

REPORT

GCE BLUE MARITIME: CLUSTER PERFORMANCE AND EXPORT POTENTIAL 2022



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Preface

Menon Economics has for seven consecutive years studied the competitiveness of the GCE Blue Maritime cluster, measured by key economic performance, both in absolute terms and compared to the rest of the maritime industry in Norway and to international competitors.

Menon Economics is an employee-owned consultancy operating in the interface between economics, politics and business. Menon Economics analyses issues and provides advice to companies, organizations and authorities. We combine economic and commercial expertise in fields such as industrial organization and competitive economy, strategy, finance, organizational design and social profitability. We use research-based methods in our analysis and work closely with leading academics in most disciplines.

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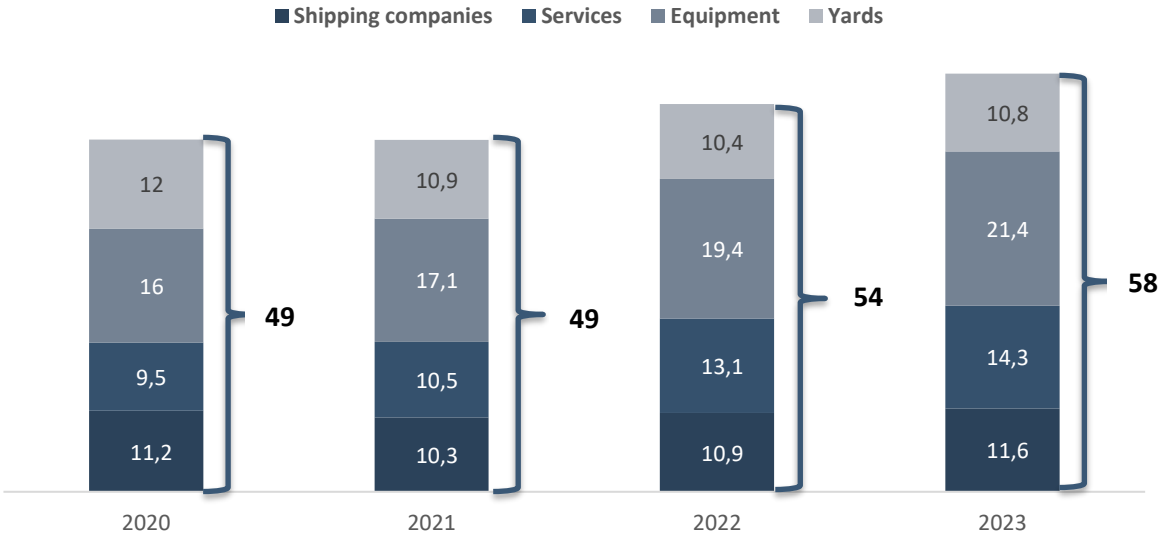
Summary

Strong revenue growth ahead

The overall revenue among the maritime companies in the Møre region has remained stable from 2020 to 2021 but is expected to increase both in 2022 and in 2023. While total revenues in the cluster were below 50 billion NOK in 2021, they are expected to reach NOK 58 billion in 2023. This is, however, still 10 billion below the peak year of 2014.

As is evident from the figure below, the change in activity is not uniform between the different maritime groups. The equipment suppliers are the main driver behind the revenue development in the cluster – expecting revenues in 2023 to be at the same level as during the last peak in 2013. The shipyards were the second largest segment in terms of revenue in 2020 but based on the result from the survey conducted among the Blue Maritime cluster, the yards’ income level is expected to stabilize at a level lower than 2019¹. Service providers have historically followed the same development in revenues as the shipyards. This is because the most important group among the service providers are electro companies, which are directly related to shipbuilding activity in the region. However, after 2021, we observe a decoupling in expectations, where service providers expect a higher growth compared to the shipyards. The shipping companies also expect revenue growth in 2022 and 2023, but not at the same pace as the equipment and service providers.

Figure 1: Overall revenue for the four main segments in Møre region, 2020-2023. Estimates of revenues in 2022 and 2023 based on reported information from companies. NOK billion. Source: Menon Economics



¹ Estimates for revenue growth in 2022 and for 2023 are calculated based on replies to a survey recently conducted among cluster members.

Continued growth in the regions' value added – an overall increase of almost 50 percent since 2018

Following the continuous decrease in activity from 2015 onwards, the overall value added among the maritime companies in the Møre region started improving again in 2019. From 2018 to 2021, the value added has increased by almost 50 percent. It is primarily EBITDA² that has contributed to the surge in value added in recent years for the Møre region. It is mainly the strong growth of EBITDA within service providers and an overall improvement in EBITDA among the yards which are the main drivers behind this trend. The general trend is similar to the results from last year's report. In 2021, EBITDA has quintupled in comparison to 2018-levels.

Continued improvement in profitability expectations

Profitability expectations for the Blue Maritime cluster's members were on an upward trend before the Covid-19 pandemic hit in 2020 and drastically reduced the cluster's prospects. Expectations have since recovered and are almost back at 2019-levels. Almost 80 percent of the respondents report that an increase in input prices has the biggest negative effect on their profitability expectations, while the same share reports that the general market development has the most positive effect on their profitability expectations. This is especially true for service providers and equipment suppliers, which have a diversified customer portfolio.

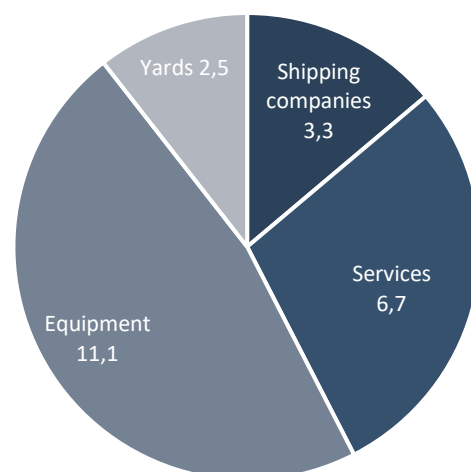
50 percent export share – NOK 27 billion in export revenues from the cluster

The maritime industry is one of the largest export industries in the Møre region, where half of the Blue Maritime cluster's revenues come from export of goods and services. Export revenues are important, both because they serve as an indicator of the companies' competitiveness and because success in the export markets contributes to increased innovation and productivity among subcontractors, collaboration partners and other actors in the industry. The companies also have relatively high costs associated with imports of goods and services from outside of Norway, equivalent to around 40 percent of the companies' costs in 2021.

There are relatively large differences between the four segments when looking at their export revenues and export shares. Equipment producers' export revenues were 11.1 billion NOK in 2021, constituting almost half of total export revenues.

The shipping companies have experienced a decrease in their export revenues since 2018, mainly because the offshore shipping companies in the cluster have faced a decrease in activity, particularly in export markets. The yards have also experienced a decrease in export revenues, especially since 2019, and this decrease was quite substantial from 2020 to 2021, mostly due to the stagnation in the building of cruise ships because of the COVID-19 pandemic.

Figure 2: Export revenues in the Blue Maritime cluster in 2021. Billion NOK. Source: Menon Economics



² Earnings before interests, taxes, depreciation and amortization

Europe is the most important export market for the cluster

Europe is the most important export market for the Blue Maritime cluster, standing for more than 50 percent of export revenues. Europe (without the Nordic countries) is closely followed by the rest of the world, while Asia is of equal importance as the Nordic countries. Europe is especially important as an export market for the shipowners and the maritime service providers in the cluster. The result for the shipowners is mainly driven by the offshore service companies, which have several contracts on European offshore installations.

Asia is one of the most important export markets for the equipment and service providers. Most of the global orderbooks are being built in Asia. Even though it is more likely with Norwegian content on ships being built in Norway, it is vital for the Norwegian suppliers to also focus on winning contracts with foreign yards, to sustain their activity and value creation.

Cost and time invested in establishing a position are the greatest barriers in export markets

The members in the Blue Maritime cluster report that the time it takes to establish a position in a new market is one of the greatest barriers/challenges they face in the export markets. A typical challenge when entering a new market is that potential customers do not have any knowledge about the company or product. This will impact the time it takes to establish a position in the market. The high cost level in Norway is also a challenge for the cluster companies. Norwegian companies have higher costs compared to many foreign companies, with the implication that the companies are forced to take a higher price than their competitors. In addition, they might experience that the willingness to pay for a product or service is lower in the export market compared to the home market.

Leading role in the green transition

Where shipowners choose to build their ships is important for the yards in Møre region, but it is also important for the equipment suppliers, ship designers and service providers. For many years, the yards have had a competitive advantage based on innovative technology and solutions, flexibility, and their proximity to suppliers of design, equipment, and services. In addition, the yards were able to maintain a high cost base, due to a high willingness to pay, especially among the offshore shipping companies. The yards have however in recent years experienced increased competition from European yards, especially the Turkish ones. One reason is related to the above-mentioned high cost base. This has resulted in weakened competitiveness for the Norwegian yards. This is also reflected in the orderbooks, where a higher share of Norwegian shipowners' vessels (excepting shipowners from the Møre region), measured in compensated gross tonnage (CGT)³, are now ordered at foreign yards, especially at Turkish yards. Orders at Turkish yards exceeded orders at Norwegian yards in 2021.

On the other hand, when comparing shipowners in the Møre region with shipowners in the rest of Norway, the results show that shipowners in Møre to a larger extent order their vessels from Norwegian yards than other Norwegian shipowners do. *This is a clear indication of the positive effects of the cluster dynamics.* It is however important to notice that the same negative trend is seen in this case; that a higher share of the orders, measured in CGT, in recent years are placed at foreign yards.

³ Compensated gross tonnage (CGT) refers to the comparative work content inherent in building the ship. It is based on the gross tonnage, which is modified by a compensation factor related to the complexity of the building process.

The size of the shipping market and its expected growth are decisive for the shipyards and the equipment and service suppliers' market opportunities. The entire world fleet will in the years to come be replaced by or rebuilt into zero-emission vessels. The proven strong level of adaptability and high technological competence in the maritime companies in the Møre region make the cluster well positioned in the expected transition to green technology and propulsion systems in shipping. For the cluster to sustain its competitive advantage, it will be important to continue the cluster-based innovation.

Looking forward: Future export potential for the maritime companies in the Møre region

Offshore wind will be the most important market for the Blue Maritime cluster the next five years, followed by the aquaculture industry. Norway's competitive advantage is higher within the market for floating offshore wind, both because of the existing maritime expertise from the oil and gas industry and because Norway has a head start compared to competing countries. The aquaculture industry is currently the most complete and competitive maritime value chain. The global market for this value chain is relatively small, but the growth potential is large as there is a potential for maritime deliveries to an increased number of fish species. The export potential is however not as big as within the offshore wind segment.

Norwegian shipping and maritime industry were from the beginning of the 2000s until the oil crisis in 2014 integrated in a complete value chain to the oil and gas industry. The shipping part of the cluster was to a large extent decoupled from the shipbuilding part after 2015. Although the offshore oil and gas market has recovered, it might be hard for the yards to capture a significant share of this market. There is, however, a promising potential in the retrofitting of offshore vessels with zero or low-emission solutions.

Passenger segments – cruise, ferries and speed boats – are other arenas with high potential for the Blue Maritime cluster, particularly because these segments are in the forefront of decarbonization. The market is highly innovative and growing, and the home market is substantial, not least because Norway has a strong reputation for nature-based tourism.

It will be important for the companies in the cluster to exploit the opportunities provided by the new markets. A successful transition does not only hinge on finding new markets, but also on the ability to make these new markets profitable. The cluster will have to be more efficient in transitioning towards new markets in the future. Success will depend on being able to establish new supply chains quickly and efficiently or being part of a supply chain with well diversified demand impulses.

Introduction

GCE Blue Maritime is one of three Global Centres of Expertise in Norway – the highest level in the hierarchy of Norwegian Innovation Clusters. To become a GCE, a cluster must prove that it has established a systematic collaboration between the participating companies, a partnership characterised by dynamic relations with innovative power. The GCE clusters must also have a strong potential for growth in national and international markets and together form a robust innovation system.

Menon Economics has for seven consecutive years studied the competitiveness of the Blue Maritime cluster, measured by key economic performance, both in absolute terms and compared to the rest of the maritime industry in Norway and to international competitors. In this year’s report, we place more emphasis on the cluster’s export.

The report is structured as follows: We first provide a short summary of the main findings in the report. Then, in the chapter titled “Economic performance of the maritime companies in the Møre region”, we take a closer look at the economic indicators. This includes present revenues, expected revenues, profitability in the short term, value added and employment. In the next chapter we look at the economic development for the four main maritime

Figure 3 The four segments in the cluster with company illustrations



groups, namely shipping companies, shipyards, equipment suppliers and maritime services (including ship designers). A selection of the leading companies within these four segments is shown in the figure above to illustrate the scope of the activities in the cluster. The analysis in the two above-mentioned chapters are based on accounting data from the companies, together with primary data collected from the companies through a tailor-made questionnaire. The deep dive in this year’s report is export. This chapter includes data on the cluster’s historical and current export, its main export market, where shipowners choose to build their vessels, and current trends affecting the cluster in the years to come.

Definitions and delimitations

Blue Maritime cluster: This term refers to current and previous members of the Blue Maritime cluster, who have received the survey and were asked about their current financial situation, expectations about the future, and other questions that are presented later in the report. We received 54 answers in this year’s survey.

Møre region: This term refers to all companies within the maritime sector that are registered in Møre and Romsdal in Norway. Figures presenting historic development of financial data are based on this sample.

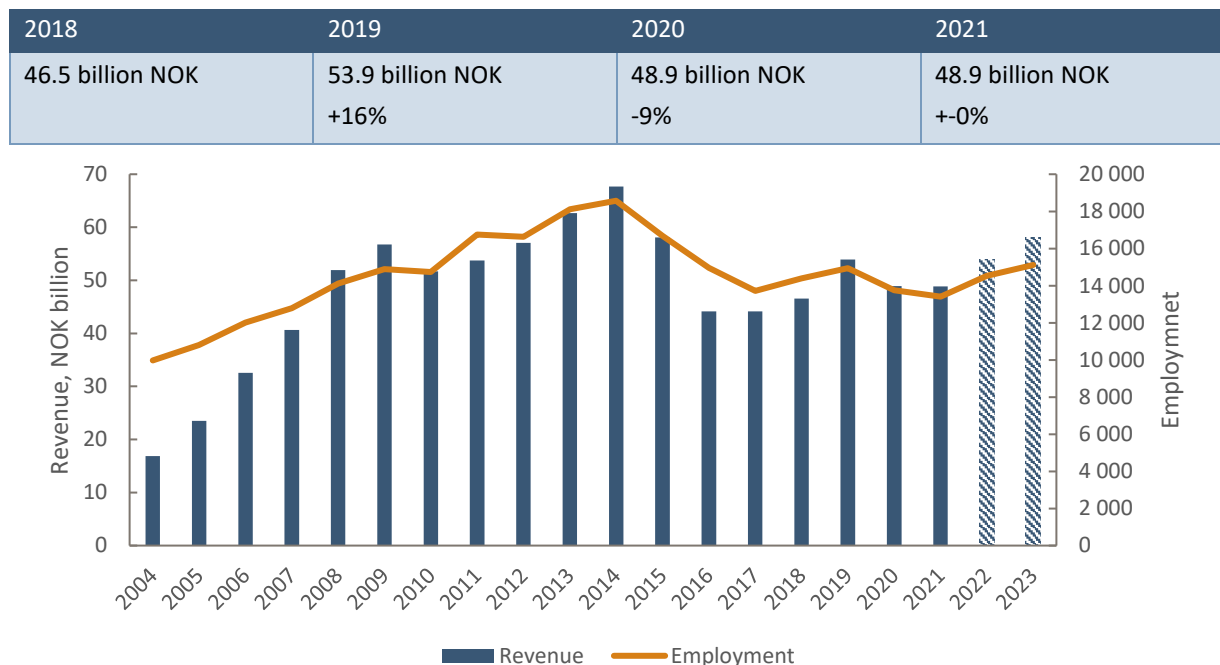
Historical financial data presented in this report up to 2021 are based on all maritime companies in the Møre region, whereas estimated financials for 2022 and 2023 are based on the answers we have received from former and current members of the Blue Maritime cluster.

Economic performance in the maritime companies in the Møre region

Stable revenue development – mainly driven by equipment suppliers

Overall revenue among maritime companies in the Møre region has in 2021 remained the same as in 2020. As is evident from the figure below, we expect the region to deliver positive revenue and employment growth in both 2022 and in 2023. Both estimates for 2022 and the prognosis for 2023 are based on a recently conducted survey among the Blue Maritime cluster members. We find that equipment suppliers and service providers are the main drivers for positive expectations.

Figure 4: Revenue in the Møre region, 2018-2021. Below: Aggregate revenue and employment development in the Møre region, 2004-2021. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics



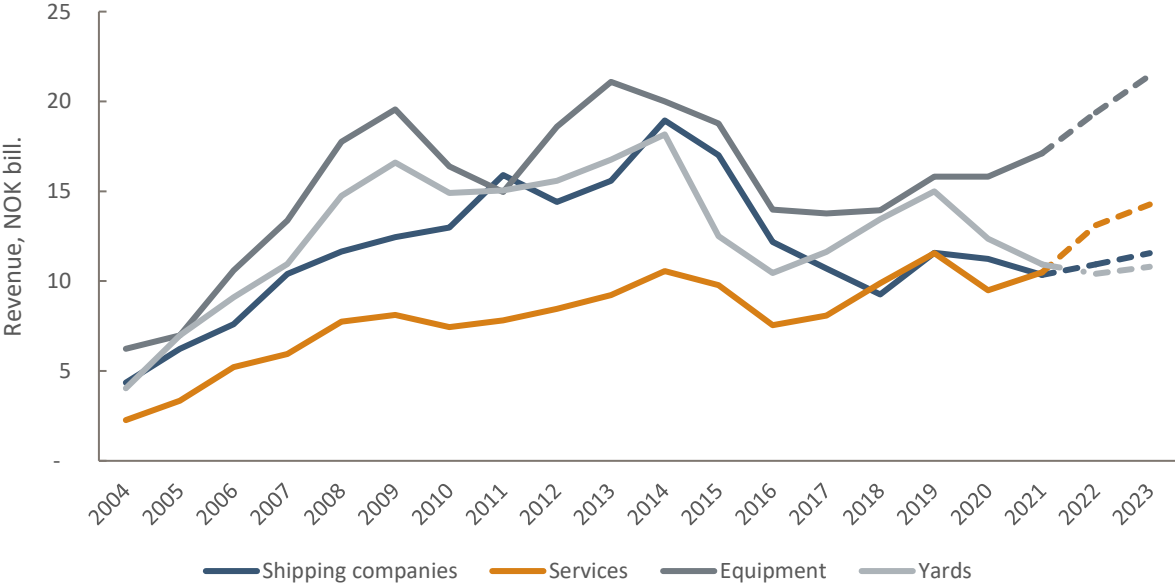
Changes in activity from 2020 to 2021 were not uniform between the different segments in the Møre region. The most striking development is found among the equipment suppliers and service providers. While the equipment suppliers experienced an activity increase of 8 percent from 2020 to 2021, the increase was 10 percent for the service providers. Given the Blue Maritime cluster’s expectations, the equipment suppliers’ revenues will in 2023 be at the same level as during the last peak in 2013, as seen in the figure below. Excluding the equipment suppliers, the overall year-on-year revenue change in the cluster would have been around -4 percent in 2021.

The equipment suppliers are the biggest group in terms of revenue in 2021. This segment is also the segment that grew the most in terms of revenue after the pandemic. The change in revenue between 2020 and 2021 is 1 billion NOK. When it comes to the increase in revenue, estimates for 2022 and 2023 are mainly driven by the bigger equipment suppliers’ growth expectations. The shipyards are the second largest segment in terms of revenues in 2021. After the oil price fall in 2014, the cruise and ferry segment became an important arena for Norwegian shipyards in Møre, which is the main driver behind the revenue increase for shipyards between 2016

and 2020. However, the pandemic had a particularly negative effect on shipyards, as it changed the outlook for the cruise market. Estimates based on the survey we conducted among the cluster members show that the income levels will stabilize at a level lower than 2019. The yards were the group that contributed most negatively to growth in 2021, with a drop in revenue of as much as 26 percent, compared to 2019. Note however that this group on aggregate (like the other three groups) does expect positive revenue growth in 2021⁴.

Shipping companies follow a similar pattern where they are negatively affected by the pandemic. However, our estimates for 2022 and 2023 show that the shipowners in the Møre region are expecting their income levels to increase slightly over time, as seen in the figure below. The final group in the region, the service providers, have followed a similar development to shipyards historically. This is because one of the most important groups among service providers is electro companies, which are directly related to shipbuilding activity in the region. However, we observe a decoupling in expectations after 2021, where service providers expect a higher growth compared to shipyards.

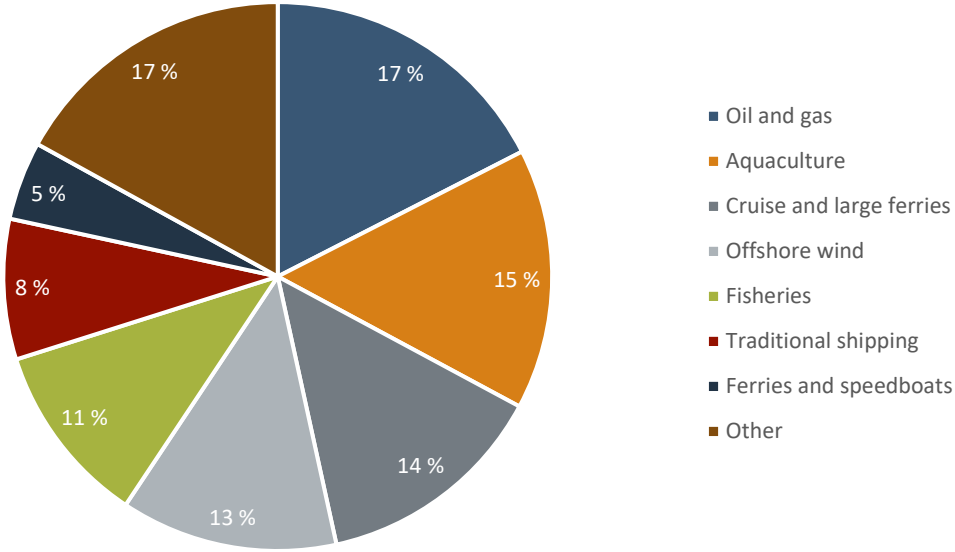
Figure 5: Revenue for the four main groups in the Møre region, 2004-2023. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics



The figure below shows the companies in the Blue Maritime clusters’ revenue split by market segment in 2022. The revenues from the oil and gas market have remained relatively stable since 2021, but still a decrease of two percentage points. Compared to 2016, the revenues from the oil and gas market have decreased from 41 percent of total revenue to 17 percent in 2022. This gives a picture of the clusters’ ability to adapt to the changes in the market, where the cluster today is far more diversified compared to in 2016. The revenues from the aquaculture and fisheries sector have remained stable compared to last year. Together with offshore wind, these are the markets that will be the most important for the cluster in the years to come, as we will discuss later.

⁴ Estimates for revenue growth in 2022 and 2023 are calculated based on replies to a survey recently conducted among cluster members.

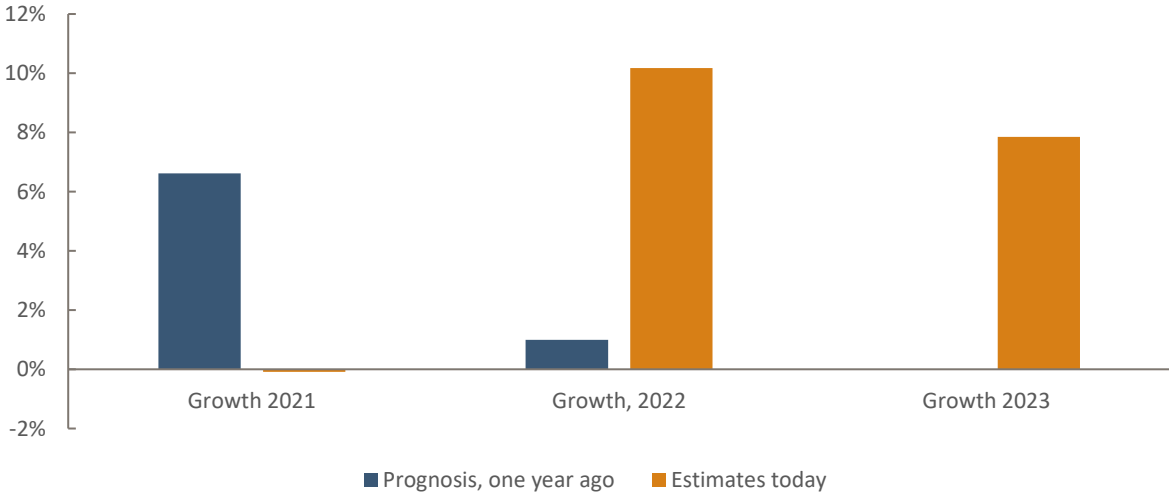
Figure 6 Revenue split by market segment for the companies in the Blue Maritime cluster in 2022. Source: Menon Economics



A continued improvement in the short-term outlook

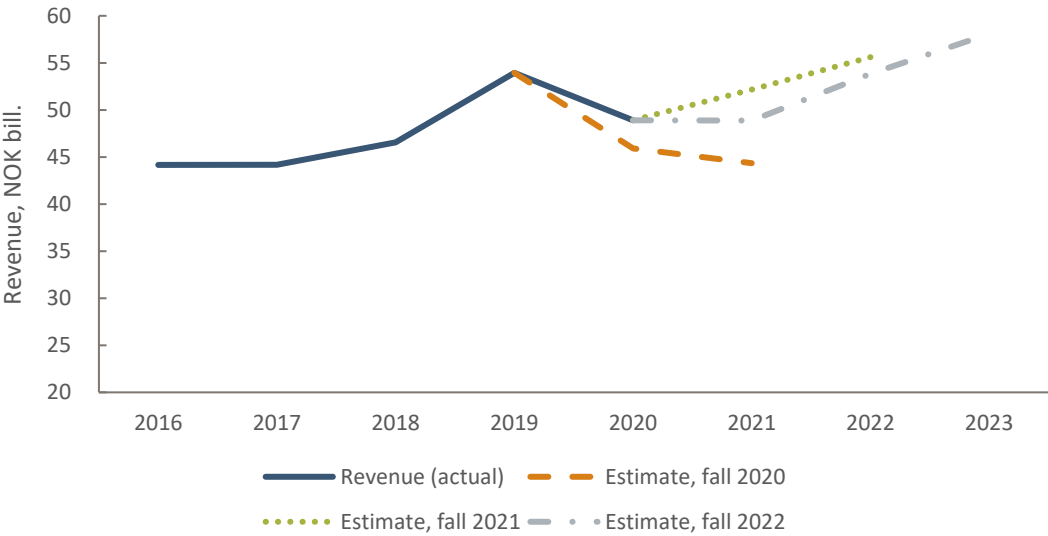
As in previous years, we have asked the Blue Maritime cluster members to report their short-term revenue expectations. Last year’s survey showed that the cluster expected almost 7 percent increase in revenues in 2021. However, estimates today show that the actual income levels for the Møre region in 2021 were lower than expected last year, as seen in the figure below. On the other hand, one year ago, the cluster members’ prognosis for revenue growth for the Møre region in 2022 was 1 percent, while the cluster members this year are expecting a growth of 6 percent in 2022. The cluster is also expecting a continued growth of 8 percent in 2023. As seen, the members are more positive compared to previous years, and it is evident that the pessimism that prevailed during the Covid-19 pandemic is over.

Figure 7: Revenue growth rates, year-on-year from August 2021 and August 2022. Source: Menon Economics



An alternative way of illustrating the positive change in expectations since last year’s report is in terms of revenue levels. If we compound the expected growth rates from 2022 and 2023 and calculate the different growth paths in terms of total revenue, we see that the difference from one year to another is quite extensive. In 2020, the industry was hit by the Covid-19 pandemic, and the company’s short term revenue expectations were quite pessimistic. In 2021, the respondents from the cluster were more positive. This year’s calculations show that the expected level of growth was not achieved in 2021 and the revenue stayed at the same level in 2021 as in 2020. When looking at the estimates in this year’s report, the grey line, even though the revenues are under last year’s estimations, shows that they are expected to increase at a higher rate in 2022 and 2023. This is reflected in the higher slope of the revenue curve. Revenues are expected to reach a level in 2023 that is higher than 2019-levels.

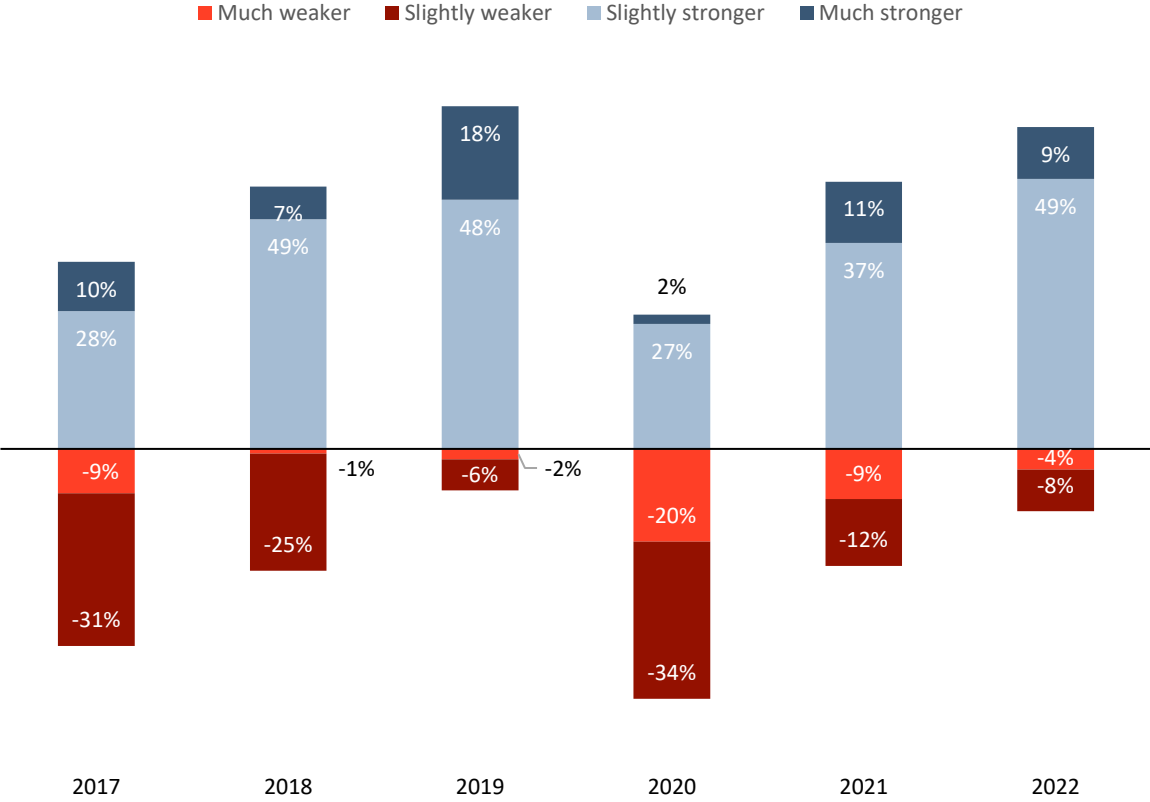
Figure 8: Actual revenue in the Møre region from 2016 to 2020. Orange line: Estimates for revenue in 2020, green line: Estimates for revenue in 2021, grey line: Estimates for revenue in 2022. Source: Menon Economics



Increased profitability expectations, yet not back to 2019-levels

Profitability expectations for the Blue Maritime cluster showed an upward trend before the Covid-19 pandemic hit in 2020 and drastically reduced the cluster’s prospects. Expectations have since recovered and are almost back at 2019 levels. The share of members expecting a higher profitability increased between 2020 and 2021, while the share of members expecting a weaker profitability decreased significantly. This must be seen in light of reduced uncertainty related to the pandemic. Furthermore, the share of members expecting operating profits to improve has increased from 48 percent in 2021 to 58 percent in 2022. The share of members expecting profitability to fall is also considerably lower in 2022 compared to 2021 – 21 percent in 2021 as opposed to 12 percent in 2022. This implies an overall positive outlook on short-term future profitability.

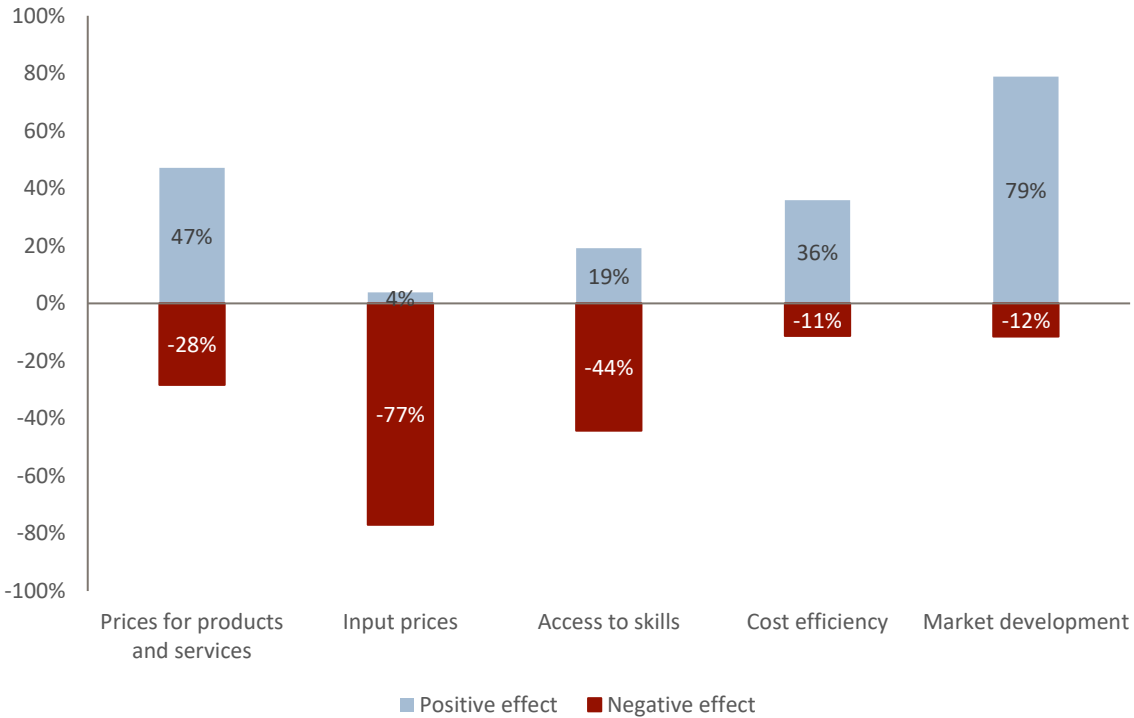
Figure 9: The Blue Maritime cluster members' profitability expectations: "How do you expect operating profits to develop this year compared to last year?". Source: Menon Economics



The figure below shows which factors the cluster members expect to influence their profitability. The most striking result is related to the effect of input prices: 77 percent of the respondents say that input prices have affected their profitability negatively. War in Ukraine, global inflation as well as increasing wage costs to keep up with inflation, have been a global trend we observe in the post-pandemic world, and it is a well-known problem for most members in the cluster. The second most important factor that negatively affects the cluster members' profitability is (lack of) access to relevant competence. This is a general challenge in the maritime industry, where many companies are concerned about not having access to people with the competence needed following the technological development (Menon Economics, 2022). One fifth of the cluster members do on the other hand believe that access to relevant competence is a factor that will contribute to their profitability in 2022.

Prices for products and services will contribute positively to the profitability of almost half of the respondents, while it will have negative effects for almost one third of them. It is expected that higher prices will result in higher revenue immediately. However, if higher prices have a negative effect on demand, this will have an overall negative effect on profitability. Almost 80 percent of respondents expect market development to affect their profitability positively. This is especially true for service providers and equipment suppliers, who have a diversified customer portfolio, as we will touch upon later in this report. Finally, one third of the respondents expect a positive contribution of cost efficiency on their profitability. A reason for this may be the increased productivity in production resulting from learning effects.

Figure 10: Reported reasons for expected reduced (red) and improved (blue) profitability in 2022 compared to 2021.
 Source: Menon Economics



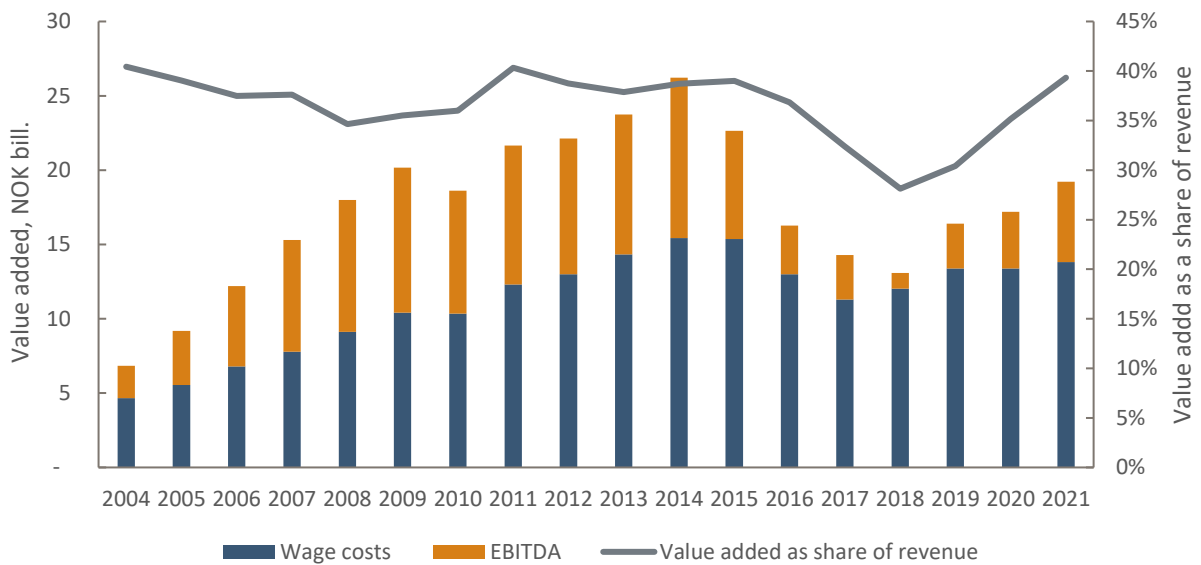
A continued growth in the Møre regions value added – almost a 50 percent total increase since 2018

Following the continuous drop in activity from 2015, the overall value added among the maritime companies in the Møre region started improving in 2019. From 2018 to 2021, value added has increased by almost 50 percent. It is primarily EBITDA⁵ that has contributed to the surge in value added in the recent years for the Møre region. It is mainly the strong growth of EBITDA within service providers and an overall improvement in the EBITDA among the yards that are the main drivers behind this trend. The general trend is similar to the results from last year’s report. In 2021 EBITDA has quintupled compared to 2018-levels. This is an important explanation for the improvement in the value added as a share of the revenue.

Looking at the overall value added as a share of revenue, we see that it was consistently high until 2015 at a level of 35-40 percent. However, the oil price fall resulted in significant challenges for the sector, as apparent in the figure below: value added as a share of revenue continued to fall until 2018 when it reached 30 percent. It started increasing again 2019 and onwards, where it reached 40 percent in 2021, the same level as in 2014. However, it is important to highlight that both revenue and value added are at a lower level now than in 2015.

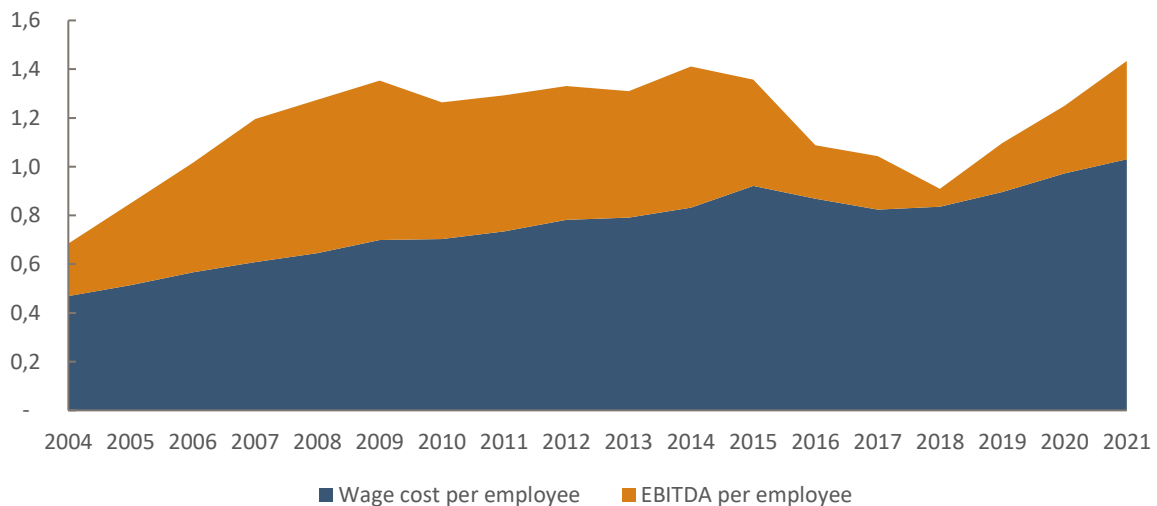
⁵ Earnings before interests, taxes, depreciation and amortization

Figure 11: Value added split by wage cost; and EBITDA and value added as a share of revenue. Source: Menon Economics



The figure below shows value added per employee in the Møre region and how this is distributed between wages and EBITDA. Value added per employee is a common measure of labour productivity. As can be seen, productivity has experienced an increase last year, where the growth in productivity from 2020 to 2021 has increased more compared to the value added in total (ref. figure above), by 15 percent and 11 percent respectively. One of the drivers behind this trend is the continuous increase in wage costs per employee since 2018. Another driver is the strong growth of EBITDA per employee among service suppliers.

Figure 12: Value added per employee in the Møre region, split by wages and EBITDA. Source: Menon Economics



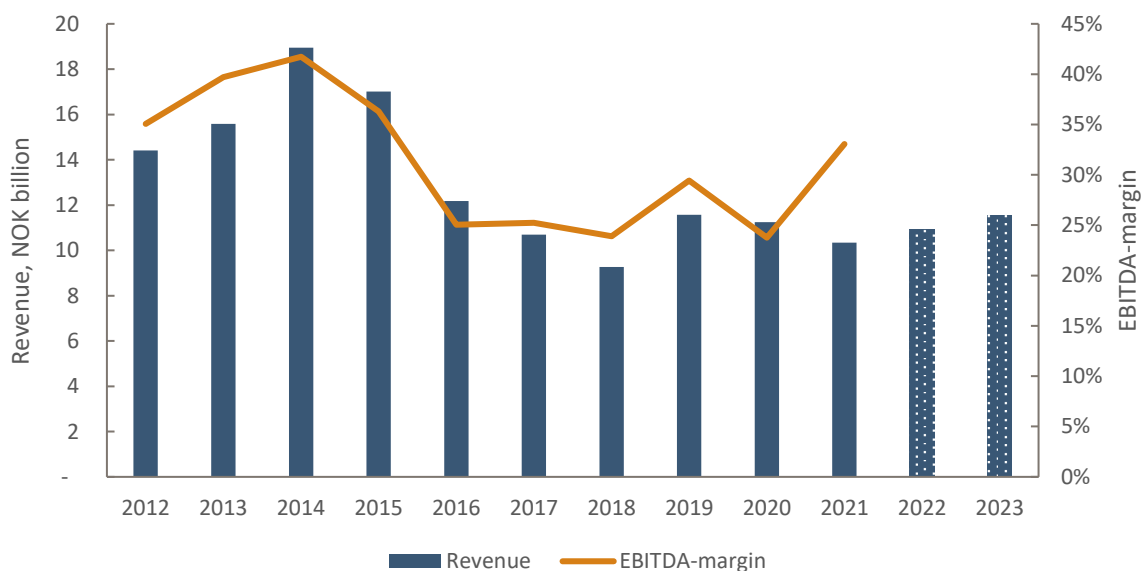
Economic performance for the four maritime groups

Shipping companies – offshore companies are the most important source of revenue

The shipping companies in the Møre region experienced a decrease in revenues of 8 percent from 2020 to 2021, as seen in the table below. On the other hand, the shipping companies experienced a growth in both value-added and employment in the period, equivalent to 11 percent and 18 percent respectively. The growth in employment might seem high, but it follows an almost equal drop in 2020, so employment in 2021 is only slightly higher than in 2019. Even though the revenues are not back at 2019-levels, the companies are expecting an increase in revenues in both 2022 and 2023, as seen in the figure below. The EBITDA-margin also experienced an increase in 2021, driven by increasing EBITDA and decreasing revenues at the same time.

Figure 13: Table: Revenue, value added and employment for the shipping companies in 2021, including percentage change from 2020. Figure below: Revenue and EBITDA-margin among shipping companies. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics

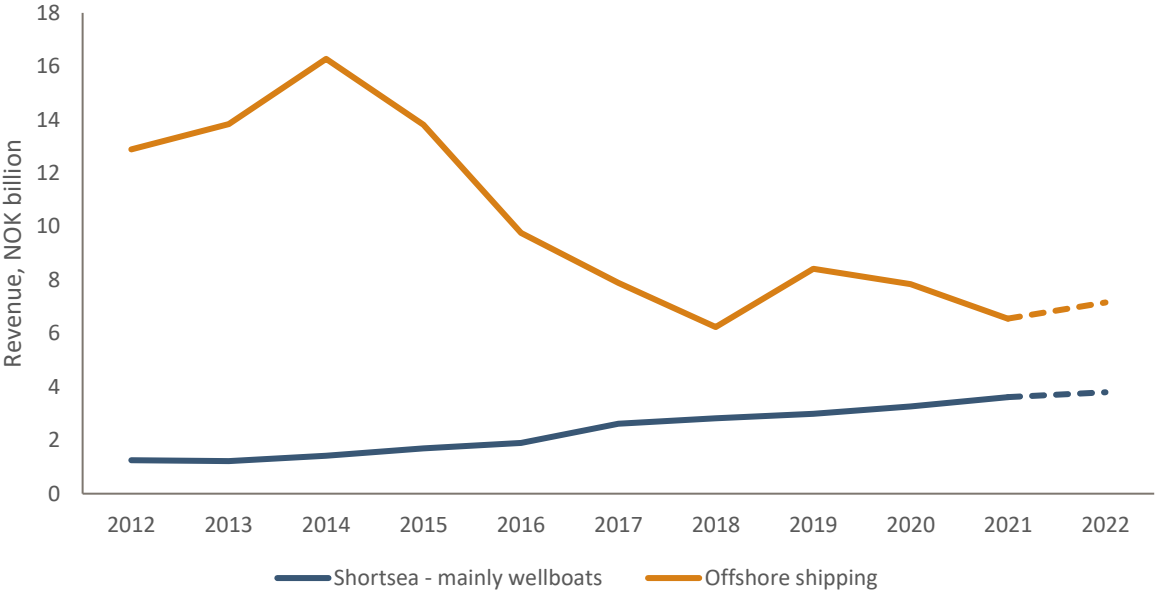
	Revenue	Value added	Employment
The shipping companies in 2021	10.3 billion NOK -8%	8.1 billion NOK 11%	3799 +18%



Within the shipping segment, there are mainly two sub-segments contributing to the development in revenues. These are offshore shipping companies and well boat companies. In 2021, the offshore shipping segment's share of total revenue was around 61 percent, while the well boat segment's share was 37 percent. The remaining revenue stems from the freight companies. The two segments have experienced significantly different development paths since 2014 as shown in the figure below. The drop in revenues experienced by the offshore shipping companies, being by far the biggest segment among the shipping companies until the oil crisis in 2014, dominates the development for the group as a whole. This trend does however not represent the development of the well boat segment, as seen in the figure below. This segment has experienced a continuous revenue growth since 2014, equivalent to almost 150 percent in the period 2014 to 2021. They also expect a continued growth in 2022. As seen in the figure below, the revenues from the two segments have been converging in the

last decade, however, based on the expected development in the years to come, it might seem like this is about to change, where the expected increase in the offshore shipping segment is higher than in the shortsea segment.

Figure 14: Revenue of the two main shipping segments in the Møre region from 2012 to 2022. Estimates of revenues in 2022 and 2023 based on reported information from companies⁶. Source: Menon Economics



Offshore companies have experienced a decrease in revenue in 2021 compared to 2020, whereas for well-boat companies the revenues have increased. Nevertheless, offshore companies still stand for a significant share of shipping companies’ revenue in the Møre region. In addition, according to our survey, offshore shipping companies in the Blue Maritime cluster expect a growth in revenue in 2022. This is driven by high rates in this segment because of increased activity in the oil and gas sector as well as in offshore wind. Offshore vessels also constitute a large share of the big yards’ orderbooks, equivalent to 50 percent of the total ships on order in the big shipyards’ orderbooks in 2021. The well boat segment has however thrived by offering services to the growing aquaculture industry. Looking at the orderbooks, we see that aquaculture vessels are in high demand, constituting a large share of the total orderbooks for the medium-sized yards in the Blue Maritime cluster, equivalent to a third of the orderbook in 2021. Although the trend has been towards convergence between these two shipping groups in recent years, this year’s results point out a divergence in 2022.

Shipyards – a diversified orderbook

The Møre region is still the most critical region for shipbuilding in Norway. Throughout the last decade, the yards in Møre have experienced vast changes in the relative importance of different market segments. For years, deliveries to the oil and gas industry were by far the most important segment, until this came to a halt in the mid-2010s. Since then, the activity has mainly evolved around building expedition cruises, ferries and aquaculture vessels. The turn in segment focus, especially for the big yards, from offshore supply vessels to (mainly) the expedition cruise segment resulted in a growth in revenue for the yards as a group from 2017 to

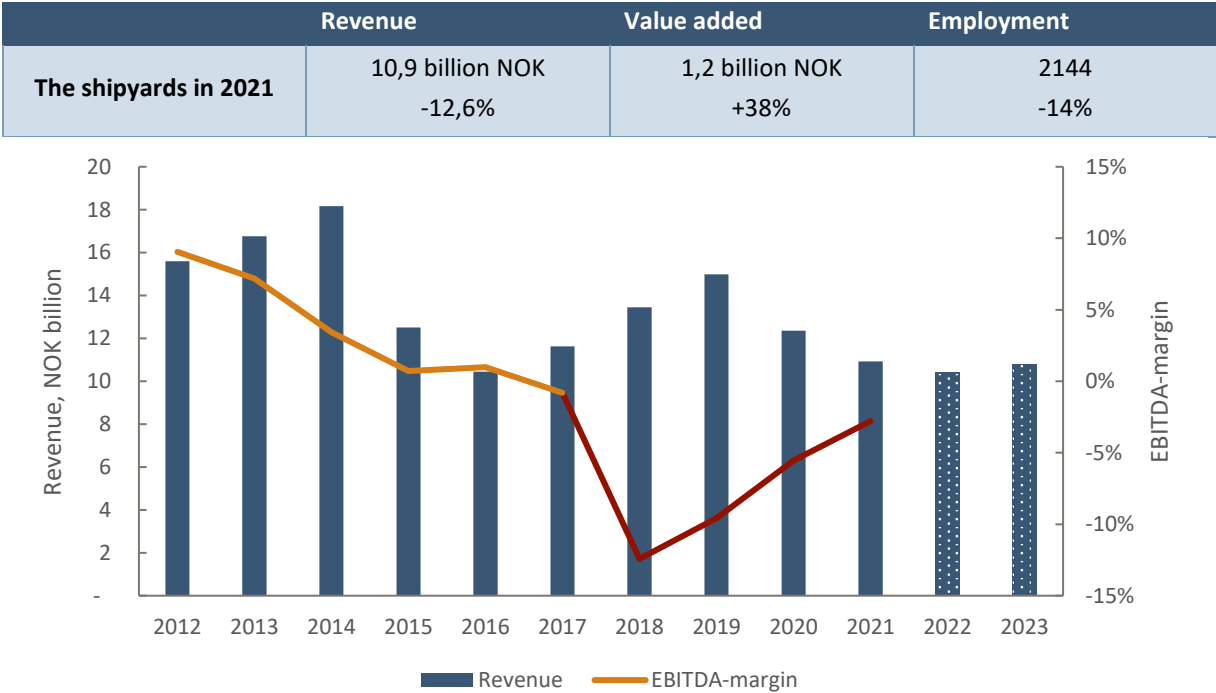
⁶ Compared to last year’s report, revenues in 2019 are higher for the offshore shipping companies in this report due to changes in the population. This change is mainly caused by Bourbon Offshore being added into the cluster population and Solstad Offshore being taken out from 2017 onwards.

2019, as seen in the figure below. However, this turn of market focus entailed huge profit losses. This is evident in the figure below where we see that the aggregate EBITDA margin has been negative since 2016, even with a revenue growth of more than 40 percent from 2016 to 2019. The profit loss can be attributed mainly to a lack of experience in new segments and tailor-made solutions for orders (Menon Economics & BCG, 2021).

The yards in the Møre region as a group experienced a fall in both revenues and employment from 2020 to 2021, equivalent to almost 13 percent and 14 percent respectively. The decrease in employment is mainly due to the decrease in employment at the bigger yards in the aftermath of the covid-19 pandemic. On the other hand, the value added increased with close to 40 percent in the same period. This might seem strange, but the reason is that the yards' value added was extremely low due to high negative EBITDA. With gradual improvement in profitability (while still negative), value added has increased both in 2020 and in 2021.

The yards' revenues in 2020 and in 2021 have been lower compared to 2019, mainly due to the Covid-19 pandemic. However, based on the survey we conducted with the cluster members, the yards are relatively positive in their short-term outlook and expect revenues to increase in 2023. Though still negative, the aggregate profit margin for the shipyards in the Møre region has improved for two consecutive years. One reason for this could be that yards that are working within expedition cruise have become more experienced and hence more efficient. In other words, the shipyards have moved down the learning curve during the transition. Another reason for the improvement is the development among yards that build other types of vessels, such as well boats and ferries. These yards were to a lesser extent hit by the sudden halt in orders for offshore ships in 2014-2015 and have consistently been building vessels within other segments. In recent years there has been particularly high activity within the aquaculture segment, which in turn has resulted in improved profit margins.

Figure 15: Revenue, value added and employment for the shipyards in 2021, including percentage change from 2020. Figure below: Revenue and EBITDA-margin among the shipyards. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics



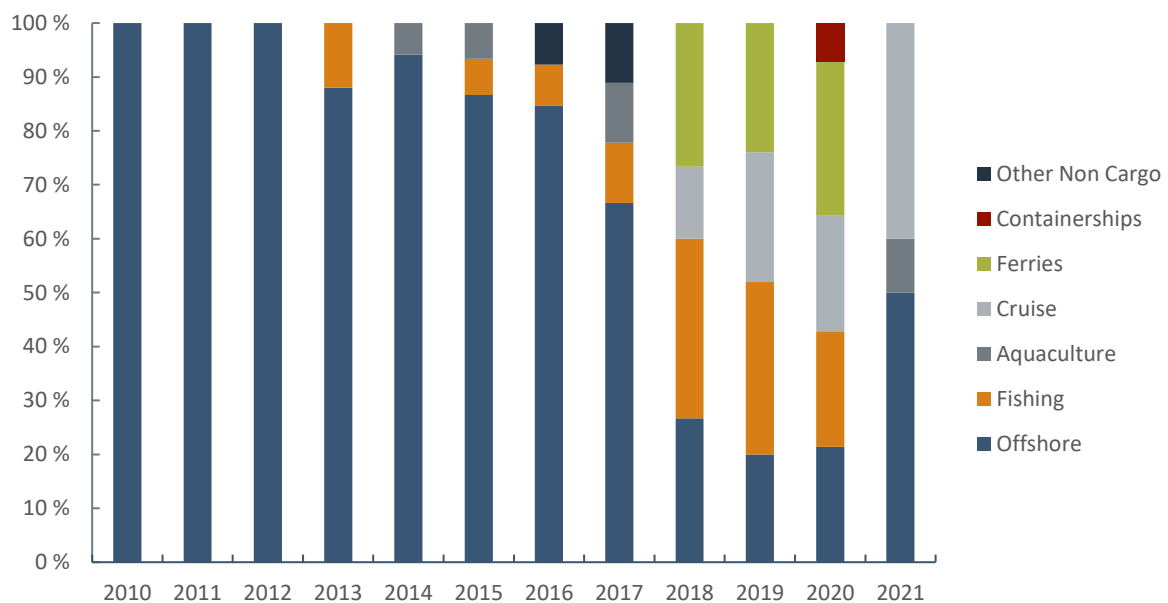
To describe the yards' development, it is expedient to divide the group into two: the large yards and the medium-sized yards.⁷

Large yards – from offshore vessels to diversification

Between 2010 and 2014, the large yards in the Møre region mainly built vessels for the offshore shipping companies. Due to relatively long delivery times, the orderbooks up until 2017 still consisted of offshore vessels. In parallel with the orderbooks emptying of offshore vessels after the 2014 oil price fall, the large yards in the region have become more diversified, and today they have a more diversified orderbook.

Since 2018, the large yards in the Møre region have positioned themselves well within the ferry, fishing, and expedition cruise market. Even though the cruise market was severely affected by the covid-19 pandemic, this segment constituted a significant share of big yards' orderbooks in 2021. This is mainly because the contracts were signed before the pandemic. As of September 2022, there is only one cruise vessel in the large yards' orderbooks, ordered in 2021. Lack of new orders in the aftermath of the pandemic is expected to be reflected in the building activity of shipyards in the coming years.

Figure 16: Share of different vessel types in total vessels built in large yards from 2010 through September 2022⁸. Source: Menon Economics and Clarksons Research



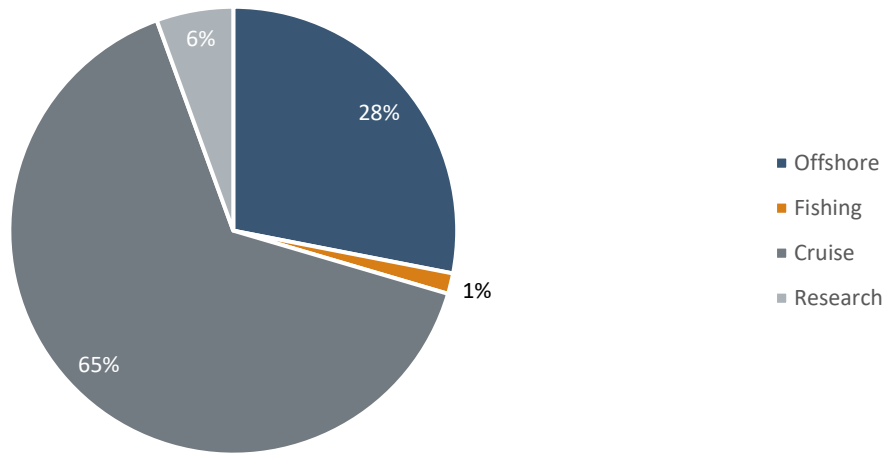
The figure below shows today's orderbooks for large yards. Although the large yards have a diversified orderbook in terms of number of vessels, a large proportion of the orderbook value stems from the cruise segment, equivalent to 65 percent, as seen in the figure below. The remaining orderbook value is made up by the offshore and fishing segments. Vard yards currently have four cruise ships and five offshore vessels to be delivered in

⁷ The large yards include Vard Langten, Vard Brattvåg, Vard Sjøviknes, Vard Aukra, Ulstein, Kleven and Havyard. The medium-sized yards consist of Vågland Båtbyggerverft, Aas Mek, Fiskerstrand, Larsnes Mek, Myklebust, Stadyard and Brødrene Aa.

⁸ Aquaculture vessels include well boats. Other types of fishing vessels are included under the category fishing.

2022, 2023 and 2024. Ulstein and Havyard have two offshore vessels and one aquaculture vessel on order, respectively. Green Yard Kleven’s orderbook is for all practical purposes empty.

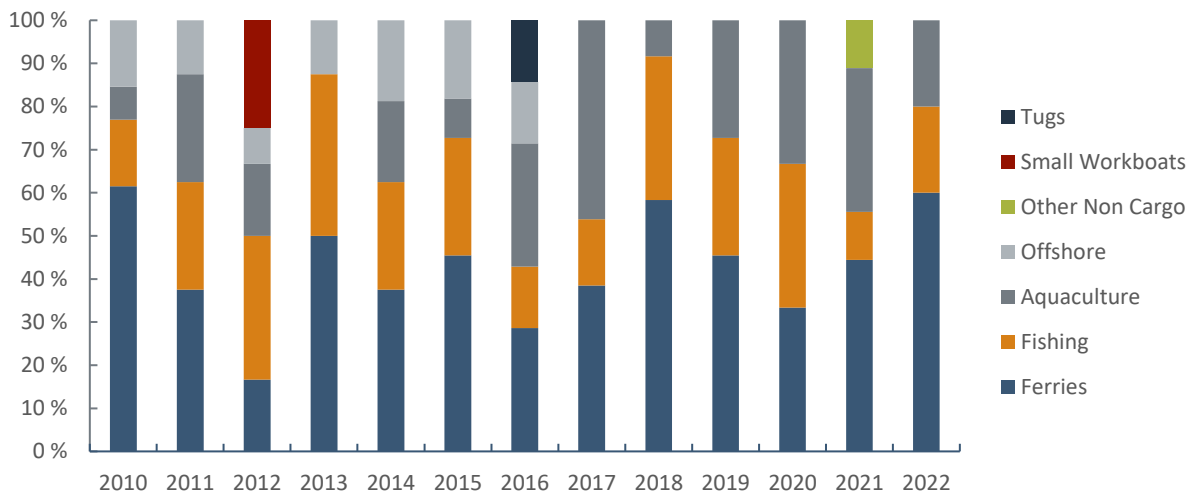
Figure 17: Looking forward: Distributed orderbook value by vessel type at large yards, 2022-2024. Source: Menon Economic



Medium-sized yards – more diversified and stable

Medium-sized yards take on both newbuild projects and repairs. The medium-sized yards in the Møre region have had a more diversified portfolio of ships during the last decade compared to the larger yards, with the largest segments in recent years being ferries and aquaculture as well as fisheries. Newbuild orders in current orderbooks are predominately aquaculture and fishing vessels, implying a more single-market focus compared to previous years. Amongst companies that have placed orders, Sølvrans has placed 5 orders out of a total of 12 with medium-sized yards, all aquaculture vessels. Half of the medium-sized yards’ orderbooks are due to be delivered in 2022.

Figure 18: Segmented ship building for the medium-sized yards. Share of total vessels built from 2010 through September 2022. Source: Menon Economics and Clarksons Research.

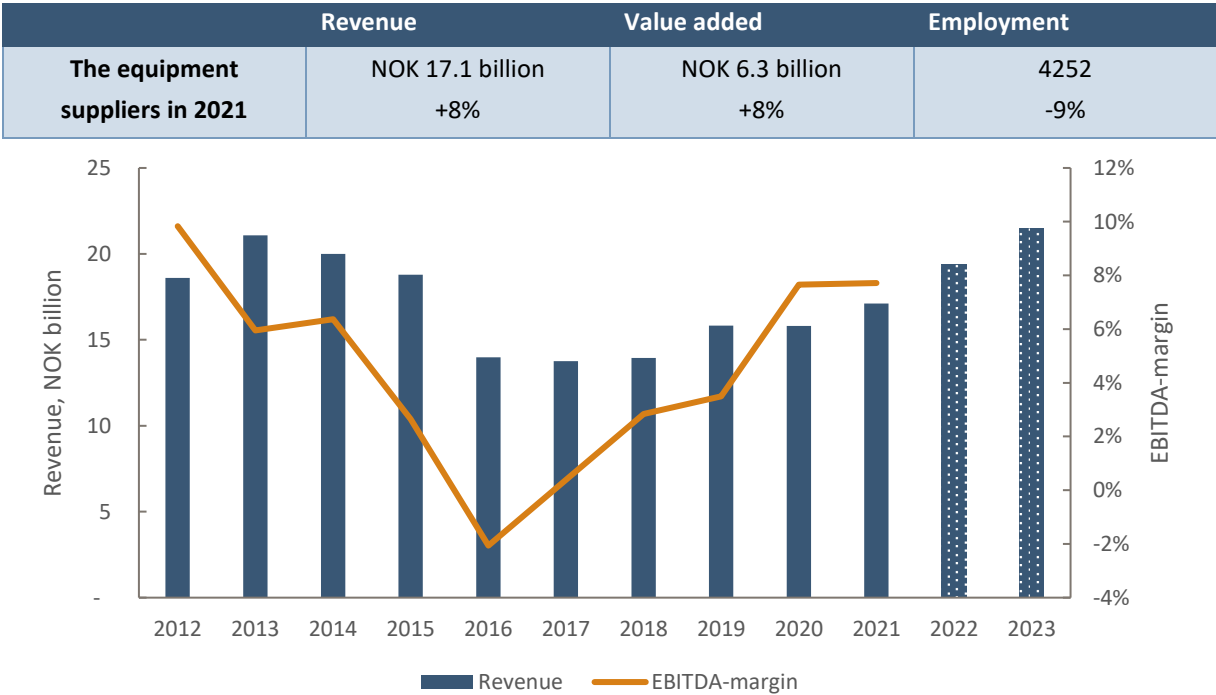


It is, however, important to stress that newbuild orderbooks will not predict future income distribution as well among the medium-sized yards as the large ones. Repairs, upgrades and modifications on existing vessels make up a significant amount of income at the medium-sized yards, and the market segmentation on this revenue is in most cases more diversified than their newbuilds.

Equipment suppliers – positive short-term outlook

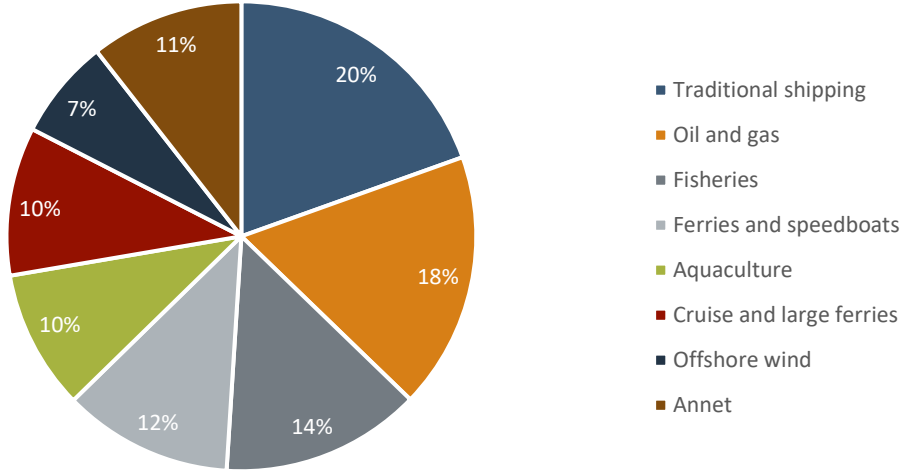
The equipment suppliers in the Møre region have experienced an increase in revenues and value added from 2020 to 2021, equivalent to 8 percent respectively. The employment in the equipment suppliers has on the other side decreased in the same period with 9 percent. The short-term outlook for this segment is positive based on the survey we conducted with the Blue Maritime cluster members, where they expect an increase in revenue of 13.3 percent in 2022 and 11 percent in 2023. This coincides with a total revenue of NOK 19.4 billion in 2022 and NOK 21.4 billion in 2023. If the expectations of the equipment suppliers are realized, their revenue will be at the same level as before the oil price fall in 2013. The EBITDA-margin has improved continuously since 2016, in the aftermath of the oil crisis, but remained stable from 2020 to 2021.

Figure 19: Revenue, value added and employment for the equipment suppliers in 2021, including percentage change from 2020. Figure below: Revenue and EBITDA-margin among the equipment suppliers. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics



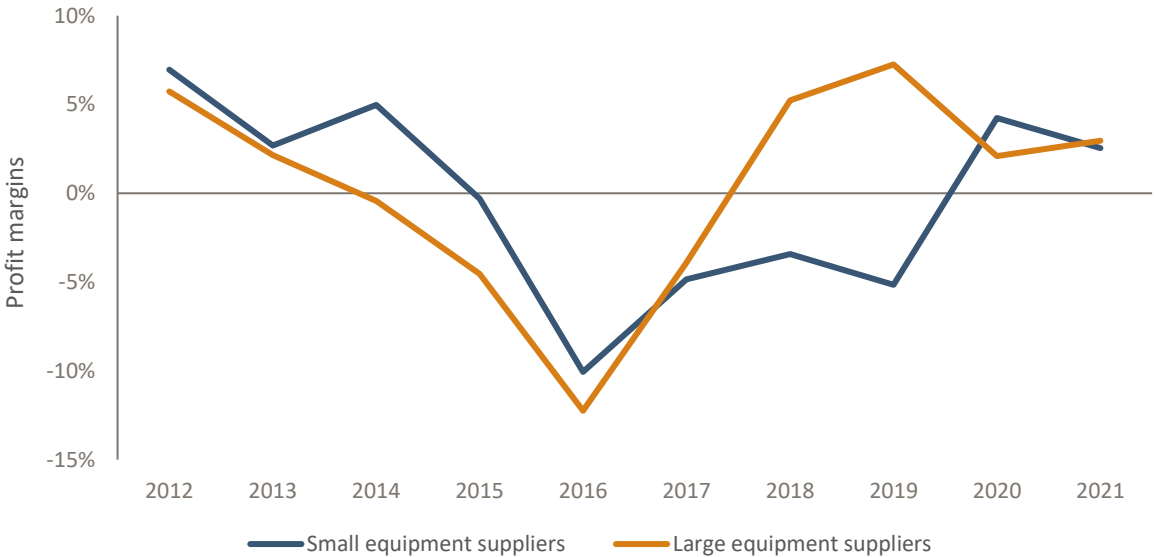
The outlook for the equipment suppliers as a combined group is substantially better than for the yards. The explanation is due to the orderbooks diversification. Diversification is an advantage in the current market, as some markets are hit harder than others by the ongoing circumstances. As evident in the figure below, the single biggest market segment for the equipment suppliers in terms of revenues is traditional shipping, equivalent to one fifth of the total revenues in 2022. The revenues from offshore oil and gas are higher in 2022 compared to in 2021. Together with offshore wind and aquaculture, these are the most important markets for the cluster in the coming years, as discussed later in the report. This makes the overall outlook for the equipment suppliers look positive.

Figure 20: Revenue by market segments for the equipment suppliers in the Blue Maritime Cluster in 2022. Based on survey. Source: Menon Economics 2022



The figure below shows the difference in the development of the profit margin between 2012 and 2020 for small and large equipment suppliers. Large equipment suppliers have a yearly revenue of more than NOK 750 million. While the development for two groups is somewhat similar between 2012 and 2017, the large equipment suppliers have experienced a higher increase in profit margin from 2016 to 2019. This implies that this group was the main driving force behind the increase in profitability until 2019. From 2019 to 2020, and from 2020 to 2021, the profitability of the two groups moved in the opposite direction, leading to an approximately equal profitability in 2021.

Figure 21: Profit margins (EBIT⁹) for equipment suppliers in the Møre region by company size. Source: Menon Economics

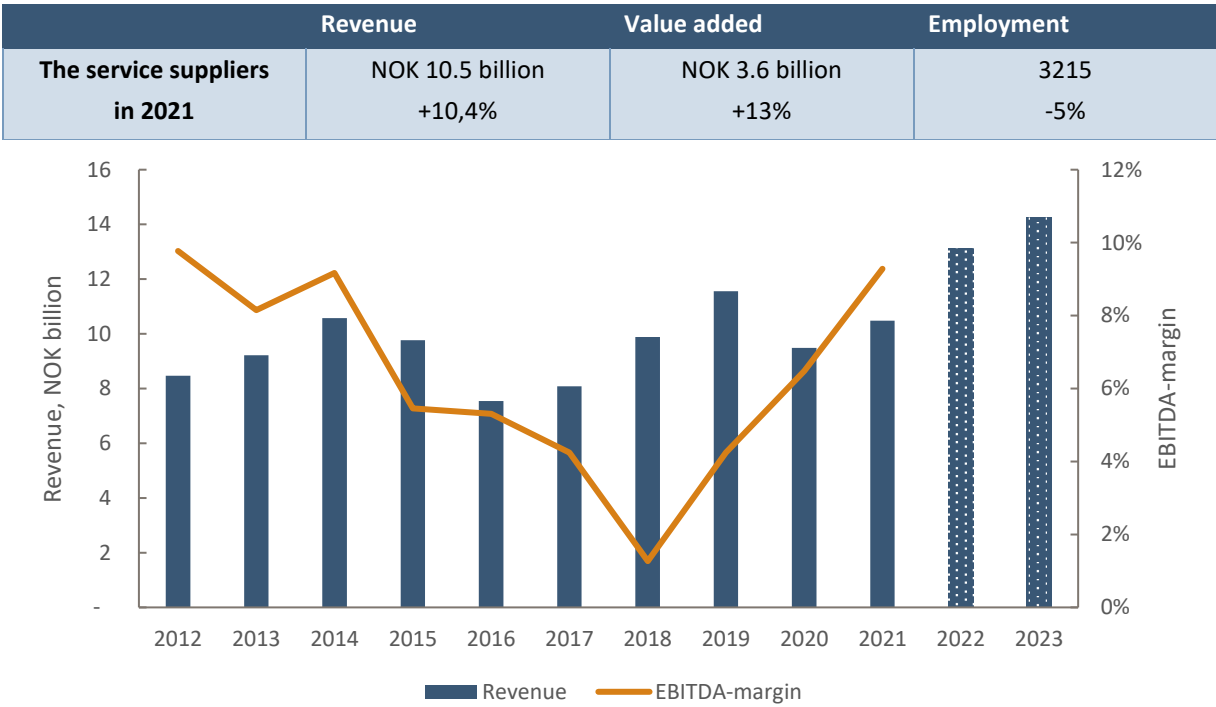


⁹ Earnings before interest and taxes

Service providers – an increase in revenue, mainly driven by technological service companies

Maritime services in the Møre region comprise of a broad set of sub-segments. The diversity within this group makes it difficult to identify an unambiguous reason for the group’s development in revenue and profit margin over the last ten years. However, since the service providers are closely connected to the yards, their activity to a large extent follows the development among shipyards. Hence, also companies within maritime services were hit by the offshore crisis in 2014-2015. Revenue fell by almost 40 percent from 2013 to 2016, and profit margins kept declining until 2018. After 2018, service providers have experienced an increase in revenues and profit margins. Although 2020 resulted in a fall in revenue, profit margins kept increasing for the segment in 2020 and 2021. The same applies to the group’s revenue and value added, which increased by 10 percent and 13 percent respectively. The group has however experienced a decrease in employment of 5 percent. The segment has positive expectations for the short-term outlook, expecting an increase in revenues in both 2022 and 2023, based on the Blue Maritime cluster members’ answers to our survey.

Figure 22: Revenue, value added and employment for the service suppliers in 2021, including percentage change from 2020. Figure below: Revenue and EBITDA-margin among the service suppliers. Estimates of revenues in 2022 and 2023 based on reported information from companies. Source: Menon Economics



The service segment consists of companies that provide services to other companies in the cluster or to foreign companies. Their activities include trade, installation and service of ship equipment, and other specialized maritime services like ship design. A large share of the service companies is connected to or serving the yards. Technological services are the single most important segment among the service providers, including companies providing services like ship design and advanced engineering services. In 2021, these companies accounted for 75 percent of employment and 74 percent of value added within the service segment.

Export opportunities and barriers

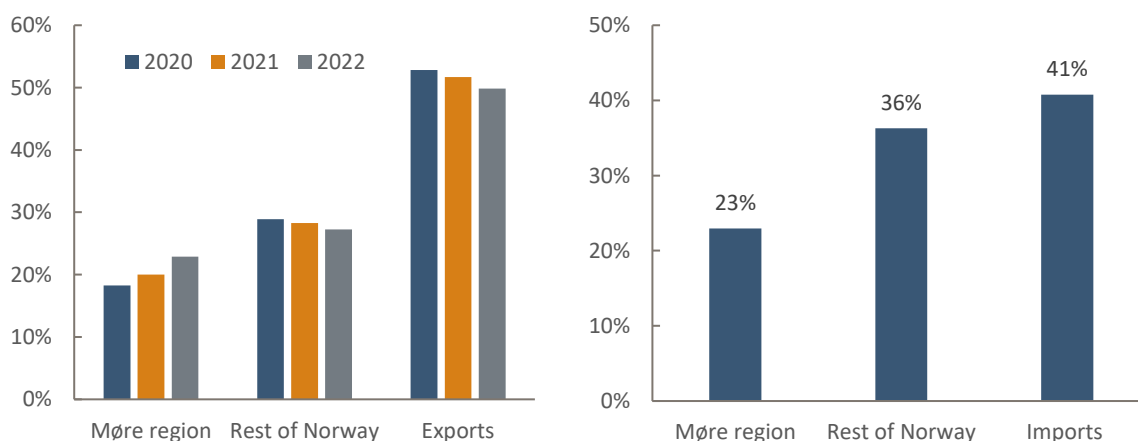
Companies seek markets where they can continue to grow. Hence, success in export markets is an indicator of the industry's competitiveness. An indication of this is that productivity in export industries is usually higher than in industries without export, and productivity growth is positively correlated with export growth. Compared to the rest of the country, the Møre region is very internationally oriented, with one of the highest export revenues per employee in Norway. A lot of the export is related to the maritime industry, but also to the seafood industry and the process industry. When companies from the Møre region succeed in international competition, they contribute to building competence and capabilities that will spread to other industries and sectors through customer-supplier relationships, cooperation relations and mobility of employees. In this way, both innovation and productivity in the whole region will increase. This is important from a regional perspective, and the effect is reinforced by the fact that success in large markets creates greater ripple effects than success in smaller markets.

Half of the cluster's revenue is export – equipment suppliers and ship design companies dominate

The maritime industry is one of the largest export industries in the Møre region. As shown in the figure to the left below, half of the revenue of the companies in the Blue Maritime cluster is from export of goods and services. Export revenues are important, both because they serve as an indicator of the companies' competitiveness and because success in the export markets contributes to increased innovation and productivity among subcontractors, collaboration partners and other actors in the industry.

The domestic market is also important for the Blue Maritime cluster's revenues, where 23 percent of the companies' revenues in 2021 come from customers in the Møre region and the remaining from the rest of the country. In addition, even though export constitutes a high share of the companies' revenues, the companies also have relatively high costs associated with imports of goods and services from outside of Norway. In 2021, around 40 percent of the companies' costs were associated with imports. This implies that the maritime industry in Møre is part of a large global value chain.

Figure 23: Left: What geographical area the Blue Maritime cluster gets their revenue from. Right: The Blue Maritime cluster's external purchases distributed by geographical area in 2021. Source: Menon Economics

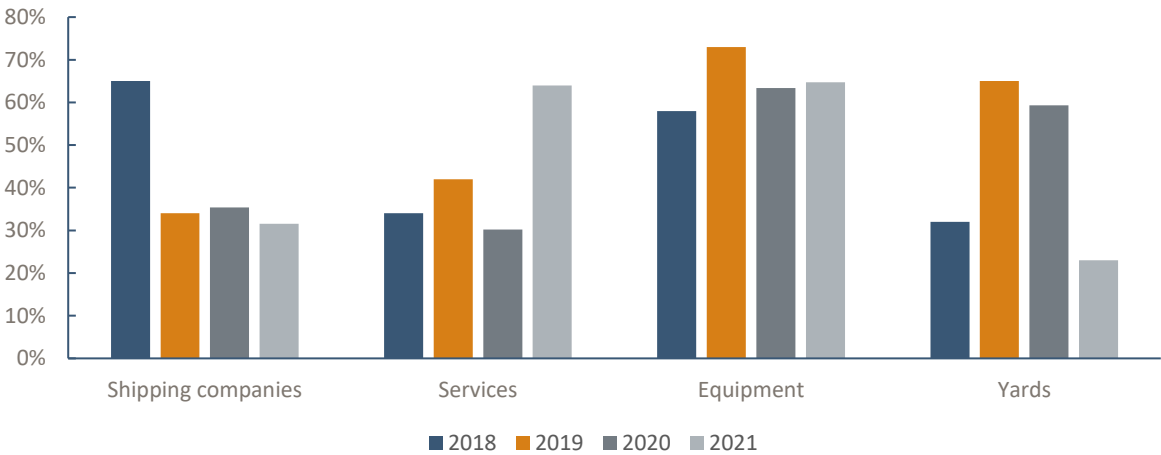


There are relatively large differences between the four segments when looking at their export shares. As illustrated in the figure below, the export share of the shipping companies has fallen dramatically since 2018. The share has however remained relatively stable from 2019 to 2021. This is mainly due to the fact that the offshore shipping companies in the Blue Maritime cluster have faced a decrease in activity, particularly in export markets. The short sea segment, mainly well boats, has experienced a steady increase, but the market is mainly domestic.

The yards have also experienced a decrease in export revenues, especially since 2019, and this decrease was quite substantial from 2020 to 2021. While most of the yards’ customers were regional or domestic when they built offshore services vessels, the yards had to approach foreign customers when entering the expedition cruise market, leading to a higher export share. Due to the Covid-19 pandemic, the cruise market stagnated, resulting in less export for the yards in 2021.

The service suppliers have experienced the opposite development. From 2020 to 2021, their estimated export share increased from 30 percent to 64 percent. This is mainly due to the ship design companies. If we exclude the ship design companies from the rest of the service providers, the estimated export share for the service segment drops to 10 percent. The equipment suppliers have kept their export share approximately stable for the last two years and are in 2021 on the same level as the service providers.

Figure 24: Estimated export shares for the four segments in the Blue Maritime Cluster, 2018-2020. Source: Menon Economics.



Equipment suppliers have the highest export intensity in the cluster

Møre and Romsdal is one of the regions in Norway with the highest export intensity¹⁰, largely due to the export intensity in the maritime industry. The whole cluster has an export intensity of close to NOK 700,000. This is higher than the average export intensity in Norway, which is around NOK 280,000 (Menon Economics, 2022).

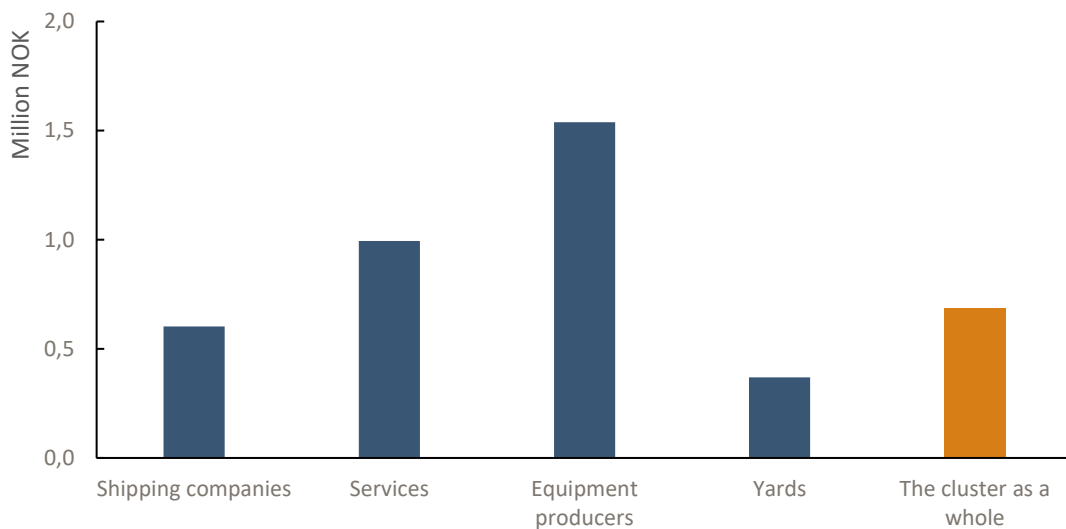
The export intensity differs considerably between the segments. As shown in the figure below, the equipment suppliers have the highest export intensity among the four maritime segments, equivalent to approximately 1.5 MNOK. As mentioned above, around 50 percent of the equipment suppliers’ export is from customers in the

¹⁰ Export intensity is defined as export per employee

export markets, indicating a strong international competitiveness. The maritime service suppliers have the second highest export intensity. It is however important to highlight that if we exclude the ship designers from this group, the export intensity decreases to around NOK 100,000. The ship designer companies have a relatively high export revenue compared to the number of people employed.

The yards have the lowest export share and export intensity among the four segments in 2021. As we will see later in the report, there is an increase in Norwegian ships being built at foreign yards. Even though the yards' export has decreased, the Norwegian equipment and service providers have maintained a relatively high share in 2021.

Figure 25: Export intensity for the four segments in the Blue Maritime Cluster, 2018-2020. Source: Menon Economics



Companies with high export revenues and/or high export intensity have a higher probability of succeeding in the export markets compared to companies that cannot (yet) demonstrate success in export markets. However, there is no guarantee that previous success in export markets equals continued success in these markets in the years to come. The historical trends provide valuable information, but they should be interpreted in the light of the trends in the industry, such as the green transition and the technological development.

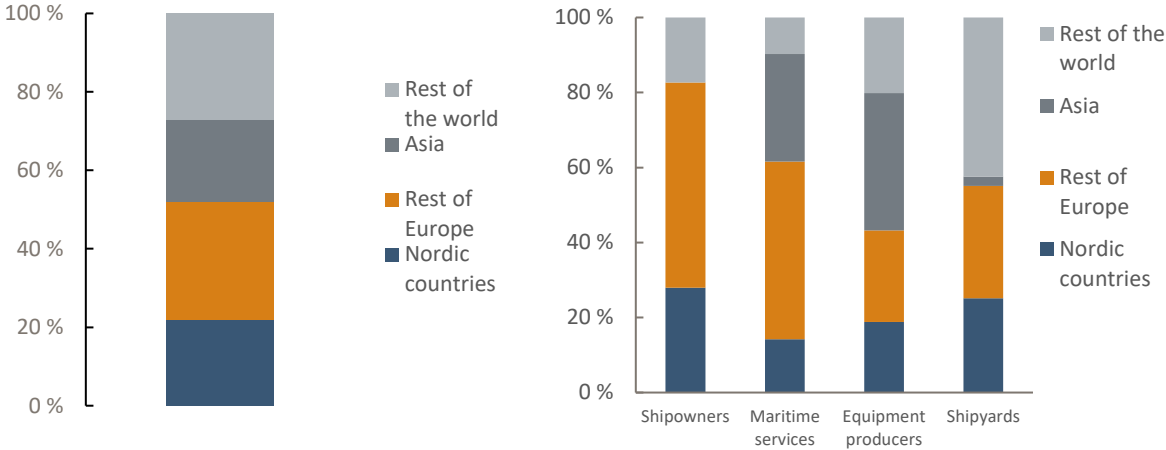
Europe is the most important export market for the cluster

The figure below shows where the companies' customers are located, in other words, their export markets. As seen in the figure to the left, Europe is the most important export market, standing for more than 50 percent of export revenues. The Nordic countries' share is approximately 20 percent, while the rest of Europe's share is 30 percent. Europe (without the Nordic countries) is closely followed by the rest of the world, while Asia is of equal importance as the Nordic countries. Europe is especially important as an export market for the shipowners and for the maritime service providers. The result for the shipowners is mainly driven by the offshore service companies, which have several contracts on European offshore installations.

Asia is one of the most important export markets for the equipment and service providers. Most of the global orderbooks are being built in Asia. Even though it is more likely that there will be Norwegian content on ships being built in Norway, it is vital for the Norwegian suppliers to also focus on winning contracts with foreign yards, to sustain their activity and development. Most of the equipment suppliers' export is through direct sales to

foreign shipyards and shipowners. In addition, they export indirectly through deliveries to Norwegian shipowners that operate outside of Norway. Most of the shipyard’s export goes through shipowners in other countries. As seen in the figure below to the right, the rest of the world is in 2021 the yards’ biggest export market. The results here are mainly driven by the “Somnio”, a superyacht that is planned to be built at Vard for an Australian owner.

Figure 26: Left: Export distributed on geographical regions. Right: Export distributed according to geographical regions for the four segments. Source: Menon Economics



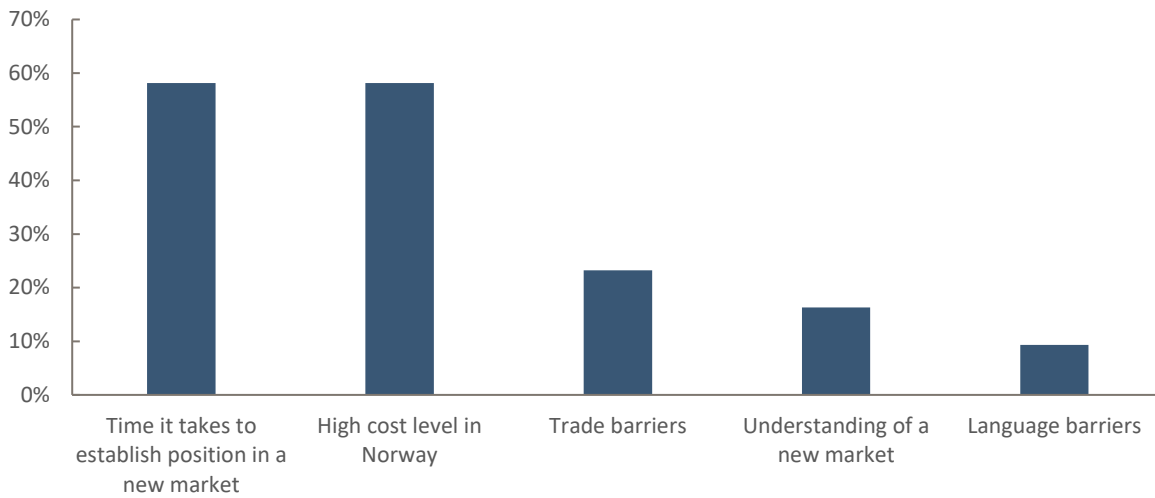
A high level of cost and time it takes to establish a position in new markets are the greatest barriers in the export market

To establish a position in a new and/or international market can be challenging. The challenges faced by the companies depend on the industry they are in, products and services offered, in addition to how well they know the market. The latter applies both in relation to the existing position the companies have in the market and to how well-known the company and the company’s brand is among the potential foreign buyers. The members in the Blue Maritime cluster report that the time it takes to establish a position in a new market is one of the greatest barriers/challenges they face in the export market. A typical challenge when entering a new market is that potential customers do not have any knowledge about the company or product. This will impact the time it takes to establish a position in the market.

The high cost-level in Norway is also a challenge for the cluster companies. Norwegian companies have higher costs compared to many foreign companies, which means they are forced to take a higher price than their competitors. In addition, they might experience that the willingness to pay for a product or service is lower in the export market compared to in the Norwegian market.

There are some differences in the perception of barriers in the export market when looking at the main groups in the cluster. The yards report that trade barriers and the high cost level are the greatest barriers. (We will come back to the cost level in the next chapter.) The shipping companies also perceive trade barriers as the biggest challenge, while the equipment and service providers report that the time it takes to establish a position in a new market is the biggest challenge. There is also a difference when looking at the size of the companies. Smaller companies think it is more important to understand the market compared to the bigger companies. In addition, the larger companies perceive trade barriers as a greater challenge compared to the smaller companies.

Figure 27: The greatest barriers/challenges in the export market. Source Menon economics



The companies in the Blue Maritime cluster were also asked to reflect on what is required to succeed when entering markets and increasing their export. Several pointed out that there is a need for a higher effort on establishing and building relations in the export market, in addition to more marketing to succeed in the export market. It was however emphasized that this also requires increased use of both human and economic resources. It was also mentioned that the transition to a zero-carbon society needs to happen faster. The EU, Asia and the US all have bigger ambitions than Norway. Support schemes and regulations were all mentioned by some of the respondents.

Looking forward: Future export potential for the Møre region

Whether a company succeeds in a new or international market depends on its competitive prerequisites. Competitive prerequisites are a function of the resources and capabilities a company possesses relative to the competitors in the relevant target market. The sources of competitive advantage are found both internally in a company and in a company's external environment. To be successful, it is essential to have access to relevant expertise, competitive suppliers, competent owners, capital providers and framework conditions that are internationally competitive. When operating in such environments, the companies are part of strong business clusters. In this subchapter we look at the Møre region's market and export potential in the years to come.

Leading role in the green transition

The maritime industry in Norway is known for its innovation and adaptability. The green transition and technology development are affecting the industry, and the industry has all the prerequisites to create value and new solutions considering the climate crisis. An early positioning within green international shipping can constitute a significant competitive advantage for the whole maritime industry, and the industry in Møre specifically. To meet the IMO's emission goals, vessels will to an increasing extent have to be built with zero-emission technology. A large share of the global short-sea (cargo) fleet is old and needs to be replaced, also in relation to the increased focus on emission reduction. It is not likely that the yards in Møre will have the means to build these vessels, but the design and equipment suppliers can deliver. The green transition leads to opportunities when it comes to building a home market and establishing a position in new markets, in addition to export opportunities.

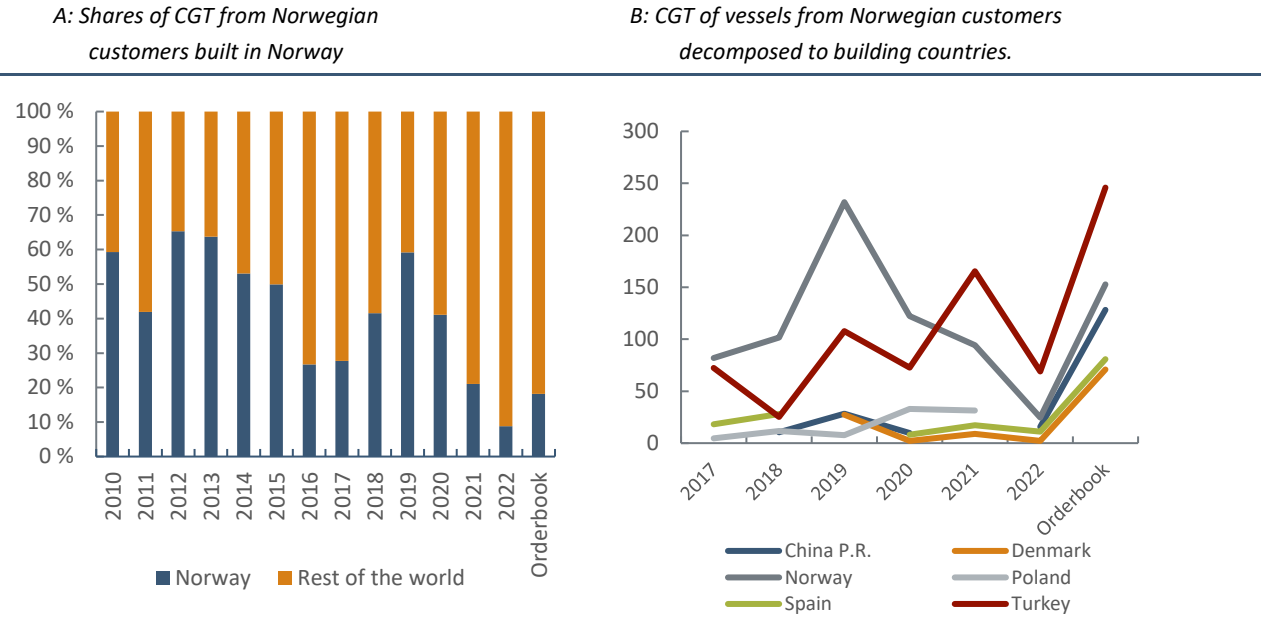
Norwegian yards – weakened competitiveness

Where shipowners choose to build their ships is important for the yards in Møre, but it is also important for the equipment suppliers, ship designers and service providers. For years, the yards' competitiveness was based on innovative technology and solutions, flexibility, and proximity to design, equipment and service suppliers. In addition, the yards have been able to maintain a high cost-base, due to a high willingness to pay, especially among the offshore shipping companies. The yards have however in recent years experienced increased competition from European yards, especially the Turkish ones. One reason is related to the above-mentioned cost base. Norwegian yards have higher labor costs compared to yards in Turkey. The changes in wage conditions for foreign labor have led to a significant increase in personnel costs for the yards. Another reason is that the Norwegian yards have outsourced tasks to suppliers abroad. This has reduced the yards' flexibility in the building process and weakened the yards', and their suppliers', internal competence building. In addition, because of the transition from offshore oil & gas to new markets, the Norwegian yards ended up into a negative spiral, where weak financial solvency has reduced their investment opportunities and increased the risks for shipowners ordering vessels at the Norwegian yards (Menon Economics & BCG, 2021).

All the reasons mentioned above have led to a weakened competitiveness for the Norwegian yards. There is a concern in the industry that Norwegian yards are losing contracts in favor of foreign yards. This is both due to the fact that prices are lower, but also that it is reported that the quality of the ships being built there has reached the same level as in Norwegian yards. This has especially been the case in relation to the Turkish yards. This trend is shown in the figures below. The figure to the left shows Norwegian shipowners' (excluded shipowners from the Møre region) orders of vessels at Norwegian vs. foreign yards, measured in compensated gross tonnage (CGT)¹¹. As can be seen, there is a negative trend, where a higher share of the CGT is ordered at foreign yards. As seen in the figure below to the right, a higher share of Norwegian shipowners' orders, in CGT, are being built at Turkish yards. Orders at Turkish yards exceeded orders at Norwegian yards in 2021. Norwegian yards have been known to be leading in building advanced and complex ships, but the figures below indicate that foreign yards are now able to build the same kind of vessels as Norwegian yards.

¹¹ *Compensated gross ton (CGT) refers to the comparative work content inherent in building the ship. It is based on the gross tonnage, which is modified by a compensation factor related to the complexity of the building process.*

Figure 28: Norwegian shipping companies' orders – without Møre region shipping companies – at Norwegian vs. foreign yards, measured in CGT (left). Norwegian shipowners' orders in compensated gross tonnage (CGT) from 2017, including orderbooks (right). Source: Clarksons Research and Menon Economics¹²



Shipowners in the Møre region order most of their ships at Norwegian yards

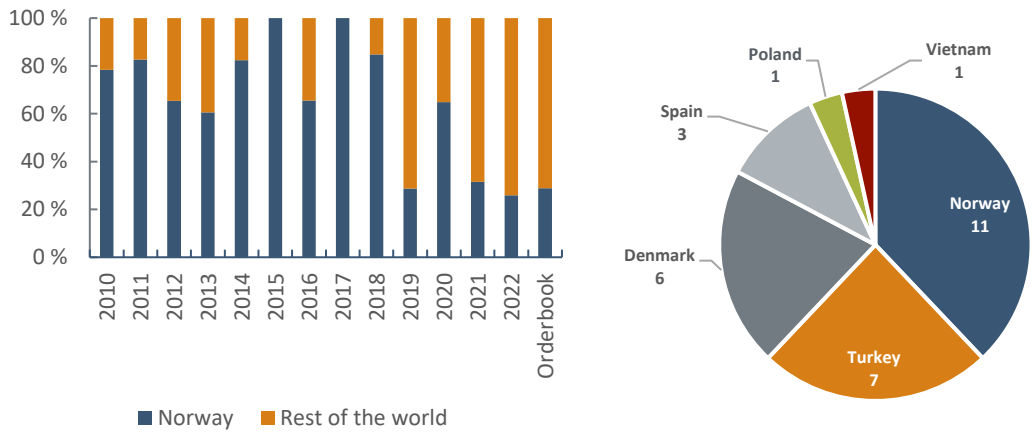
When comparing shipowners in the Møre region with shipowners in the rest of Norway, we see that shipowners in Møre to a larger extent order their vessels from Norwegian yards than other Norwegian shipowners do. This is shown in the figure to the right below. *This is a clear indication of the positive effects of the cluster dynamics.* It is however important to notice that the figure shows the same negative trend as the figure above, i.e., that a higher share of the orders, measured in CGT, in recent years are placed at foreign yards.

From 2023-2025, shipowners from the Møre region have ordered 29 vessels.¹³ The figure to the right below shows which countries the yards are located in. Around 60 percent of the vessels ordered in the period will be built at foreign yards, whereof one fourth at Turkish yards.

¹² Vessels contracted from Norwegian yards: 62 ferries, 27 aquaculture vessels, 59 fishing vessels, 13 offshore vessels, 24 other non-cargo vessels out of a total of 190. Vessels contracted from yards in Turkey are mostly aquaculture vessels, fishing vessels and ferries. 39 ferries, 30 aquaculture vessels, 26 fishing vessels out of a total of 98. Denmark: 33 fishing vessels out of a total of 36. Spain: 10 offshore vessels and 8 fishing vessels out of a total of 21.

¹³ Ordered vessels includes 12 aquaculture vessels, 11 fishing vessels, 4 offshore vessels and 2 ferries.

Figure 29: Left: Shipping companies in the Møre region orders at Norwegian vs. foreign yards, measured in CGT. Right: Orders from Møre region shipowners, distributed according to building country (2023-2025). Source: Menon Economics and Clarksons Research.



How the Møre region can sustain its competitive advantage in a changing market

The size of the shipping market and expected growth are decisive for the market opportunities of the shipyards and the equipment and service suppliers. The entire world fleet will in the years to come be replaced by or rebuilt into zero-emission vessels. The proven strong level of adaptability and high technological competence in the maritime companies in the Møre region makes the cluster well positioned in the expected transition to green technology and propulsion systems in shipping. However, the high cost level in Norway and the big yards' weak financial position are a challenge for the cluster. The shipyards are regarded as a key component of the cluster's competitiveness, which in turn is essential to maintaining market share and taking further shares of the global maritime market.

For the cluster to sustain its competitive advantage, it will be important to continue the cluster-based innovation, as seen in the case where shipowners in the Møre region to a larger extent order their vessels from Norwegian yards than other Norwegian shipowners do. The innovation happens to a large extent between the actors in the maritime value chain. The shipowners are customers, and ship designers, equipment and service suppliers and yards work together to develop new vessels and technological solutions. The relational prerequisites for cooperation, more concretely informal, trust-based relationships with a large degree of information sharing, have developed over time and are driven forward by short geographical distances and mutual dependence.

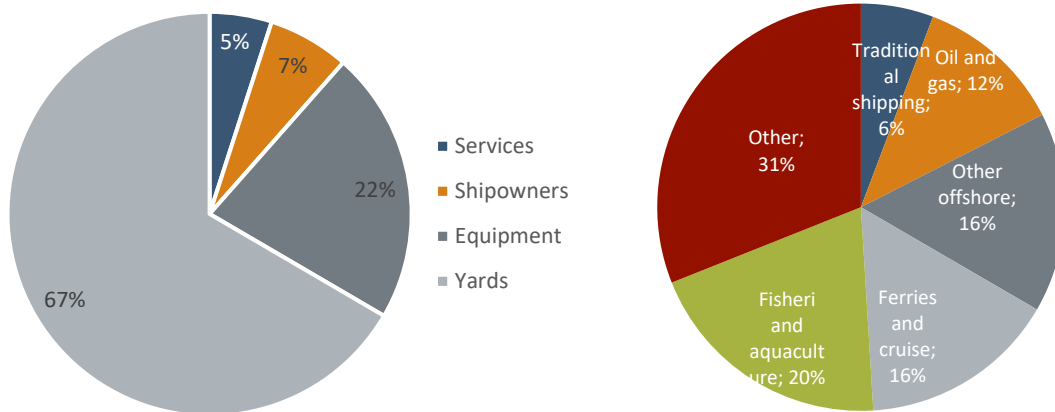
Offshore wind will be the most important market for the cluster the next five years

Estimated orderbook value for the maritime industry in the Møre region is NOK 61 billion in September 2022.¹⁴ Almost 40 percent of the respondents said that the orderbooks have increased by more than 10 percent the last 12 months, while 16 percent said that they have decreased by 10 percent. When looking at the segments' share of the total orderbook, the picture is the same as last year, where the yards have the biggest share, as seen in the figure below to the left. A change from last year's report is that the equipment suppliers have a higher share

¹⁴ We estimate the value of the orderbook based on the questionnaire. This is done by taking the value of the orderbook and comparing it to the revenue for each of the main groups. This way we find a representative multiple for how large the orderbook is, given some level of revenue. We then multiply this with the total revenue for each of the main groups in the cluster, giving us the estimated value of the orderbook in the Blue Maritime Cluster.

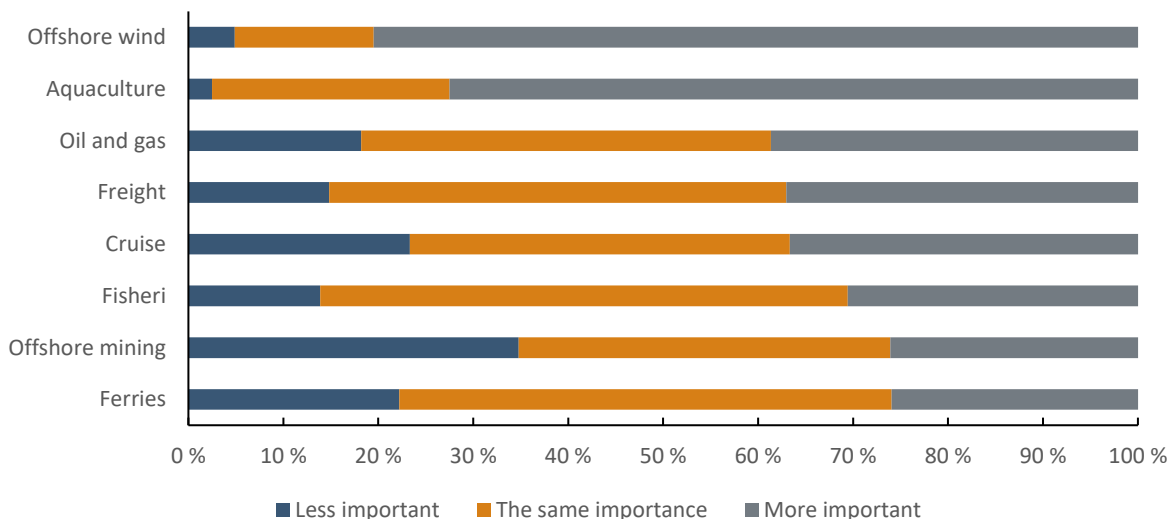
of the orderbook this year, 5 percentage points higher than in 2021, while the shipowners have a lower share, 5 percentage points lower. As seen in the figure below to the right, activity in the fisheries and aquaculture sector stands for one fifth of the orderbook in 2022, followed by ferries and cruise and other offshore.

Figure 30: Left: Estimated orderbooks in the Blue Maritime cluster September 2022. Right: Orderbook distributed on market segments, as a percentage of total orderbooks. Source: Menon Economics



The figures above give a picture of today’s situation. Given the trends in the market, with new markets emerging and the green transition, it is important to look at how important different market segments will be for the cluster the next three to five years. This is shown in the figure below. As seen, offshore wind will be the most important market for the cluster, followed by the aquaculture industry.

Figure 31: How important do you expect the following markets to be for your business the next 3-5 years, compared to today? Less important, of the same importance or more important. Source: Menon Economics



Offshore wind is one of the Norwegian government’s export focus areas – together with green maritime products and solutions. The offshore wind market is differentiated, and it is important to distinguish between floating and bottom-fixed wind parks. The Norwegian delivery to bottom-fixed offshore wind is small, only 3-5 percent, although the share within the *maritime* value chain may be a bit higher. The market for floating offshore wind is

still in a pre-commercial phase, but it is expected to have a significant growth in the coming decades, and a higher growth compared to the fixed offshore wind market. Norway's competitive advantage is higher within the market for floating offshore wind, both because of the existing maritime expertise from the oil and gas industry and due to the fact that Norway has a head start compared to competing countries. Norwegian actors have overall strong prerequisites for establishing a maritime value chain for offshore wind, and the market potential is large. It is estimated that the export potential for yards, equipment suppliers and service providers (maritime industry) within fixed and floating offshore wind is from 14-27 billion NOK in 2030. For the Norwegian offshore wind shipping companies, the export potential in 2030 is estimated to be around the same (Norsk Industri, 2022).

The aquaculture industry is currently the most complete and competitive maritime value chain. The global market for the value chain is relatively small, but the growth potential is large because there is a potential for maritime deliveries to an increased number of fish species. The competitive conditions are also good, and Norway has several large aquaculture companies that dominate the world market for salmon and trout farming. The export potential is not as big as within the offshore wind segment, but it is estimated to be between 4 and 6 billion NOK in 2030 for the maritime industry. For the Norwegian well boat and service vessel companies, the export in 2030 is estimated to be between 2-4 billion NOK (Norsk Industri, 2022).

Norwegian shipping and maritime industry were from the beginning of the 2000s until the oil crisis in 2014 integrated in a complete value chain to the oil and gas industry. The shipping part of the cluster was to a large extent decoupled from the shipbuilding part after 2015. Although the offshore oil and gas market has recovered, it might be hard for the yards to capture a significant share of this market. There is, however, a promising potential in the retrofitting of offshore vessels with zero or low-emission solutions. The estimated export potential for the maritime industry to offshore oil and gas in 2030 is estimated to be between NOK 15-21 billion, while the estimated potential for the offshore shipping companies is between NOK 25-50 billion in 2030 (Norsk Industri, 2022).

Passenger segments – cruise, ferries and speed boats – are other arenas with high potential for the Blue Maritime cluster, particularly because these segments are in the forefront of decarbonization. The market is highly innovative and growing, and the home market is substantial, not least because Norway has a strong reputation for nature-based tourism. The export potential for the maritime industry is estimated to be between NOK 25-33 billion in 2030. For the Norwegian cruise, ferry and speed boat companies it is estimated to be between NOK 5-10 billion (Norsk Industri, 2022).

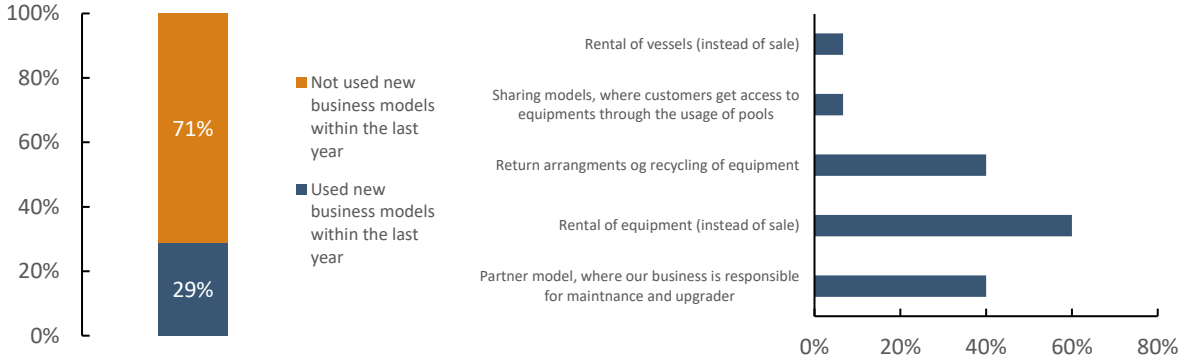
It will be important for the companies in the cluster to exploit the opportunities provided by the new markets. A successful transition does not only hinge on finding new markets, but also on the ability to make these new markets profitable. The cluster will have to be more efficient in transitioning towards new markets in the future. Success will depend on being able to establish new supply chains quickly and efficiently or being part of a supply chain with well diversified demand impulses.

Business model and cluster dynamics

The increased focus on technology and digitization, in addition to changes on the demand side, has led to a transition in the cluster. Related to this, the companies in the Blue Maritime cluster were asked to what extent they have adopted new business models in the last three years. As shown in the figure to the left below, one third of the companies answered that they have used new business models the last three years. Around 60 percent of this group answered that their new business model is that they have started to rent out equipment instead of selling it. This share has increased by 12 percentage points compared to the report written in 2020.

This indicates that the companies are more focused on environmentally friendly solutions and have a more circular economy perspective. This is further confirmed by the fact that around 40 percent answered that they have adopted return arrangements and recycling of equipment. The latter is however the same as it was in the report two years ago.

Figure 32: To what extent the companies in the cluster have adopted new business models. Source: Menon Economics

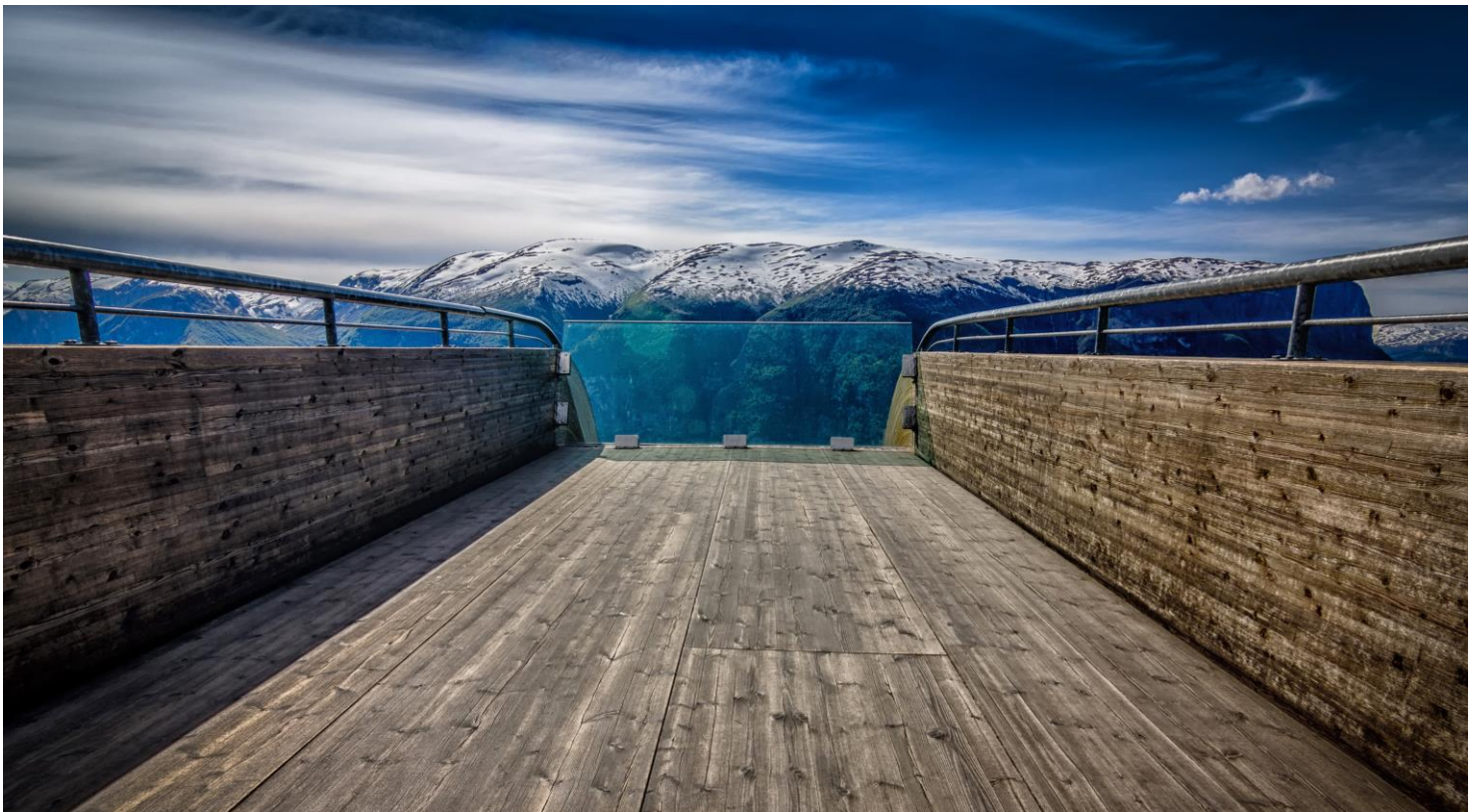


The maritime industry and the Blue Maritime cluster are in a transition phase because of digitization and new technology. As mentioned previously, a lot of the innovation happens to a large extent between the actors in the maritime value chain and the cluster. The figure below gives a picture of how the cluster members perceive the importance of the cluster, other clusters and international customers for innovation and technological development in their company. More than 60 percent of the companies perceive international customers as most important with regard to innovation and technological development. Other clusters are perceived as less important. It is interesting to observe that more than 40 percent of the respondents answer that the cluster itself is not important for innovation and technological development in the company. This is in large parts equipment suppliers. It also seems to be the case that large companies perceive the cooperation within the cluster to be less important. This may be due to the fact that they have more financial assets to help with innovation, within their company. In a previous Menon-report, several of the equipment suppliers answered that a lot of the innovation happens within their own company, coinciding with the results in the figure below.

Figure 33: How important the companies perceive the Blue Maritime cluster, other clusters¹⁵ and international customers for innovation and technological development in their company. Source: Menon Economics



¹⁵ E.g. Maritime CleanTech, iKuben, Energy Valley, GCE Ocean technology



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