.

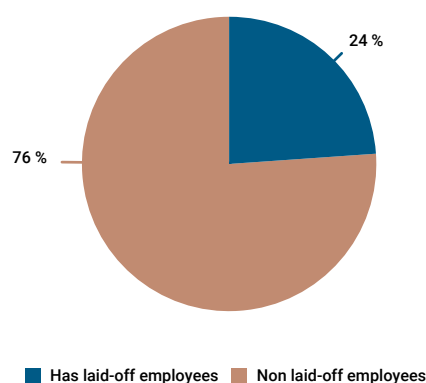
One of five shipowners have placed employees on leave

The downturn in 2020 has led to a significant decline in activity in a number of segments. With the exception of short sea, all segments have placed employees on leave. The offshore and passenger segments in particular have seen a significant proportion of shipowners forced to lay off employees. All passenger shipowners state that they have laid off employees. One of three offshore service and rig companies state the same. The transport segment (deep sea and short sea), reports few employees placed on leave. Only four per cent of deep sea shipowners have laid off employees, and none of the short sea shipowners.



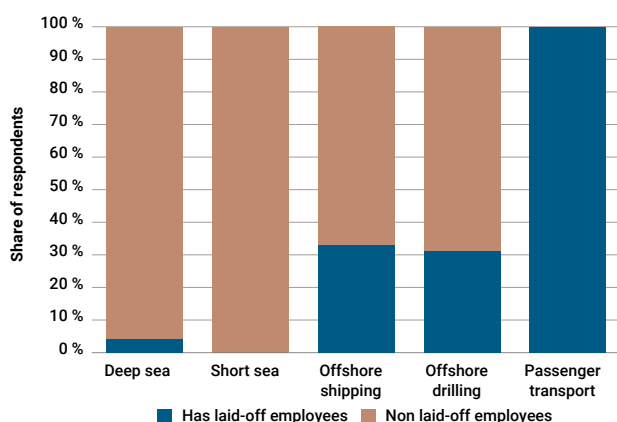
Photo: Fred. Olsen Windcarrier

Percentage of companies stating they have employees laid off in January 2021



Source: BDO AS / Norwegian Shipowners' Association

Percentage of companies stating they have employees laid off in January 2021, by segment



Source: BDO AS / Norwegian Shipowners' Association

In total, respondents to the survey report that close to 3,000 people have been laid off in shipping companies. The passenger ship segment in particular has laid off a high number of employees. Layoffs among passenger shipowners make up over 80 per cent of the total. Offshore also reports a high number of layoffs. As of January, almost 350 people have been laid off in rig companies, with about 200 laid off in offshore service during the same period.

More than 40 per cent of shipowners will order new ships during the next five years

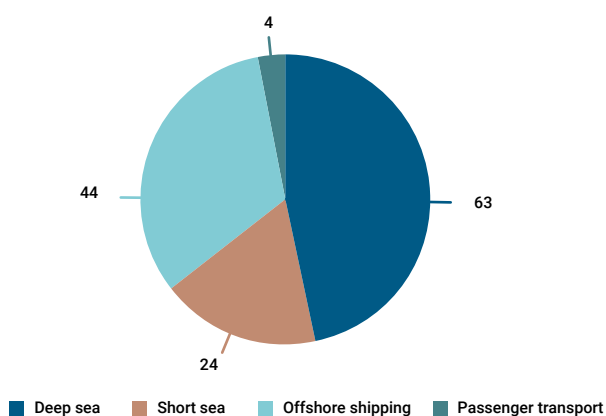
In this year's survey, 42 percent of shipowners state that they plan to order new ships or rigs over the next five years. Companies estimate that they will order a total of 135 ships over the next five years. The transport segments (deep sea and short sea) in particular report the largest proportion of shipping companies stating their intention to place orders. Deep sea accounts for almost half of estimated orders over the next five years.

We also see a great need and a strong desire for fleet renewal in short sea shipping. The potential for testing new climate and environmental technology is great in short sea shipping, with shorter distances and more frequent calls than ships in deep sea and offshore service. The average age of ships among the Norwegian Shipowners' Association's members in short sea shipping is 20 years. Two out of three short sea shipowners plan to order new vessels over the next five years. This means that the potential for renewal in short sea is significant, and that the average age of

short sea vessels will be reduced. The corresponding figure is three out of ten for offshore service shipping companies, and just over half of all deep sea shipping companies. No rig companies plan to build new rigs in the next five years.

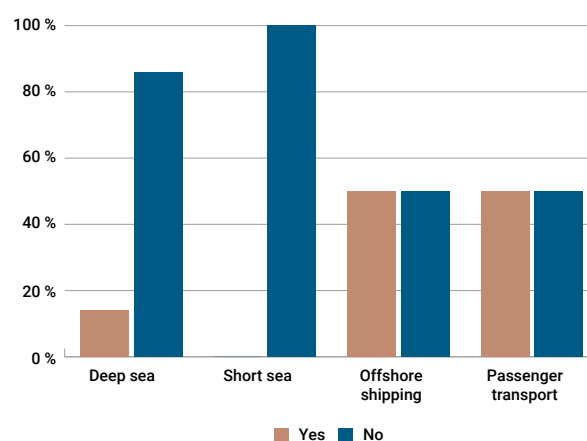
Deep sea shipowners expect to order 63 new vessels, followed by offshore service shipping companies with 44 vessels, and short sea shipowners with 24 vessels.

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



Source: BDO AS / Norwegian Shipowners' Association

Share of shipowners considering Norwegian yards for building ships



Source: BDO AS / Norwegian Shipowners' Association

Norwegian shipping companies are very important for Norwegian shipyards and the supplier industry. Ordering new ships will mean improving the order book for both Norwegian shipyards and equipment suppliers in the maritime cluster. About one in four shipping companies consider Norwegian shipyards to be relevant for construction of their vessels. Among short sea shipowners, none consider Norwegian shipyards as relevant. This is a marked decline since 2019, when about half of shipowners considered Norwegian shipyards to be relevant. This is probably due to the fact that several shipowners that have tried to find solutions with Norwegian shipyards view the price level as too high to be justifiable. Among offshore service shipping companies and passenger shipowners, about half consider Norwegian shipyards to be relevant. This too is a decline from previously.



Call to action

Shipowners believe in climate solutions

International shipping accounts for 2.9 per cent of the world's CO₂ emissions. At the same time, emissions per transported unit have fallen by 30 per cent since 2008, and shipping is on a steady course towards a greener world. This development must continue and grow in strength if we are to achieve the goals of the Paris Agreement. Norwegian shipping companies are taking a leading role in the fight against climate challenges. By 2050, the goal is for the entire Norwegian fleet to be climate neutral.

Ordering only ships with zero-emission technology from 2030

The seaway is the most energy-efficient mode of transport of goods and the only realistic way to transport large quantities of goods over long distances. Since ships have a lifespan of more than 20 years, zero-emission ships must be phased in from 2030 in order to achieve a climate-neutral fleet from 2050.

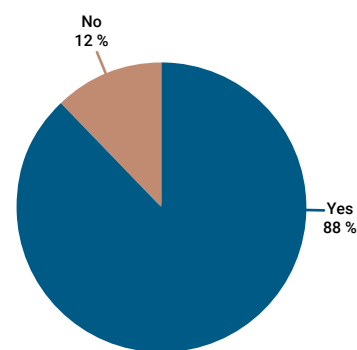
A total of 88 per cent of shipping companies say that they believe they will be climate neutral by 2050, in line with the Norwegian Shipowners' Association's climate strategy. By comparison, Kantar's climate barometer for 2020 shows that 61 per cent of Norway's population believe that we will succeed in reducing greenhouse gas emissions globally. In Kantar's survey, respondents point out that "the business community's lack of interest in investing in climate measures" is the most important reason why research is not to a greater extent

the basis for climate policy. By contrast, the Norwegian Shipowners' Association's member survey shows that the maritime members of the business community both invest in and desire stricter climate measures.

New fuel solutions for ships

In the member survey, 54 per cent reply that they will consider hydrogen as an energy carrier to achieve emissions targets by 2050, and almost half will also consider electric hybrid solutions and ammonia. Already today, several are working on groundbreaking projects with hydrogen, ammonia, biogas and electricity. More than six out of ten shipping companies answer that they are willing to pay more for climate-friendly fuel. Among short sea shipping companies, the number is eight out of ten.

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



Source: BDO AS / Norwegian Shipowners' Association



Misje Eco Bulk AS in cooperation with Wärtsilä Norway have signed a new-building contract for up to ten new eco-friendly bulk vessels.

Barriers to development

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

It took around 20 years from the time the first LNG-powered vessel was in operation until the technology was commercially competitive. We do not have that much time if we are to reach the greenhouse gas emission targets set by the IMO, the EU and various nation states, including Norway.

Significant additional costs are often associated with both operations and investments in major technology changes, especially in the early stages. Uncertainty also exists about which technologies to invest in to realize future fuels for shipping. In this shift, it is crucial to ensure cooperation between shipping companies, cargo owners, service customers and the authorities. Longer contracts reduce the risk in such investments, access to fuel infrastructure ensures flexibility, and an instrument to help reduce risk in new technology will increase the pace of the shift to low and zero-emission fuels.

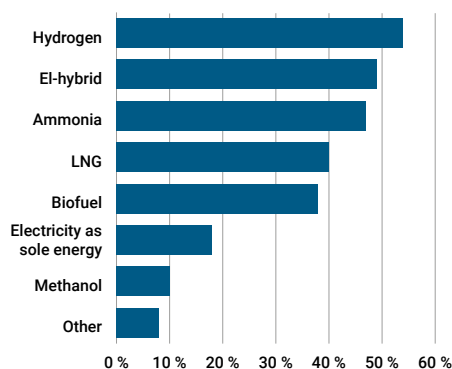
Fleet renewal

In the autumn of 2019, the Norwegian Shipowners' Association, together with The Norwegian Confederation of Trade Unions, The Federation of Norwegian Industries and the Coastal Shipping Companies, presented a package of measures for green fleet renewal. The purpose of the package is to collect a set of instruments that can stimulate the renewal of the short sea shipping fleet with the development and use of new technology.

For example, renewal can take place through contracting newbuildings or upgrading existing ships. The member survey revealed a great need for fleet renewal. Another concrete measure that can contribute to fleet renewal is the introduction of an application-based fund for recycling ships in layup. In this way, old and expensive tonnage can be removed, contributing to orders to Norwegian shipyards and making room for investments in newbuildings.

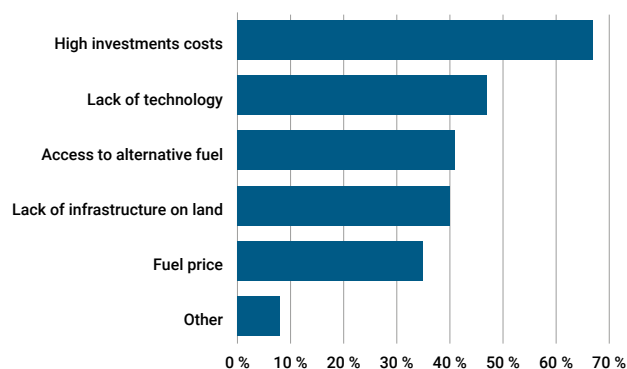
A general condition is that newer tonnage must be significantly more climate and environmentally friendly than the tonnage being replaced. New tonnage will also be more efficient, making maritime transport more competitive.

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



Source: BDO AS / Norwegian Shipowners' Association

The largest barriers for using alternative fuels



Source: BDO AS / Norwegian Shipowners' Association

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Contribute to the green renewal of the short sea shipping fleet through robust support schemes, loan schemes and top-up financing schemes on market terms
- Ensure that public funding through Enova, the NOx Fund and Innovation Norway stimulates fleet renewal
- Increase the depreciation rate for ships in short sea shipping to 20 per cent, or introduce initial depreciation of, for example, 25 per cent
- Work to establish longer-term loan financing of ships
- Facilitate new, energy-saving and emission-free technologies through funds for research and development as well as intermediate and top-up financing of specific pilot projects
- Prioritize technology that can be scaled up and contribute to emission reductions for large ships on long routes
- Establish strict, clear and technology-neutral environmental requirements for public procurement
- Facilitate diversity of energy-dense fuels such as hydrogen and ammonia as well as sustainable biofuels
- Introduce a CO₂ compensation scheme for ships using LNG as fuel
- Introduce a detachable tariff for ships that use shore power and charging
- Work actively in the EU and in the IMO to safeguard maritime interests in relevant climate processes

Proactive business policies strengthen competitiveness

The maritime industry is knowledge-intensive and thoroughly globalized. If Norway is to maintain its position as a maritime superpower, internationally competitive framework conditions are required. The industry employs nearly 83,000 people in Norway and creates value for NOK 144 billion annually. Norway has a complete maritime cluster, with international leaders in most business areas. At the core of this cluster are the shipowners, making up the largest part of the maritime industry, measured in both value creation and employment.

Long-term policies and stability ensure Norwegian ownership

Norwegian shipping companies create significant value and represent one of our most important export industries. They conduct global activities on all the world's oceans, facing fierce global competition. The Norwegian Shipowners' Association works to make it attractive to own and operate shipping companies from Norway. Without Norwegian shipowners, the maritime industry loses its most important driver of innovation.

Regulatory framework conditions for private ownership in and from Norway are highly important for shipping companies and their owners. The attractiveness of Norway as a maritime location is based on stable, predictable and internationally competitive framework conditions.

Repealing the wealth tax will contribute to Norwegian private ownership

A special feature of the Norwegian shipping industry is the 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.

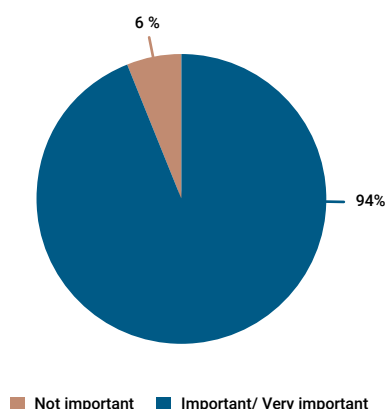
The wealth tax drains companies of capital that could be applied to innovation, restructuring measures and new jobs. In addition, the wealth tax is regularly levied on ownership, regardless of a company's profitability and liquidity, making companies particularly vulnerable in times of recession. We have seen several examples of this in 2020, which proved to be a particularly demanding year for Norwegian business and industry.

Competitive framework conditions for Norwegian private ownership are central to the further development of maritime value creation in Norway. The reduction in recent years of the wealth tax is an important step in the right direction for strengthening framework conditions for Norwegian private ownership. A distinction has been made between working capital and non-working capital.

The most important condition for strengthening access to competent and patient capital and creating opportunities here in Norway is to remove the wealth tax on working capital. As many as 94 per cent of shipowners respond that repealing the wealth tax on working capital is important to ensure competitive framework conditions for Norwegian private ownership.



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

Special Norwegian restrictions weaken the competitiveness of the tonnage tax scheme

The tonnage tax scheme is important for making it attractive to invest in Norway. Norway has an internationally competitive tonnage tax system that ensures predictability and secures a basis for operations. Nevertheless, there is a need to further develop the current scheme in order to keep pace with developments in other European schemes. As the tonnage tax scheme is structured today, ships cannot be used for activities other than those that qualify for the tonnage tax. This is regulated by the rules governing state support, but in some cases these other activities will constitute only a small part of a ship's total activity. For example, a pipe-laying vessel

that lays pipes on the seabed cannot be used for the maintenance of those same pipes. The activity is then considered stationary and not part of transport, and the ship must be removed from the tonnage tax scheme. All the ship's income from that year, even that from pipe-laying, is then taxed as ordinary.

These restrictions prevent ships in the scheme from being used to carry out other tasks. In addition, some shipping companies choose to place ownership of the vessels in other European tonnage tax schemes with greater flexibility. Restrictions must be changed to allow tonnage-taxed ships to be used for assignments taxed under the standard regime as well. Such a change in the scheme would not provide a tax advantage, but rather ensure that tonnage-taxed vessels in the Norwegian scheme can be used for more types of assignments than today. All other European tonnage tax schemes today have solutions that allow this. The introduction of shared accounting could provide a solution.

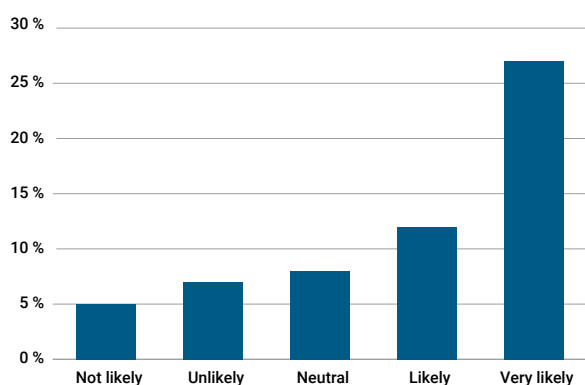
Strengthened competitiveness for Norwegian seafarers

To ensure Norwegian operational maritime competence and contribute to the recruitment of Norwegian seafarers on Norwegian-registered ships, a competitive net wage scheme is crucial. A large majority of shipping companies say it is likely that they will have to replace Norwegian seafarers with foreign crew if the net wage scheme for Norwegian seafarers is significantly weakened.

The tax refund scheme is a good investment in innovation and competence. Shipping companies also report that sailing experience is an important competence in their land organizations. The Norwegian Shipowners' Association is positive toward the government's improvement of the framework conditions for the Norwegian International Ship Register (NIS) through relaxation of trade area restrictions. At the same time, the current tax refund scheme for ships registered in NIS is not as competitive as the corresponding scheme for Norwegian Ordinary Ship Register (NOR) and should be strengthened through an increased refund rate.

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

Probability that Norwegian seafarers will be replaced by non-Norwegians if the tax refund schemes for Norwegian seafarers are significantly weakened



Source: BDO AS / Norwegian Shipowners' Association

Proactive maritime policies lead to flagging home

As a shipping nation, it is important for Norway to have a large share of the fleet under the national flag. This helps to maintain and further develop the competence of maritime regulatory bodies in Norway. It is also very important for Norway's impact in international fora such as the IMO.

Experience shows that the most important factor for choosing NIS over foreign registers is that shipping companies experience stable and competitive framework conditions in Norway. As a result of proactive maritime policies in recent years, nearly 170 ships have been flagged to the Norwegian register in the last five years. In the membership survey, shipowners state that they this year are considering flagging in 61 vessels to the Norwegian register, NOR or NIS, divided among 31 deep sea vessels, 9 short sea vessels and 21 offshore service vessels.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Remove the wealth tax on working capital
- Ensure a competitive tonnage tax scheme and amend special Norwegian restrictions in the tonnage tax scheme
- Open for access to NIS in areas where there are currently no shipping companies that have ships in NOR, for example shuttle tankers operating on the Norwegian shelf
- Further develop and improve the tax refund scheme for seafarers on ships in NIS



Norway as an energy nation

Norway has a long tradition as an energy nation, and the story is not over yet. In the same way that hydropower, oil and natural gas have been crucial prerequisites for the development of the welfare state and jobs, renewable energy should be the next chapter in the history of Norway as an energy nation.

Major green opportunities

The transition to a low-emission society presents significant economic opportunities. Countries that are capable of rapid restructuring by directing investments toward new growth areas are most likely to succeed in turning green restructuring into green growth. If Norway is to take a more decisive role in the changes taking place in energy markets, we should in principle make it as profitable to invest in renewable energy as in fossil-based energy.

Members of the Norwegian Shipowners' Association see commercial opportunities in Norway taking the lead in the development of new solutions on a large scale. Reduced emissions from long-distance transport and other industrial emissions are closely linked to the energy transition and growth in demand

for renewable energy, as well as carbon capture and storage. The significant and highly valuable utilization of Norwegian energy resources has been realized thanks to wise and predictable regulations and framework conditions from the Norwegian authorities. This is also crucial if climate goals are to be reached.

Offshore wind – a new Norwegian industrial adventure

Norway's strong position in maritime and land-based industry gives us a unique starting point for taking a leading role in the development of floating offshore wind. This is an energy source with great potential for all countries in the world with abrupt continental shelves and deep oceans.

Offshore wind is no longer a vision for the future – offshore wind is an industry the members of the Norwegian Shipowners' Association are already engaged in. There are significant deliveries from Norwegian industry and the shipping industry towards bottom-fixed offshore wind today. About 30 per cent of shipping companies state that they have turnover related to offshore wind, amounting to NOK 6.3 billion.

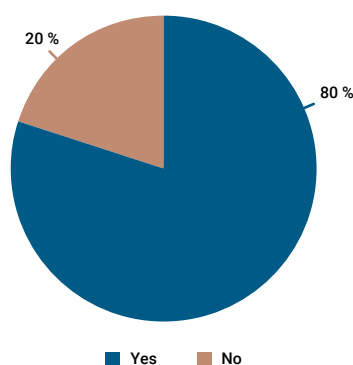
This is expected to increase to seven billion in 2021. In particular offshore service shipping companies see opportunities in the offshore wind market. Just over half of shipping companies in this segment have activity in offshore wind. Within five years, this share will increase to two out of three offshore service companies.

Norwegian-based offshore wind industry could potentially achieve turnover of nearly NOK 85 billion in 2050. It is positive that the government opened the areas Utsira North and Southern North Sea II for offshore wind power on 1 January 2021. This means that the industry can use the Norwegian Continental Shelf (NCS) as a test arena to develop new technology and green solutions.

Eight out of ten consider the home market as critical

The Norwegian Shipowners' Association believes it is high time that the Norwegian authorities establish an ambition for the Norwegian offshore wind industry and facilitate exploitation of the competitive advantage of the Norwegian maritime cluster. Eighty per cent of Norwegian Shipowners' Association members believe that a domestic market for floating offshore wind is a prerequisite for being able to compete internationally.

The shipping companies assessment of whether a domestic market for floating offshore wind is a prerequisite for being able to compete internationally



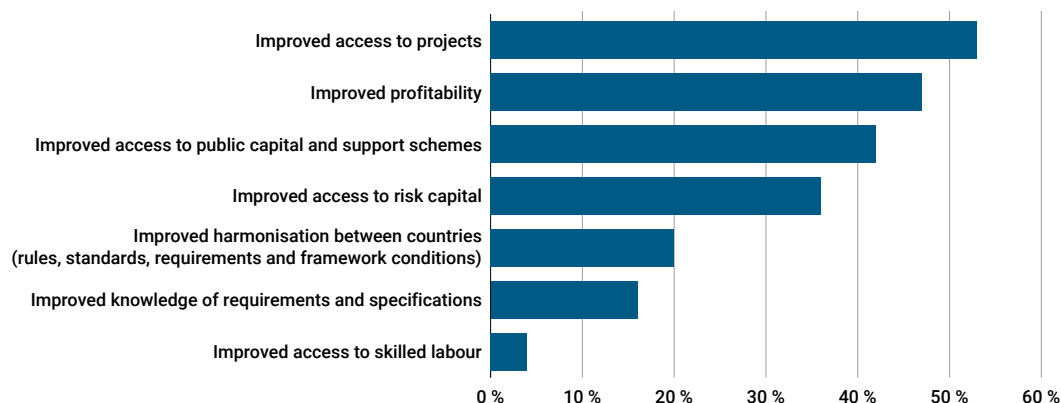
Source: BDO AS / Norwegian Shipowners' Association

We need proactive policies

Better access to projects is highlighted as the most important factor for further growth in the offshore wind market, in addition to stronger profitability and access to capital. The fact that few mention 'better access to competent labour' illustrates the unique position Norwegian shipping companies already have in this market. The high level of employee competence, together with the companies' experience from the offshore industry, makes the maritime industry extremely well equipped for this new market. At the same time, Norwegian authorities need to promote development.

A framework must be established that ensures a broad diversity of players on the NCS, among other things through qualitative award criteria and not

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



Source: BDO AS / Norwegian Shipowners' Association

strictly through auctions, and that financial framework conditions must be provided that make it attractive to invest in offshore wind in Norway.

The authorities should quantify an objective for the establishment of commercial offshore wind production on the NCS and for Norwegian deliveries to the offshore wind market. The goal should be installation of three gigawatts of capacity on the NCS by 2030. We consider a target of a ten per cent share for Norwegian companies in the global offshore wind market by 2030 to be both realistic and ambitious. For the maritime industry, establishing basic national framework conditions to promote offshore wind power development - and a new Norwegian industrial adventure - is a matter of urgency.

More than half of income stems from the NCS

Norway is the world's most advanced maritime offshore nation, with the world's second largest fleet of offshore vessels. For many decades to come, oil and gas resources will create great value and income for society and contribute to securing jobs, value creation and welfare throughout the country.

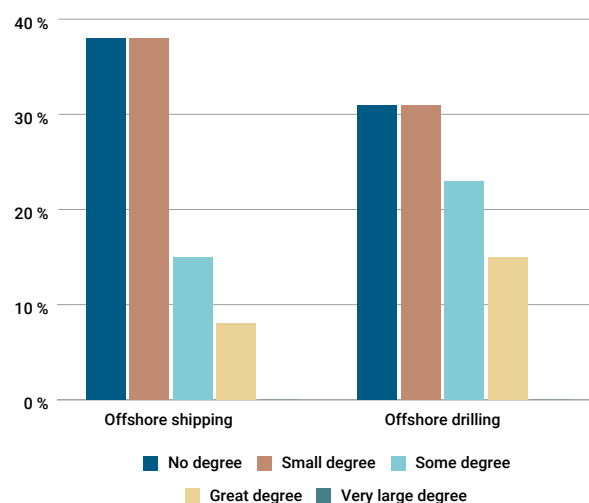
Norwegian shipping companies had NOK 113 billion in total turnover from the petroleum sector in 2020. This constitutes a share of the total revenue for shipping companies of 52 per cent. Rig companies derive all their income from the petroleum sector. Offshore service companies reported 87 per cent petroleum-related revenues in 2020. Deep sea shipping companies report that a quarter 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 seven per cent.

Corona relief measures not effective enough

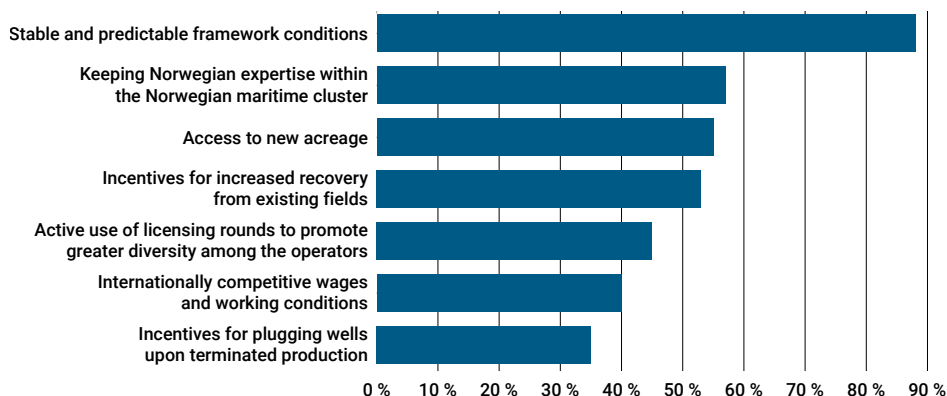
The oil price fall in 2014 took a heavy toll on offshore shipping and rig companies. Just before the corona pandemic hit, there was higher activity and cautious optimism among these companies. Now, the offshore segments still face a demanding situation, with high layup figures, low rates, and a short time horizon on contracts. The situation is not sustainable, and the offshore segments may continue to be characterized by further restructuring and refinancing in 2021.

To what extent have the policy measures helped your business during the covid-19 pandemic?



Source: BDO AS / Norwegian Shipowners' Association

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



Source: BDO AS / Norwegian Shipowners' Association

Eight out of ten believe that the pandemic will lead to operational challenges in 2021, while none of the respondents believe that they will be unaffected. As of January 2021, 144 offshore vessels are in layup. At the same time, 76 per cent of offshore service shipping companies and 62 per cent of rig companies believe that the policy package has been of little or no help. On the other hand, several of the member shipping companies say that the corona measures in the petroleum tax regime are expected to take effect over the next two years.

Continued stability is important

We believe that the Norwegian oil and gas industry must be further developed within the framework of a stricter climate policy. The power of expertise and development in the petroleum industry is also needed to develop new energy industries on the NCS, including offshore wind, hydrogen and carbon capture and storage. In order to ensure adaptability, it is crucial to have sufficient competence and capacity in the maritime supplier industry on the NCS.

Predictability and stability are identified by shipping companies as clearly the most important factors in ensuring an attractive Norwegian Continental Shelf. Favourable framework conditions for the energy industry are crucial. Therefore, a steady and stable pace must be maintained when it comes to allocating new areas for petroleum activity, both in terms of licensing rounds and allocation in predefined areas. A broad diversity of players also ensures healthy competition.

Ocean minerals – new resources for a green future

To realize the green shift, significant amounts of metallic minerals will be needed. Norway is well positioned to take part in this development due to our large continental shelf, extensive experience with resource management, and high-tech environments in the oil and gas and maritime sectors. The importance of developing technology that enables sustainable and responsible operations will be crucial to developing this industry.

It is essential to have good framework conditions for realizing extraction of minerals from the seabed on the NCS. There is uncertainty surrounding where the most interesting resources are located, their makeup and volume. Therefore, mapping is important to obtain sufficient knowledge as a basis for a resource assessment, including identifying the most interesting commercial deposits. The authorities must follow up the concession process and ensure attractive and predictable framework conditions.



NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Maintain predictability in the allocation of new areas for petroleum activity, both in terms of licensing rounds and allocation in predefined areas (APA)
- Review the competitive situation on the NCS with a view to facilitating greater player diversity and healthy competition
- Implement an energy policy that helps to provide access to renewable energy on competitive terms
- Appoint a fast-working committee to propose framework conditions that make it as profitable to invest in renewable energy as in fossil energy
- Establish infrastructure for transport and storage of CO₂
- Establish a national goal to develop Norway as an energy nation, and introduce a goal of three gigawatts of installed offshore wind capacity on the NCS by 2030
- Establish a framework and licensing system that facilitates the rapid and efficient development of a leading domestic market for offshore wind
- Establish a national sector agreement between businesses on land and at sea, together with the authorities, policy instruments, research communities and other parts of the cluster
- Ensure that Norway works towards an international ban on non-carbon neutral fuels from 2050
- Ensure that public funding through Enova, Innovation Norway and the export financing schemes stimulates fleet renewal
- Engage in active dialogue with the EU to secure Norwegian interests in the follow-up of the recently launched strategy for offshore renewable energy in Europe
- Follow up the ongoing concession process for mineral activities on the Norwegian Continental Shelf. Ensure attractive and predictable framework conditions, including tax rules, that are important for the development of seabed minerals on the NCS



Sea transport – the bridge to Europe

Sea transport is the cornerstone of Norwegian freight transport and constitutes by far the most important form of transport in and out of the country. Every day, hundreds of Norwegian ships call at European ports. These transport about 85 per cent of all goods to and from Norway. In this sense, it is easy to understand why the short sea trade - also called 'short sea shipping' - is considered industry's bridge to Europe.

In order to strengthen the competitiveness of maritime transport, it is crucial that the various modes of transport have equal conditions and competitive frameworks. Maritime transport is burdened with high fees, including large expenses to cover security and emergency services along the coast. The scope of these services is determined by the authorities, and the costs are mainly covered by the industry. This decoupling between requisitioner and payer means that incentives for streamlining are virtually non-existent. At the same time, navigation has become steadily safer as a result of the increased scope of digital sensors and aids. Many navigators carry out pilot-mandated sailings with pilot exemption certificates as an alternative to pilots on board. This has led to a significant reduction in the need for pilotage services. Unfortunately, the dimensioning of pilotage services has not followed reduced demand, and fee levels therefore remain high.

The most climate-friendly alternative

Short sea shipping is the most energy-efficient transport alternative for goods. This means that short sea shipping will have a competitive advantage in the future, when demand increases for solutions that can reduce climate emissions. Moving goods from road to sea significantly reduces climate emissions. In addition, fewer trucks on the roads will lead to a significant reduction in accidents, road wear, local environmental emissions, and pollution from

microplastics as a result of tire wear. Nor does sea transport pass directly through communities or cities.

The industry is taking important steps to reduce its climate emissions in order to meet ambitious climate requirements nationally, regionally and internationally. Short sea shipping is unique in that most ships are relatively small, sailing distances are short, and port calls are frequent. Several shipowners also operate on fixed routes with scheduled calls and repetitive operating patterns. This makes short sea shipping particularly suitable for testing new technology.

With smaller ships and engines and shorter sailing distances, the short sea fleet has lower energy needs. This makes it well suited for testing the transition to low and zero-emission fuels such as hydrogen, biogas, electricity and ammonia, as well as combinations of these. Frequent calls also open up for automated and autonomous solutions. New fuels must be made available in a critical number of ports so that ships are guaranteed access. Requirements from short sea shipping in fixed route shipping in Western Norway, for example, can form the backbone of such a supply network and be expanded to serve other ships. Coordination with other countries' authorities around the North Sea can expand the trading area for these vessels and make alternative fuels more attractive.

Seaborne transport must be strengthened

The Norwegian Parliament has set a target for 30 per cent of road transport exceeding a distance of 300 km to be transferred to sea and rail by 2030. In order to achieve this goal, measures must be implemented that strengthen the relative competitiveness of maritime transport.

Short sea shipping companies believe that lower fees and charges and remuneration for maritime



transport are the most important framework condition for strengthening short sea shipping. Sea transport is the only transport mode that finances most of its own infrastructure. Reduced charges will strengthen shipping's competitiveness against other modes of transport and be an important measure for moving goods from road to sea.

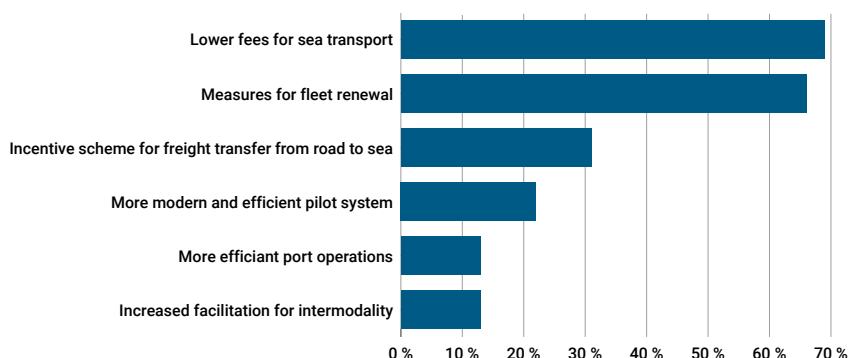
Sixty-six per cent of shipowners state that fleet renewal is important for strengthening short sea shipping. The Norwegian short sea fleet currently has an average age of 21 years, and the need for fleet renewal is great. Due to the low margins in this segment, access to capital is critical for realizing fleet renewal. Replacing aging ships with new, more efficient and greener ships will also represent an important contribution to achieving climate goals.

The incentive scheme for freight transfer is important for strengthening short sea shipping. The incentive scheme for transfer of freight from road to sea was launched in 2017 and has been an important contribution to the work of moving goods from trucks to ships. The industry is unanimous in its desire for the scheme to be continued.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Prepare a short sea shipping strategy that will strengthen the competitiveness of short sea shipping
- Facilitate the green transition and fleet renewal in short sea shipping through the establishment of a top-up financing scheme, improvements in the depreciation system for ships, and support schemes for investments in climate and environmentally-friendly solutions on ships
- Prolong and strengthen the subsidy scheme for the transfer of goods from road to sea
- Reduce and simplify the regime for fees and charges for short sea shipping by lowering pilotage fees
- Streamline and modernize the pilotage service, among other things by developing more robust and high-tech environments, as well as continuing to facilitate increased use of pilot exemption certificates
- Prioritize major improvements in the maritime transport infrastructure through facilitating efficient and more automated port operations

Main framework conditions for strengthening short sea shipping



Source: BDO AS / Norwegian Shipowners' Association

World class maritime research and innovation

Norway is at the forefront of research, innovation and development of future environmentally friendly and sustainable transport solutions related to shipping. A number of groundbreaking transport concepts are under development in Norway. In order to maintain this leading position, investments must be sustained and funds for research and development of new technology increased. The maritime cluster in Norway has significant opportunities to develop solutions in this area that the world needs, through interdisciplinary collaboration and increased research efforts.

Sector agreements

Cluster collaboration in Norway is impressive, and is seen by the rest of the world as a major Norwegian competitive advantage. The close collaboration between the industry, research and innovation stakeholders and the public sector has brought success in many areas.

Internationally, collaborative research is used strategically to solve increasingly pressing challenges facing the world. One example is the United Kingdom, where sector agreements have been in place for a number of years between the authorities, business, research and educational institutions and organizations. With the business community in the driver's seat, clear strategies and agreements are

laid out on how to meet common challenges and opportunities. This should provide inspiration for Norwegian businesses and the Norwegian authorities. We believe that sector agreements are needed to realize the opportunities offered by the technology laboratory that the Norwegian coast comprises.

Realizing the Ocean Space Centre must be a priority

The business community'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. Research infrastructure at the Marine Technology Centre in Trondheim has contributed to creating great value over many decades. Today's research infrastructure is unfortunately showing clear signs of wear. Our most important tools for innovation and new development are disappearing, and this is dramatic. For this reason, realizing the Ocean Space Centre must be made a critical priority.

Furthermore, it is absolutely crucial to quickly establish the infrastructure for renewable energy. Facilitating a green infrastructure along the coast is a prerequisite for adopting new technologies, and for participation in international research projects.



NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Finance the Ocean Space Centre through a positive investment decision laid out in the proposed National Budget for 2022
- Initiate sector agreements in Norway, for example in floating offshore wind, artificial intelligence and development of zero-emission technology, which can contribute to realizing the Norwegian coast as a technology laboratory
- Ensure a significant place for ocean-based research and innovation in EU research and innovation programs

Digitalisation creates opportunities

Worlds first autonomous zero emission ship, Yara Birkeland.

Our goal is for Norway to continue to lead the way in the digital transformation. Digitalisation in the maritime industry is about using technology to ensure efficient operations, reduce costs, enhance safety 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.

Standards, digital cleansing and efficient reporting

A number of digital solutions and products are under development in the Norwegian maritime industry today. In particular, three areas can contribute to the realization of a paperless maritime industry: requirements for standards, rules that have been developed based on the analogue world, and opportunities for effective digital reporting.

The maritime industry is internationally regulated with many requirements for documentation and reporting that today must be done manually by the crew on board. The Norwegian Shipowners' Association believes that the authorities should demand international standards adapted to a digital world. A 'digital cleanse' of regulations should also be carried out to remove requirements that documentation must be kept on paper, and to ensure effective digital reporting routines.

Autonomy and new transport systems

Norway is today a world leader in research and development for autonomous ships, with several strong regional environments. We also have particular transport challenges that are well suited for autonomous ships. The Norwegian Shipowners' Association encourages continued investment in autonomy by creating designated test arenas made available to companies and research environments.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Make use of experience and expertise from the industry, including in the coming task of mapping digitalisation in the maritime industry
- Establish a working committee to review requirements for new standards in the maritime industry with participation from different sectors in the industry
- Carry out a 'digital cleanse' of regulations currently requiring documentation to be kept on paper on board
- Expand assessment of experience and knowledge with digital reporting systems from other areas of business
- Assist the industry in reducing risk through testing of new solutions in full scale
- Facilitate research and development of autonomous ships in Norway
- Help to ensure that the IMO's work on automating administrative tasks such as reporting becomes a reality

The maritime industry has a broad need for competence

Climate and environmental challenges, technological development and strong demand for restructuring mean that the need for competence in Norway will undergo significant changes in the future. This is rarely as clear and important as in the maritime industry. The right skills, competence and knowledge are required in order to succeed.

We need leading educational institutions with quality technical equipment, updated competence among instructors, and digital skills integrated as part of the educational process. This means that the financing of technological and maritime subjects must be strengthened, and the work with collaboration, division of labour and consolidation of educational institutions must continue. Norway needs a flexible and scalable education system with a focus on both vocational schools and colleges and universities, and with good arrangements for student transfer between institutions.

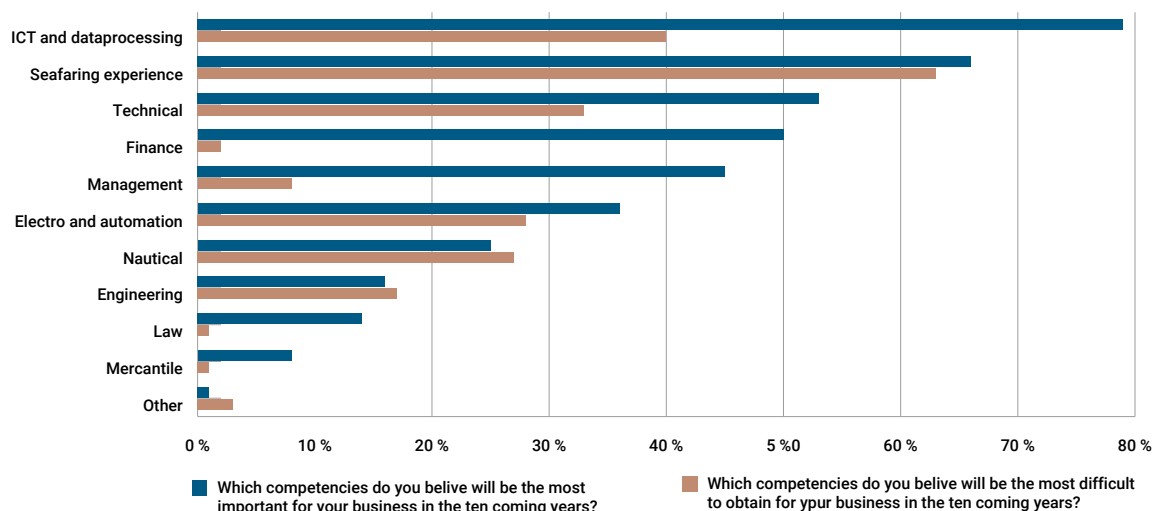
Operative maritime competence is valuable

Experience-based competence is an important driver 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 this competence will be the most difficult to come by.

Strong need for digital competence

In the survey, almost 80 per cent report that ICT and digital competence will be most important for their business in the coming years, and 40 per cent believe that this competence will be difficult to acquire. For many companies, the corona pandemic has contributed to a rapid digitalisation of their business, and many more than in previous surveys now report that they require this expertise.

The need for competence in shipping companies the ten coming years



Source: BDO AS / Norwegian Shipowners' Association

With a lack of competence comes the risk of under-utilizing the potential that lies in digitisation. It is therefore 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 up with technological development.

Strengthened funding ensures higher quality

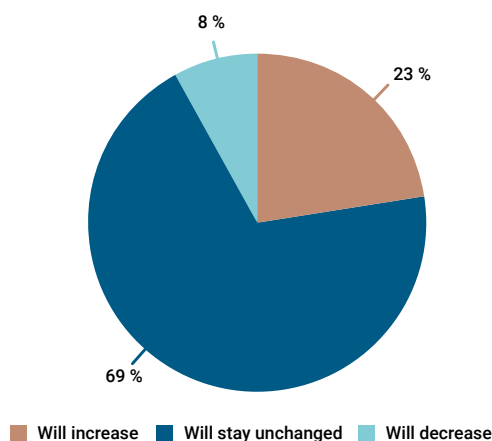
In order to maintain quality in higher education, basic funding must be established at the right level. Funding for maritime operational education has been too low for some time. Maritime education must be raised to category C, together with science, technology and fisheries.

The collaborative project MARKOM2020 has over the last ten years played a very important role in raising the quality of maritime education. The project has contributed to the development of a comprehensive educational trajectory from vocational school via bachelor's and master's programs to maritime research, with a doctoral program in nautical operations. A long-term continuation of this investment is critical to further strengthening maritime professional and vocational school educations.

Continued need for apprentices and cadets

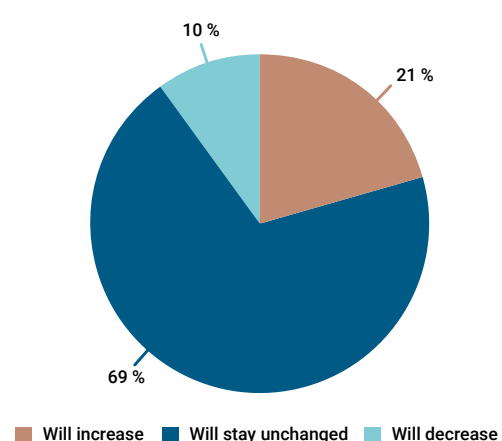
Companies report that the need for apprentices and cadets will remain unchanged over the next five years. Over 40 per cent of short sea shipping companies believe that there will be an increased need for apprentices and cadets.

The shipping companies assessment of their need for apprentices the next five years



Source: BDO AS / Norwegian Shipowners' Association

The shipping companies assessment of their need for cadets the next five years



Source: BDO AS / Norwegian Shipowners' Association



Lifelong learning

Both ships and land-based industry are becoming more specialised, and tasks will require competence not necessarily acquired through education or experience. A solid offering of relevant continuing and further education is therefore needed.

Universities and colleges today struggle to offer continuing and further education that satisfies the demands of the business community and individuals for short courses and modules of high academic quality and relevance. The authorities must ensure quality solutions and incentives for both institutions and companies to prioritise continuing and further education.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Place maritime education in cost category C in the financing model
- Ensure strengthening of the Nautical Operations Research program by awarding permanent PhD chairs
- Continue to improve the quality of maritime education through a long-term extension of MARKOM2020
- Establish a new, broader approach to maritime education and competence with special focus on digitisation and new technology
- Evaluate ways to adapt current regulations and funding systems in the university and college sectors to encourage lifelong learning
- Explore tools and incentives to allow both companies and individuals to invest in competence and education

A global industry

Shipping represents the most important infrastructure for trade between continents. More than 80 per cent 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 International Maritime Organization IMO and the UN International Labour Organization, ILO.

Majority of turnover generated abroad

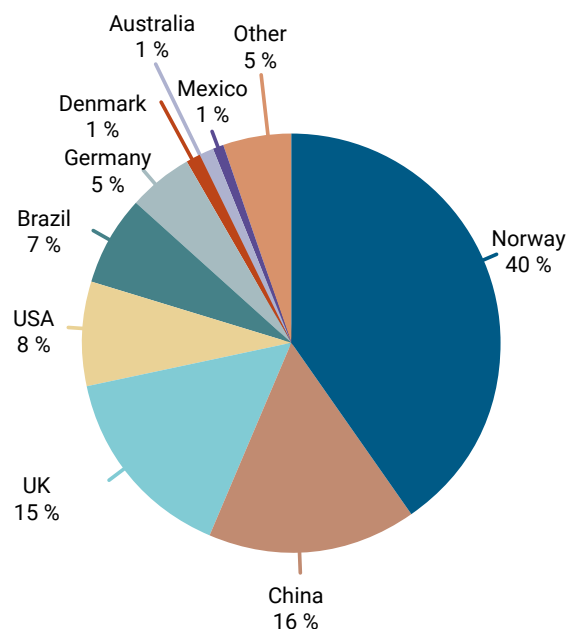
The member survey shows that Norwegian shipping companies' revenue from markets outside Norway amounted to approximately NOK 155 billion in 2020, or 71 per cent of the total turnover in the industry in 2020. In 2021, growth in foreign markets of NOK 6.5 billion is expected, bringing the foreign share of shipowners' turnover to 72 per cent. This clearly illustrates the global nature of maritime industry.

Deep sea shipowners in particular gain a large share of their revenue from foreign markets, with about NOK 100 billion in 2020 and an expected NOK 104 billion in 2021. This constitutes as much as 94 per cent of deep sea shipowners' total turnover.

The Norwegian fleet is the world's fourth largest in terms of value, and shipowners maintain strong positions around the world. Shipowners highlight

China in particular, followed by the United Kingdom, the United States and Germany as important foreign markets. At the same time, four out of ten companies say that Norway is the most important single market. The offshore service segment and rig companies derive more than half of their revenues from the Norwegian market.

Countries of particular interest – all shipping companies



Source: BDO / Norwegian Shipowners' Association.



Protectionism and trade wars

At a time when globalisation is increasingly being challenged by regional offensives, national interests and protectionist policies, it is crucial to support an international legal order and multilateral governance. Deep sea shipping companies in particular are noticing the negative effects of protectionism, with as many as 72 per cent saying that it affects them negatively or very negatively. The Norwegian authorities must work for free trade agreements with countries corresponding to those with which the EU has agreements, and prioritise negotiations with China and the United Kingdom.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

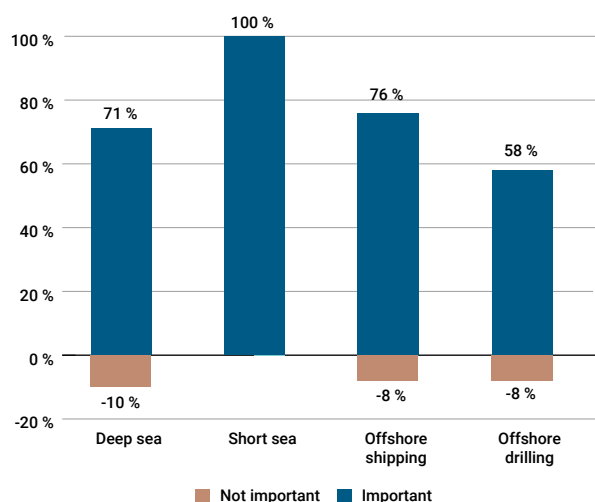
- Continue to contribute to regulatory development in the IMO and work toward harmonised global implementation and uniform practice of international rules
- Speak out clearly against protectionist trends in foreign markets
- Negotiate free trade agreements with countries corresponding to those with which the EU has agreements, including prioritising bilateral trade agreements with China and the United Kingdom
- Continue to support the WTO as the central multilateral organisation for global trade and trade policy by contributing to reform efforts

Europe – our most important market

The European countries collectively represent the maritime industry's largest and most important trading partner. The EEA agreement ensures market access, predictability and a level playing field in Europe. Uncertainty related to our most important market will hit Norwegian export-oriented businesses particularly hard.

In the member survey, the EEA agreement is named as important for all shipping segments. This is perhaps not surprising, as calls by Norwegian ships at ports in the EU number close to 40,000 a year, or more than 100 calls every single day. The agreement is particularly important for short sea shipping companies, where every company state that it is important or very important for their businesses.

Shipowners' perception of the importance of the EEA agreement



Source: BDO AS / Norwegian Shipowners' Association

An agreement between Norway and the UK is important

When the United Kingdom left the EU on January 31, 2020, the country also left the EEA agreement and thus the framework that regulates large parts of its relationship with Norway. The EU and the United Kingdom agreed on a trade and cooperation agreement in December 2020, while Norway must continue with its own negotiations.

In the member survey, the United Kingdom is ranked as the most important country after Norway in Europe. The Norwegian Shipowners' Association encourages the Norwegian authorities to maintain high ambitions in negotiations with the United Kingdom.

Regardless of which agreements are entered into, the United Kingdom's withdrawal from EU cooperation will continue to present practical challenges, and it is unclear how the relationship between the United Kingdom and the EU / EEA area will develop in the long term.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Maintain an active European policy that ensures good cooperation with EU institutions and member states, based on the EEA agreement
- Secure shipping's interests in the Brexit process, and maintain high ambitions in negotiations with the UK on a trade agreement



Maritime security and crisis response

With 1,800 ships around the world at any given time, Norwegian shipping is confronted with the full range of challenges and threats in the world. The Norwegian fleet represents a formidable emergency resource for the Norwegian authorities and our allies. In order to contribute to global maritime security and strengthen the nation's ability to utilise the fleet as a contingency resource, there is a need to further develop a comprehensive national strategy and plans in several areas.

Cybercrime a serious threat

Members of the Norwegian Shipowners' Association report cybercrime as the biggest threat to their activities. The digitalisation of the industry, and of society, offers many opportunities, but at the same time presents a number of vulnerabilities and

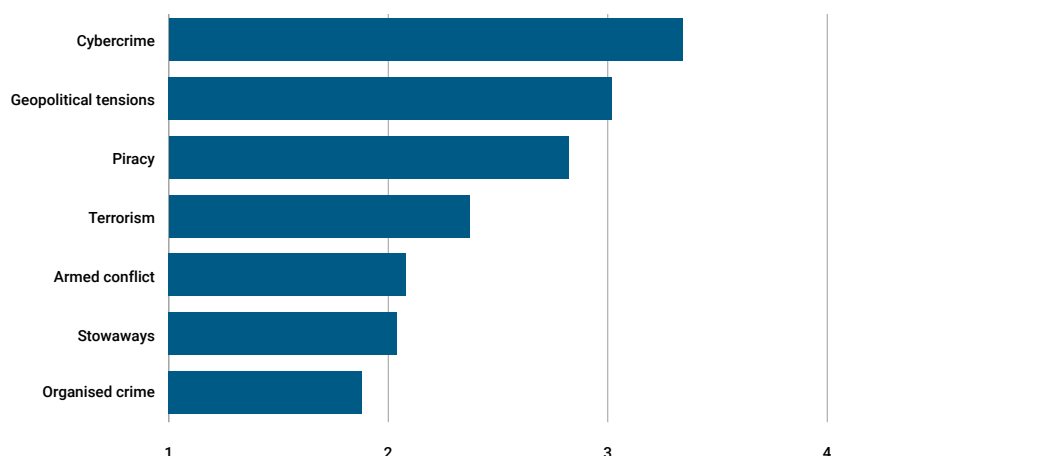
challenges. The industry is working in earnest to improve security in both systems and infrastructure. The most notable initiative has been the establishment of the industry's own cyber security centre, NORMA Cyber. In order to be as well equipped as possible, there is a need for close cooperation with relevant state actors. At the same time, the business community could act as invaluable listening posts and competence partners for the authorities.

Piracy and regional armed conflicts

Following cybercrime, respondents rank geopolitical tensions and piracy. In 2020 alone, several Norwegian ships have been exposed to threats and situations in different parts of the world. The situation off West Africa is the most demanding, with pirates attacking ships and kidnapping crew members for ransom. In

To what degree the following security threats impact the shipping companies operations

Scale from 1 to 5 where 1 = Insignificant and 5 = Highly significant



Source: BDO AS / Norwegian Shipowners' Association

2020, more than 135 seafarers were exposed to this serious criminal activity. Regarding armed conflicts, many waters and ports present challenges to world trade. In 2020, the situation in the Middle East has continued to cause significant uncertainty in the industry.

The Norwegian authorities can contribute more actively to coordinated and comprehensive safeguarding of Norwegian shipping, particularly in demanding waters such as West Africa and the Middle East. The challenges are complicated and demanding, but willingness to coordinate and use the state's instruments strategically and cooperate internationally can contribute to increased security and stability.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Develop a comprehensive national strategy to systematically contribute to improving the maritime security situation in vulnerable and prioritised regions
- Ensure that coastal states in vulnerable regions have legislation in place that criminalises and prosecutes piracy
- Contribute to the establishment of regional cooperation and agreements between vulnerable coastal states, enabling them to share information about ongoing attacks and implement collaborative countermeasures
- Establish arenas for the industry and regional partners to build trust and share information and experiences
- Assess military efforts that may de-escalate the security situation and contribute to long-term stability in the Middle East and West Africa
- Improve national defence in the cyber domain through close collaboration with NORMA Cyber

State secretary in Ministry of Foreign Affairs, Jens Frølich Holte; CEO of Norwegian Shipowners' Association, Harald Solberg, and activist Afroz Shah participated in the cleaning of the Versova beach in Mumbai.

A clean and bountiful ocean

The ocean not only abounds with opportunities, but also comprises a vulnerable ecosystem. The world generates 275 million tonnes of plastic waste annually, an estimated 5-13 tonnes of which ends up in the sea. If we do not implement countermeasures, it is estimated that the plastic waste will quadruple by 2050. The situation is dramatic and requires action.

Put a price on plastic

In order to ensure sustainable and vibrant oceans for the future, it is important that we find good solutions to prevent more litter and plastic from ending up in the sea. First and foremost, comprehensive measures must be implemented on land to stop the flow of litter, and secondly, we must do what we can to clean up.

Only 20 per cent of plastic is recycled worldwide. This is not only a major environmental problem, but also a huge loss of resources. Changing the definition of plastic waste from litter to resource is an important part of the transition to a circular economy. Recycled plastic must become competitive with new plastic as a raw material, in order to stimulate collection and recycling. When used plastic articles become part of the value chain, it leads to less waste of resources, for example through refund schemes.

A multidisciplinary plan for cleaning up

Challenges in this area are often characterised by the fact that there are few or no incentives to initiate development projects due to a lack of willingness of the market to pay. To stimulate this development, funding should be allocated to an application-based pilot scheme.

The Norwegian Shipowners' Association believes in bringing people together across traditional dividing lines and different industries to find new solutions to the world's environmental challenges. We believe that collaboration with the environmental movement, various industries, and with academia and the public sector is the best way to find new, robust solutions to our common challenges.

NORWEGIAN SHIPOWNERS' ASSOCIATION ENCOURAGES THE AUTHORITIES TO:

- Develop an offensive strategy to fight marine litter and the spread of microplastics nationally and internationally
- Invite shipowners and the Norwegian maritime cluster to join projects to remove plastic from the sea
- Allocate funding for an application-based pilot scheme for the development of new technology aimed at mapping and technical solutions for efficient clean-up
- Establish a market mechanism for developing a comprehensive value chain to place a value on all plastics and help remove plastics from the oceans
- Instruct municipal ports to establish waste plans for improved management of plastic waste, among other things by facilitating increased use of recycling as part of the value chain

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 with an external market analysis to this year's report. It is clearly shown in the text where this material has been used.

Member survey on framework conditions and the shipping companies' prospects

The Norwegian Shipowners' Association conducted a survey of its members in the period from January 5 to January 15, 2021. Members were sent an electronic questionnaire to survey their expectations of developments in key economic figures, emerging markets, access to capital and competence, and political framework conditions. 93 out of 125 current member companies responded to the survey, giving a response rate of 74.4 per cent. The 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 2020 and 2021

BDO AS has access to accounting data for Norwegian shipping companies' turnover in 2019. In the survey, the shipping companies were asked to indicate turnover in 2019, estimated turnover for 2020, and expected percentage of growth in turnover for 2021. Since BDO AS does not have complete turnover figures for all shipping companies in 2020, these have been calculated as follows:

a) The companies' self-reported turnover in 2019 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 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 2020 has been adjusted for the proportion of total turnover in each of the four ship segments included in the data basis.
- c) Forecasts for 2021 have been calculated by multiplying the 2020 turnover of each member company by their own declared growth for 2021. 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.

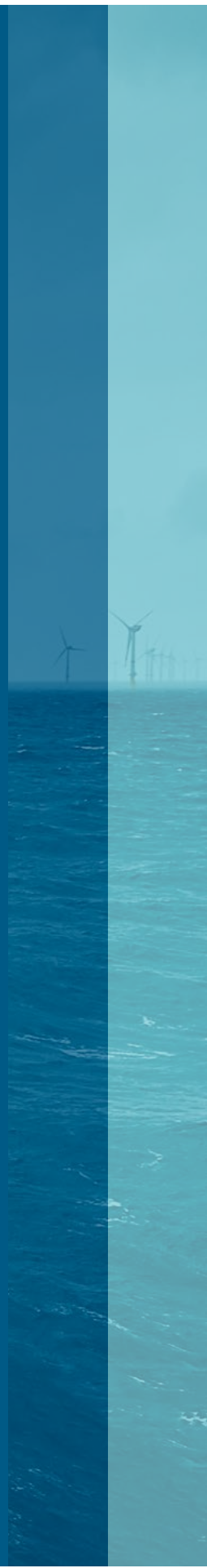
Valuation of the world's shipping fleet

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. Fleet size data has primarily been obtained from IHS Fairplay, while valuation data was obtained from several sources, including Clarksons Platou, UNCTAD Review of Maritime Transport, and Worldyards. In order to arrive at value estimates for 2021, volume data for 2020 was combined with price data for 2021. The model is regularly revised to enhance precision. Cruise ships have been removed from the fleet figures, and the historical figures have also been adjusted for this.

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 flag, owned by Norwegian-controlled shipping companies (stipulating 50 per cent Norwegian ownership or higher) and engaged in foreign trade



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Photo cover: Fred. Olsen Windcarrier • Inside: Adobe Stock • **p. 4** Wallenius Wilhelmsen (Orcelle Wind), Trine Nessler Wichmann (Stril Polar/SC Connector), Snorre Lundemo – Island Offshore, Roberto Smera – Odfjell SE, GustoMSC/OHT, Fred. Olsen Windcarrier • **p. 10** Fred. Olsen Windcarrier • **p. 12** Salt Ship Design (illustration) • **p. 13** Altera Infrastructure • **p. 14** Felleskjøpet • **p. 15** Vard • **p. 16** OHT (both) • **p. 17** GustoMSC/OHT • **p. 18** Adobe Stock • **p. 20** Shutterstock • **p. 22** NORMA Cyber • **p. 24** Odfjell SE • **p. 26** Adobe Stock, Shutterstock, AP Photo/Evan Vucci, AP Photo/Patrick Semansky, Pool, The Norwegian Parliament • **p. 28** Adobe Stock, Shutterstock, University of Oslo, NUPI • **p. 30** Trym Vik – Simon Møkster Shipping AS • **p. 35** Sea Cargo • **p. 36** Altera Infrastructure • **p. 37** Henriette Vedøy – Simon Møkster Shipping AS • **p. 38** Maritim Karriere • **p. 43** Island Offshore • **p. 45** Fred. Olsen Windcarrier • **p. 49** Arnstein Menes • **p. 50** Fred. Olsen Windcarrier • **p. 52** Adobe Stock • **p. 54** Misje Eco Bulk AS • **p. 57** Fredrik A. Rosså – Simon Møkster Shipping AS • **p. 59** Equinor • **p. 63** Bjarne Hovland • **p. 64** Dan Ove Håndstad – Arriva Shipping AS • **p. 67** Adobe Stock, manipulated • **p. 68** Uavpic.com • **p. 71** Framo (Maritime Bergen) • **p. 73** Høegh Autoliners Group • **p. 75** Adobe Stock • **p. 77** The Royal Norwegian Consulate General in Mumbai



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