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REPORT
GCE BLUE MARITIME CLUSTER – GLOBAL PERFORMANCE BENCHMARK 2019

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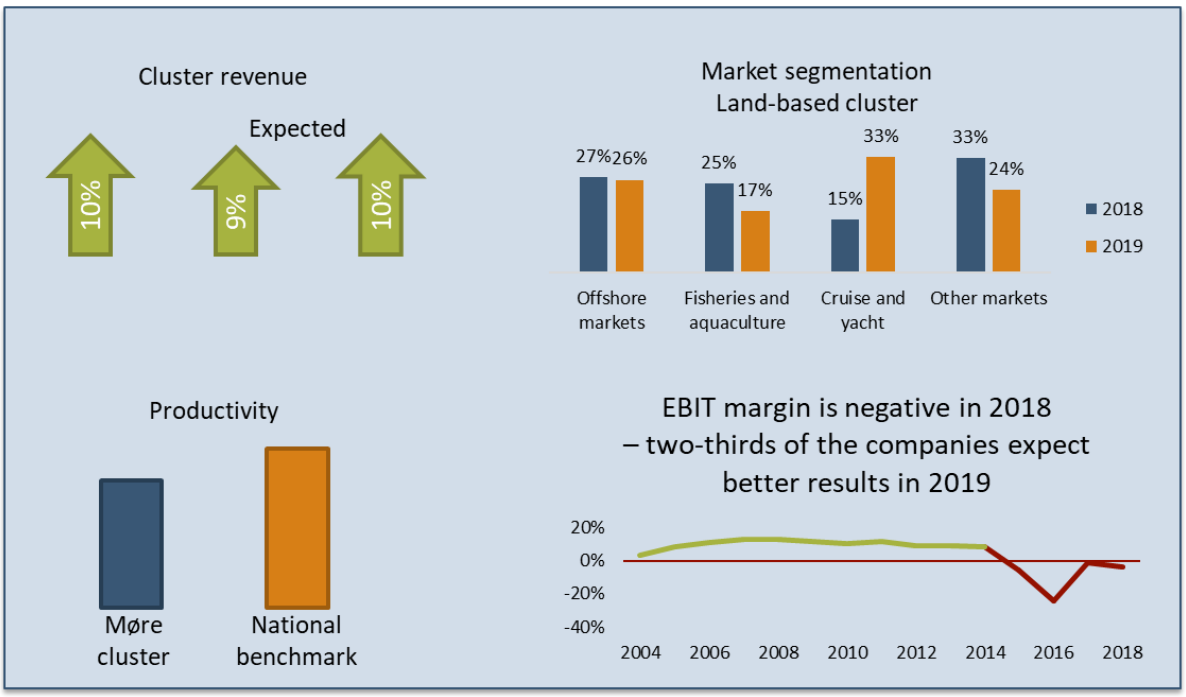
1. Introduction and main findings

Combined revenue in the Møre cluster grew for the first time in four years in 2018, increasing by 10 per cent from 2017. Revenue is expected to grow further in 2019 and 2020 with an estimated increase in income of 20 per cent from 2018 to 2020. The increased activity comes as a result of continued growth in relatively new market segments. The cruise segment has now overtaken offshore oil and gas as the primary source of income in the land-based segment of the cluster.

The Møre yards have taken a strong position in the market for exploration cruises and are set to deliver 15 of the 40 cruise vessels under 50 000 GT currently on order with a delivery date before 2022. Interestingly, the equipment manufacturers are increasingly shifting their focus towards deliveries for cruise vessels as well. Judging by the equipment manufacturers orderbooks, the cruise market is set to overtake oil and gas and cargo shipping as their primary market segment soon.



Offshore shipping companies continue to struggle. Market conditions are still harsh, even though there looks to be some light on the horizon. The Norwegian and Møre offshore shipping companies still, like last year, seem to be more indebted than their foreign counterparts, which makes it harder to compete against foreign competitors. A positive development since last year is that the percentage of laid-up vessels now is lower in Møre compared to the world fleet.

Profitability and productivity remained well below the national benchmark in 2018. The combined cluster posted negative operating margins yet again in 2018. Offshore shipping companies and a few large industry actors are the primary drivers of the combined negative margin. Even though the situation is not equally bleak for everyone, increased profitability for the large players is crucial in the long term for all cluster members.

The companies surveyed, including the large players, believe profitability will increase in 2019 and 2020. The companies believe continued growth in new market segments and increased cost efficiency will drive profitability up.

The land-based segment of the cluster is becoming less reliant on local suppliers. While the shipping companies believe local suppliers to be as important today as before, more than 80 per cent of the land-based companies report that suppliers outside Møre have become more important over the last years. This is not necessarily negative but should be monitored going forward, as knowledge spillovers are likely to decrease with less interaction between the companies in the cluster.

1.1. The Blue Maritime cluster in Møre is a leading ocean-based cluster

GCE Blue Maritime is one of three Global Centers 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 collaboration characterized by dynamic relations with innovative power. The GCE-clusters must also be considered to have a strong potential for growth in national and international markets and together form a strong innovation system.

The Blue Maritime cluster was originally a tight vertically structured cluster, with world-leading designers, equipment manufacturers, yards, shipping companies and other specialized service providers. The companies in the cluster are world-leading in all the parts of the value system. Companies such as Skipsteknisk, Ulstein Design, Havyard Design and Marine Teknikk design the world's most advanced offshore vessels that perform different operations in some of the most challenging environments at sea. The shipping companies, including Bourbon, Island, Havila and Olympic, operate the ships serving the offshore fields across the globe and control a fleet that is young, advanced and equipped with world-leading equipment. The vast majority of the ships are produced by local shipyards such as Kleven, Vard and Havyard. The yards in turn use equipment – motors, propulsion, winches, dynamic positioning etc. – produced locally by Kongsberg Maritime CM[1], IP Huse and Brunvoll, all located in the cluster. However, from 2015 onwards there have not been any new orders for offshore service vessels. This means that market relations and innovation impulses from the shipping companies to the rest of the cluster were cut off, thus weakening the internal linkages in the cluster. Currently, the cluster must reinvent itself, with new value chains and linkages. Based on historical evidence, there is reason to believe that the Blue Maritime cluster will succeed in this effort.

In the remainder of this report, we will divide the cluster into four separate segments: Shipping companies, yards, equipment manufacturers and other specialized services. Since the designers play a crucial role in the product innovation in the cluster, we will also present some separate numbers for this group, but they will mainly be included in the group with companies offering specialized services. A selection of the leading companies within the four areas is shown in the figure to the right to illustrate the width of activities in the cluster.

Figure 1-1: The four segments in the cluster with company illustrations

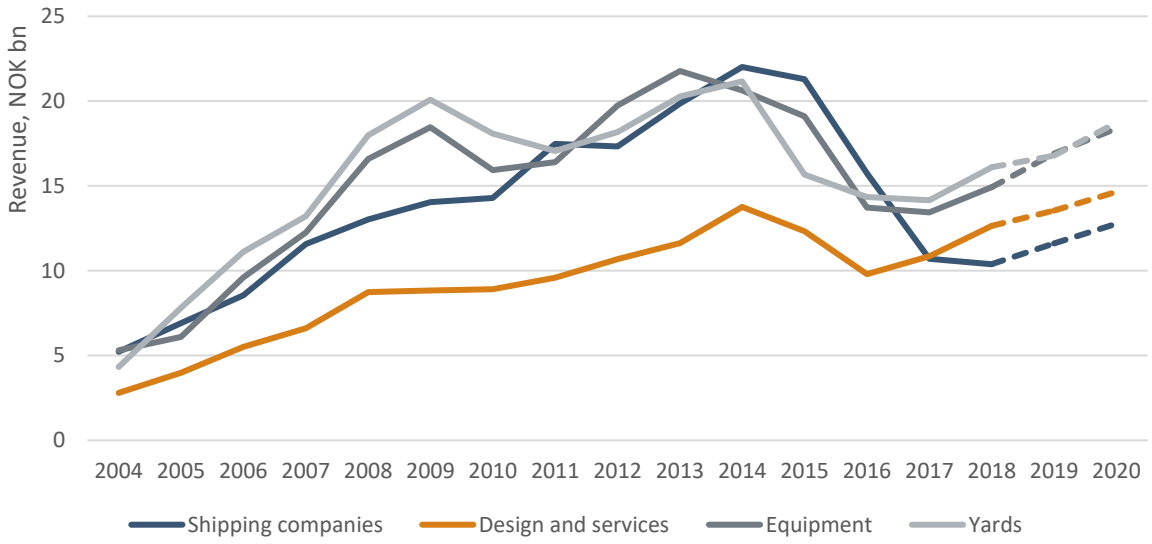
[1] *Former Rolls-Royce Marine*

2. Key developments in the Blue Maritime cluster

2.1. Revenues are increasing – further growth expected

In 2018, revenues increased by 10 per cent compared to 2017, which took the total income of the cluster to NOK 54.1 billion. Last year, the combined revenues of the cluster amounted to less than NOK 50 billion for the first time since 2007. However, the cluster is well-positioned for growth, with expectations for increasing revenues in all four segments. By 2020 the revenue is expected to reach NOK 64.5 billion, which will be 4 billion below 2015 and 13 billion beneath the all-time high in 2014.

Figure 2-1: Development in the cluster's revenues broken down on the four maritime segments. Source: Menon (2019)



As we can see from the figure above, the history of revenues for the cluster companies can be separated into four different periods:

- 2004 – 2009: High growth in all segments
- 2010 – 2014: Volatile growth
- 2014 – 2017: Sharp decline
- 2018 ➔ Cautious optimism, and growth in several ocean industry markets

In terms of revenues, the financial crisis was a severe blow for the yards, and in turn also the equipment manufacturers. Revenue fell, but in 2011 demand from the offshore industry began to increase and turned the situation around. The increase in demand was particularly sharp for specialized offshore vessels. For the shipping companies and design and services segments, this was another period of high growth.

From 2014 to 2016, revenues fell by more than NOK 20 billion. On an aggregate level, the negative trend slowed down in 2017, but income nonetheless fell by more than NOK 4 billion from 2016 to 2017. The bottom seems to have been reached in 2017, and in 2018 revenues are back at 2016-levels on aggregate. Further, the cluster's revenue is expected to increase by almost 30 per cent from the bottom in 2017 to NOK 64.5 billion in 2020.

2017 represented a turning point for the cluster. In our survey from last year, the cluster companies were asked to report the expected revenues in 2018 and 2019. The results were clear: All segments expected higher revenues

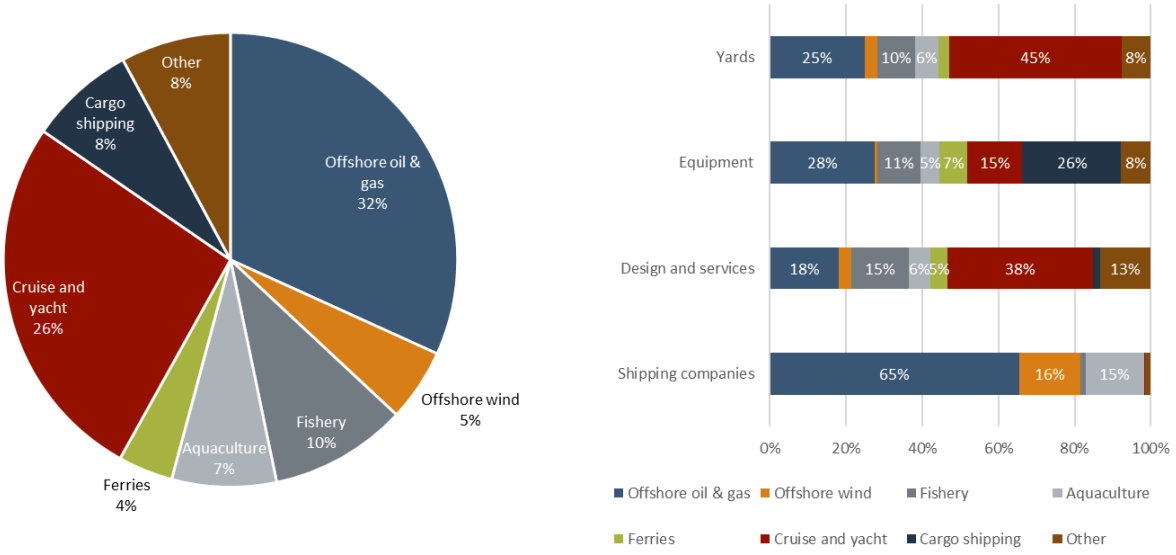
in 2018 and 2019. This year's survey strengthens this outlook, with the cluster expecting continued growth in revenue. From 2018 to 2020 the cluster expects an increase of 20 per cent. For the individual segments, this ranges from 16 to 23 per cent, with equipment expecting the most substantial growth and services the lowest.

The market for exploration cruises is driving growth in activity

In this year's survey, the companies were asked to distribute their revenues on various ocean industries and land-based markets.[2]

For the cluster as a whole, the oil and gas market constitutes 32 per cent of the aggregated market, decreasing from 35 per cent in 2018 and 50 per cent in 2017. We do not have corresponding numbers for the period before 2017, but presumably, the share of the oil and gas market has declined massively since 2014. For the shipping companies, the proportion is still high; 65 per cent of their revenues come from offshore oil and gas. For the yards, equipment manufacturers, design companies and other services the proportion is 30 per cent or lower. Contrary to earlier years where the oil and gas market had a higher importance for the large companies, this is no longer the case. Cruise and yacht, as well as the fishing industry[3], constitute the second and third-largest market segments for the cluster.

Figure 2-2: Left: Distribution of the cluster's combined revenues on the different ocean- and land-based markets. Right: The cluster's turnover broken down on the four segments and split by markets. Source: Menon (2019)



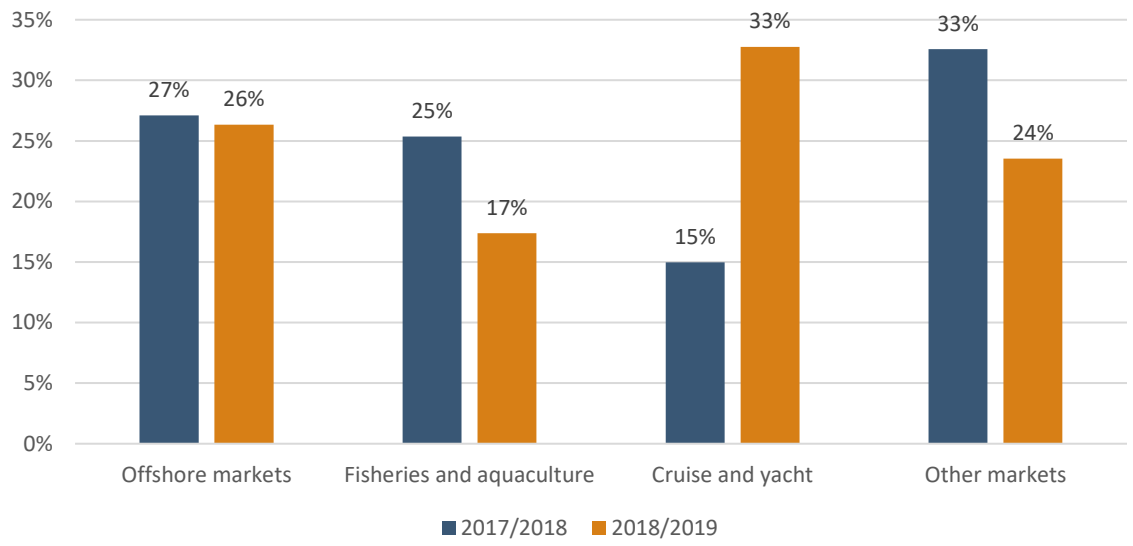
The most significant change from last year is seen in the cruise and yacht market, which has grown from 12 to 26 per cent of the total revenue. The yards have the highest share of cruise and yacht as a share of income; 45 per cent of the yards' income comes from this market. Service companies also have a high percentage of their revenues coming from the cruise and yacht segment, with almost 40 per cent in 2018.

Figure 2-3 shows that the offshore markets are almost unchanged compared to the previous year, measured in revenue for all segments except shipping companies. Fisheries and aquaculture fell from 25 to 17 per cent, but

[2] The calculations are based on reported shares of 58 per cent of the total revenue of the cluster.
[3] It is important to emphasize that the fishing fleet is not included in the numbers, only design, equipment and building of fishing vessels.

over the last year, we see that cruise and yacht increased its share from 15 to 33 per cent of the total revenue for the service, equipment and yard segment.

Figure 2-3: The Møre cluster share of different market segments over time. Shipping companies are not included. Menon (2019)



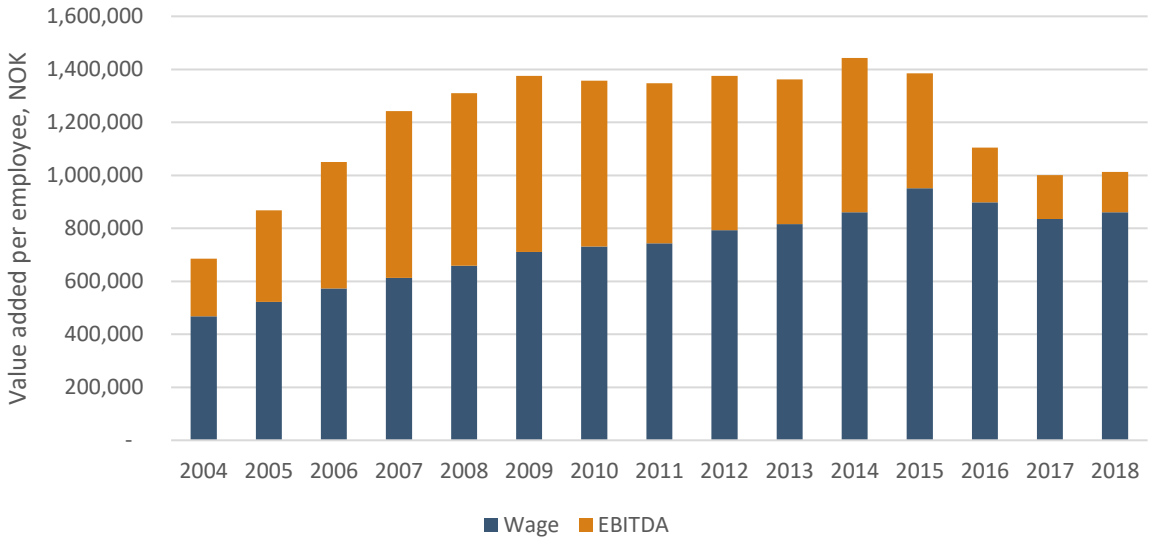
2.2. Productivity and profitability remained low in 2018 – but companies expect improvements

An essential feature of the Blue Maritime cluster has been the tightly integrated value chain, with world-class companies in each step of the chain. To maintain international competitiveness, companies have been innovation-driven and focused on improving productivity.

Productivity in the cluster, measured as value added per employee, multiplied from 2004 to 2009. Since 2009, however, value added per employee has stagnated – suggesting that productivity growth in the cluster has declined. On the cluster level, productivity is stable at about NOK 1 million per employee in 2018, up 1 per cent from 2017.

One benefit of using value added as a proxy for productivity is that we can decompose value added into a wage component and an operating profitability (EBITDA) component. Wages per employee increased continuously from 2005 to 2015, increasing the average salary by more than 80 per cent over the period. While increases in wage indicate increased productivity, we also know that wages are «sticky», making it harder to reduce costs.

Figure 2-4: Value added per employee broken down to wages and EBITDA. Source: Menon (2019)



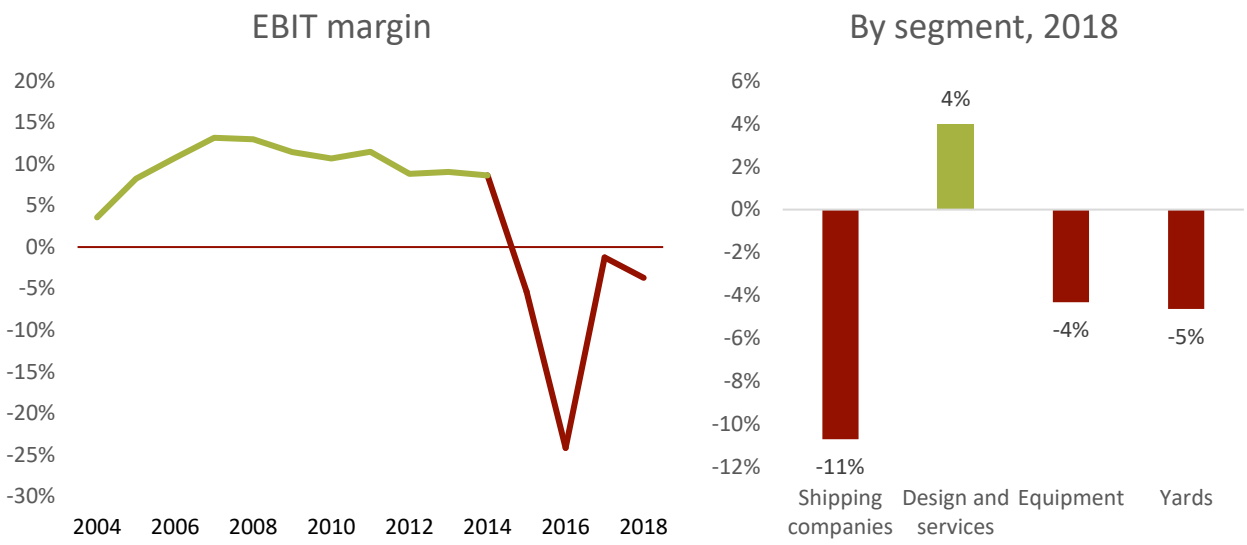
In 2016, we observe that the salary per employee started to come down. From the salary peak in 2015, pay per employee is down by almost 10 per cent in 2018. This may indicate that the effort to bring costs down has succeeded. Two factors can explain that wages per employee have declined. Studies of recessions show that it is hard to reduce employees' salaries. The decline is likely partly explained by the fact that the people who lost their jobs in the downturn had high salaries. For instance, many officers in the shipping segment had significantly higher wages than average, which contributed to a higher overall wage level. Another important reason is that many employees receive performance-related payments. Generally, in times with poor performance, one should expect these bonuses to be substantially lower as well. Still, wages per employee have increased again in 2018 compared to 2017 and are now back at 2014-levels. The cluster should monitor this closely, as this could affect profitability negatively.

The EBITDA-share of the value added decreased significantly after 2014. From 2006 to 2014, the EBITDA-share was stable at around 40-50 per cent of value added, but in 2016 and 2017, this share fell below 20 per cent. In 2018, this is still the case, with the EBITDA-share of value added at 15 per cent. This is a reduction by 2 percentage points from 2017.

2.2.1. The cluster is still struggling with negative profitability

Operating in a global market, companies in Møre face competition from countries with lower costs. To be competitive, the cluster must deliver goods and services with a more favorable relationship between quality and price than competitors. Profit margins can be interpreted as an indicator of the cluster's ability to leverage its capabilities and deliver goods and services that are valued higher than its input factors. In other words: as an indicator of how competitive the cluster is. It is important to mention that there are also other factors such as market orientation and temporary supply shocks that can explain periods of deviations in profitability.

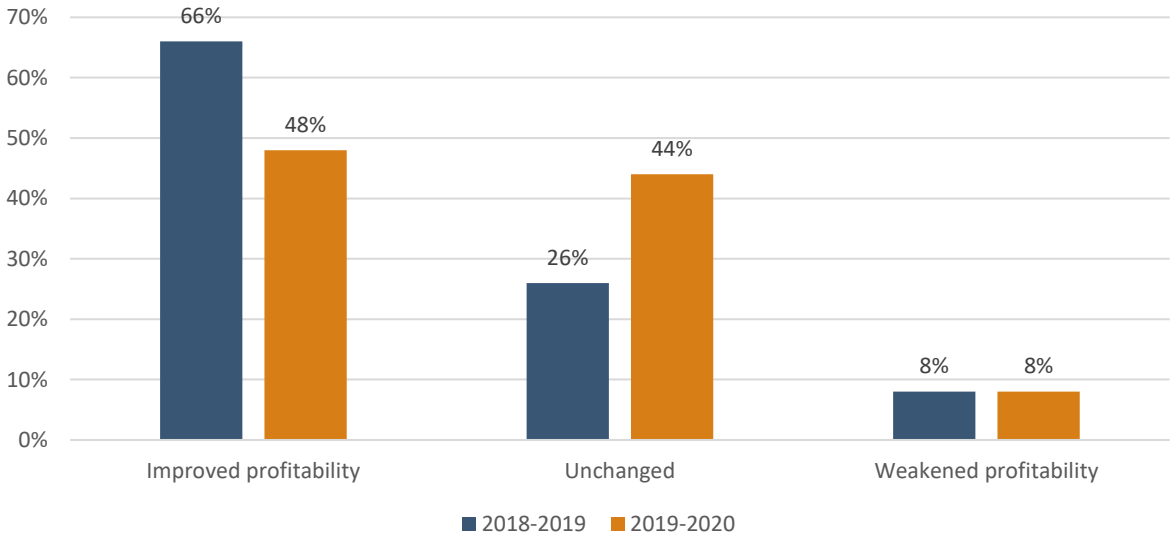
Figure 2-5: Left: Net operating margins (EBIT) for the cluster in total. 2004-2018. Right: Net operating margins (EBIT) at the segment level in 2018. Source: Menon (2019)



From 2016 to 2017, profitability in the cluster, measured by the EBIT-margin, increased from -24 to -1 per cent. However, in 2018 the EBIT-margin fell with 3 percentage points down to -4 per cent. If this is split down into segments, we can observe that shipping is struggling the most with an EBIT-margin of -11 per cent. Both equipment and yards have an EBIT-margin of around -5 per cent. Services is the only segment that delivers a positive margin of 4 per cent.

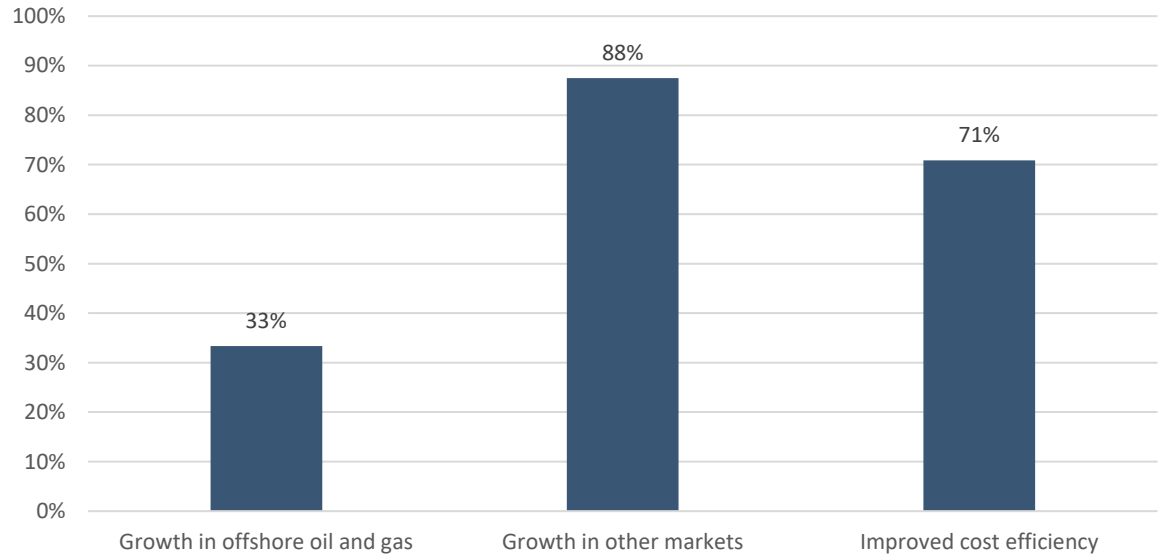
The cluster companies are in general positive about their expectations on future profitability. 2 out of 3 respondents answer that they expect improved profitability from 2018 to 2019. 1 in 4 expects stable profitability and only 8 per cent expect it to weaken. From 2019 to 2020, almost 50 per cent expect to see an improvement in their profitability, but compared to the expectation for the 2018-2019 period, 44 per cent expect profitability to be unchanged.

Figure 2-6: How does the cluster expect the profitability to develop? Source: Menon (2019)



A majority of those who expect increased profitability expect it to come as a result of operations in other markets than offshore oil and gas. In addition, 71 per cent expect increased profitability to come from improved cost efficiency. Still, 1 in 3 expects growth in the offshore oil and gas market to be part of the explanation for their positive outlook on profitability.

Figure 2-7: Where does the cluster expect increased profitability? Shares do not sum to 100% due to the fact that multiple alternatives could be chosen. Source: Menon (2019)



Operating margin as a measure of profitability

Net operating margin is defined as operating profit as share of turnover. In other words, the net operating margin is equivalent to a company's operating net income as a share of its operating gross income, where the term "operating" reflects that financial income items are excluded. The operating margin is perhaps the most commonly used measure of profitability in private companies. A weakness of the measure is that it concentrates on companies' "turnover" rather than value added. For example, consolidation of companies in an industry will lead to fewer goods and services purchased, since some transactions will now be internal. The consolidation will result in an increased operating margin, even though there has not been any direct improvement in profitability. What is more, changes in input mix and the degree of outsourcing might have indirect effects on profitability.

2.3. Value added grew slightly in 2018

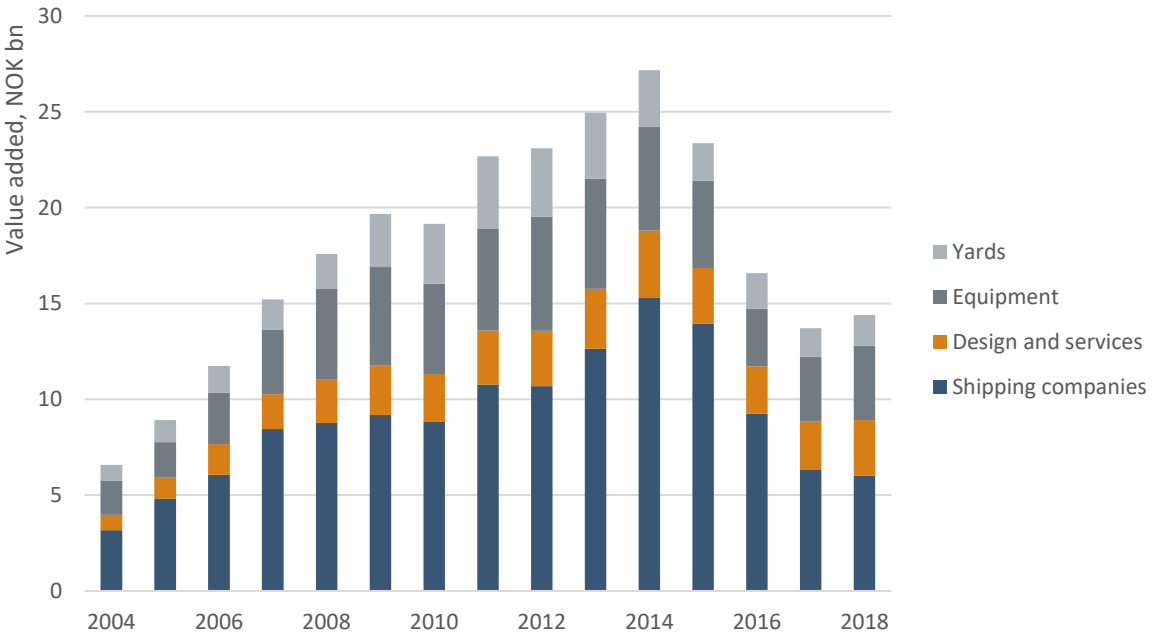
From 2004 to 2014, the cluster increased its value added by more than 300 per cent, rising from around NOK 7 billion to more than 26 billion. The cluster grew as the companies managed to land contracts for building, equipping and operating offshore vessels for the oil and gas industry.

From June to December 2014, the price of crude oil fell from over USD 110 to USD 50 per barrel, which sent shockwaves through the Norwegian economy. Due to its strong dependency on the oil and gas industry, the Blue Maritime cluster was severely hit by the subsequent downturn in activity. Overcapacity in the market for offshore vessels meant that shipping companies began an intense battle for contracts. Margins fell quickly in tandem with

significantly lower investments in new ships. That sent ripple effects upstream in the value chain, affecting the yards, equipment manufacturers and service providers.

The value added has declined since its peak in 2014 through 2017. However, in 2018, the total value added for the cluster increased by 5 per cent. This represents the first increase in value added since 2014. Value added grew in all the land-based segments in 2018, while the shipping companies continued their downward trend with value added falling by 5 per cent.

Figure 2-8: Development in value added in the cluster from 2004 to 2018. Source: Menon (2019)



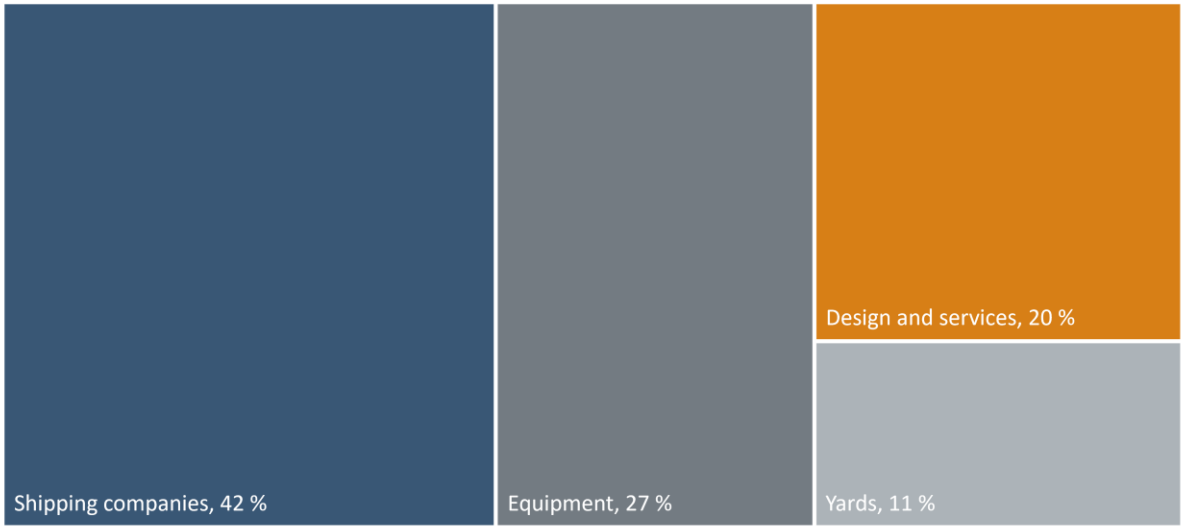
Value added grew by between 7 and 17 per cent in the land-based segments of the cluster. The service segment experienced the most substantial increase in value added, while the yards had the slowest growth among the land-based segments in 2018. The offshore shipping companies continued to face challenging market conditions in 2018, while the fishery/aquaculture-oriented shipping companies continued the growth from recent years. In total, the shipping segment's value added decreased by about 5 per cent between 2017 and 2018.

The increased value added in 2018 is likely the start of an upward trend for the coming years. The levels are however still believed to be well below what was seen in the years leading up to 2014, and value added in 2018 makes up under 60 per cent of the 2014-levels. In 2018, value added for the cluster is close to the level of value added in 2007. To be able to return to previous heights, the cluster must keep increasing activity levels while at the same time becoming more productive.

Value added

Value added is often used as a measure of activity. Value added is a company's purchases of goods and services deducted from its turnover. Value added is found in the accounts as the sum of EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) and wage costs. This measure has some key advantages others lack. It avoids double-counting purchases of goods and services, making the measure comparable across sectors. This is important in a cluster such as Blue Maritime where there is a high degree of internal sales. In addition, it can be used to measure the economic contribution or return from the sector to the national economy. This is possible because the measure shows how much is left for the key stakeholders in the industry, meaning employees through wages, government through taxes, creditors through interest payments on loans, and owners through profits.

Figure 2-9: The four segments' share of value creation in the Møre cluster. Source: Menon (2019)



The shipping companies, though struggling, still make up the largest portion of value added. In 2018 shipping makes up 42 per cent of the total value added in the cluster. Since last year, the shipping segment's share of value added has decreased by 5 percentage points. Shipping has since 2004 never made up a smaller share of total value added than this year.

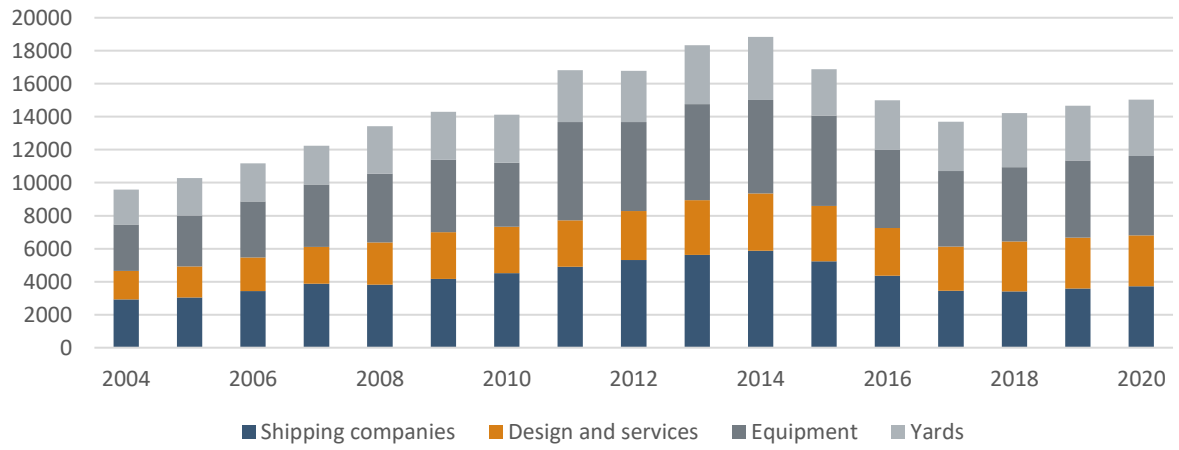
When shipping becomes less critical, other segments are growing relatively more important for the cluster. Equipment and services increased their share of value added by 2 percentage points each. The yards maintain their relative share from last year.

2.4. Employment is lagging behind revenues – productivity will have to increase first

In 2018 employment started to rise again, and the employment in the Blue Maritime cluster is expected to increase over the coming years. In 2018 the cluster companies employed 14 200 people, a 4 per cent increase since 2017. In 2020 employment is expected to reach 2016-levels with total employment exceeding 15 000. Compared to a 10 per cent increase in revenue from 2017 to 2018, it is clear that employment is lagging behind. Between 2018 and 2020, combined revenue for the cluster is expected to increase with almost 20 per cent, while

employment is expected to increase by 6 per cent over the same time period. The fact that employment increases relatively less than revenue might be a sign of improved profitability in the coming years.

Figure 2-10: Development in employment in the Blue Maritime cluster broken down on the four segments. Source: Menon (2019)



Between 2014 and 2017, around 5000 people saw their jobs disappear, which represents around 1 in 4 of the cluster employees in 2014. The reduction in employment is particularly visible for the equipment manufacturers and the shipping companies. For the equipment manufacturers, the poor performance has been driven by the leading industry locomotive, Kongsberg Maritime CM[4]. More than 500 people have lost their jobs in Kongsberg Maritime CM since 2014. For the equipment and shipping segment employment fell by 2 per cent compared to 2017. In the equipment segment this reduction is solely explained by Kongsberg Maritime CM, which cut back the number of employees by more than 200. Employment slightly increased among the other big manufacturers in 2018.

The decline for the shipping companies between 2016 and 2017 is partly explained by the Farstad exit, which saw around 450 employees leave the cluster in 2017. The departure of REM has also contributed to the reduction in employees in this segment since 2014.

Services and yards have experienced a smaller decline in employment than the other two segments. From 2017 to 2018, employment grew by 14 per cent in the service segment and by 10 per cent for the yards. Increased activity at the yards explains the need for manpower. If we look ahead, employment is expected to increase by 6 per cent from 2018 to 2020. All segments are expecting positive growth, but the highest growth is expected in shipping (10 per cent) and equipment (7 per cent).

[4] *Previously known as Rolls-Royce Marine*

3. Competitive analysis

In this chapter, we benchmark the cluster's performance to both national and international actors. The Blue Maritime Cluster developed slightly better than the benchmark of Norwegian maritime companies in 2018. The value added has stabilized for both the cluster and the benchmark. Moreover, the gap in productivity between the cluster and the benchmark was reduced in 2018.

At a segment level, the shipping companies are still struggling within offshore as debt is high and fleet utilization low, but the market prospects look somewhat better. The large equipment manufacturers continued to struggle with low profitability. Services, on the other hand, represents the most stable and profitable segment in the cluster. Møre and Romsdal remains the most crucial area in Norway for shipbuilding activities and income increased substantially in 2018. However, the yards still struggle with low profitability.

3.1. National benchmark analysis

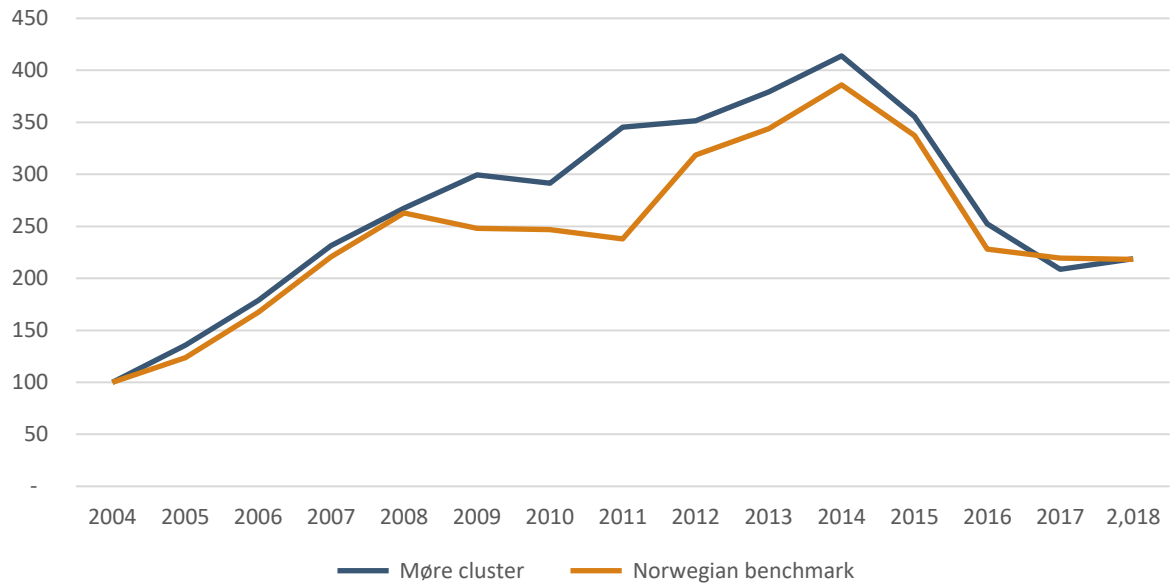
It is difficult to draw conclusions on the relative performance of the cluster based solely on the financial analysis for the cluster companies. Therefore, it is interesting to compare the performance of the Møre cluster to a benchmark of Norwegian companies in the same market segment[5]. This will allow us to analyze whether the developments are explained by market conditions or by factors within the cluster.

3.1.1. Møre developed better than the national benchmark in 2018

In the figure below, we have compared the value added in the Møre cluster to the national benchmark. We can observe a high level of correlation between the two. This tells us that the development in Møre and the benchmark is to a large degree driven by market characteristics. Therefore, it is most interesting to analyze where the two graphs diverge.

[5] *The benchmark consists of maritime companies with similar market focus and activity as the companies in the Møre cluster. The development in the benchmark is weighted so that the composition of different activities in the Norwegian benchmark is the same as in the Møre cluster.*

Figure 3-1: Indexed development of value added for the cluster and the Norwegian benchmark. Source: Menon (2019)



Both the cluster in Møre and the baseline of similar companies in Norway performed exceptionally well in the period from 2004-2008. Value added almost tripled in this period. In the following three years, however, the Møre cluster continued the same trajectory with an annual growth rate of 8 per cent and outperformed the Norwegian benchmark. Since 2011, the Norwegian benchmark has caught up and has been growing at a similar pace[6].

By 2014, the national benchmark had caught up with the Møre cluster. After 2014, both the Møre cluster and the national reference have faced harsh market conditions, and the value added fell significantly in both groups. It is interesting to observe that they fell at a similar, significant pace in 2015 and 2016.

In 2017, however, the national benchmark outperformed the Møre cluster[7]. This development was partly driven by the exit of Farstad and Rem, which contributed with a combined value added to the national benchmark of NOK 1.4 billion. The value added in the benchmark stabilized in 2017, while it increased between 2017 and 2018 in the cluster. In 2018 the cluster was at the same level of value added as the benchmark.

3.1.2. The Møre cluster still struggles with productivity

In 2017, the gap in productivity between the cluster and the benchmark increased as productivity in the benchmark group recovered in 2017[8]. In 2018, the difference between the Møre cluster and the national

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[6] The steep increase in the benchmark from 2011 to 2012 is explained by outstanding performance by the offshore shipping companies in the national benchmark, which represent an increasingly important share of the Møre cluster in these years. In particular, DOF Subsea increased its EBIT with more than NOK 1 billion from 2011 to 2012. In other segments, large companies like Technip and National Oilwell Varco also experienced high growth.

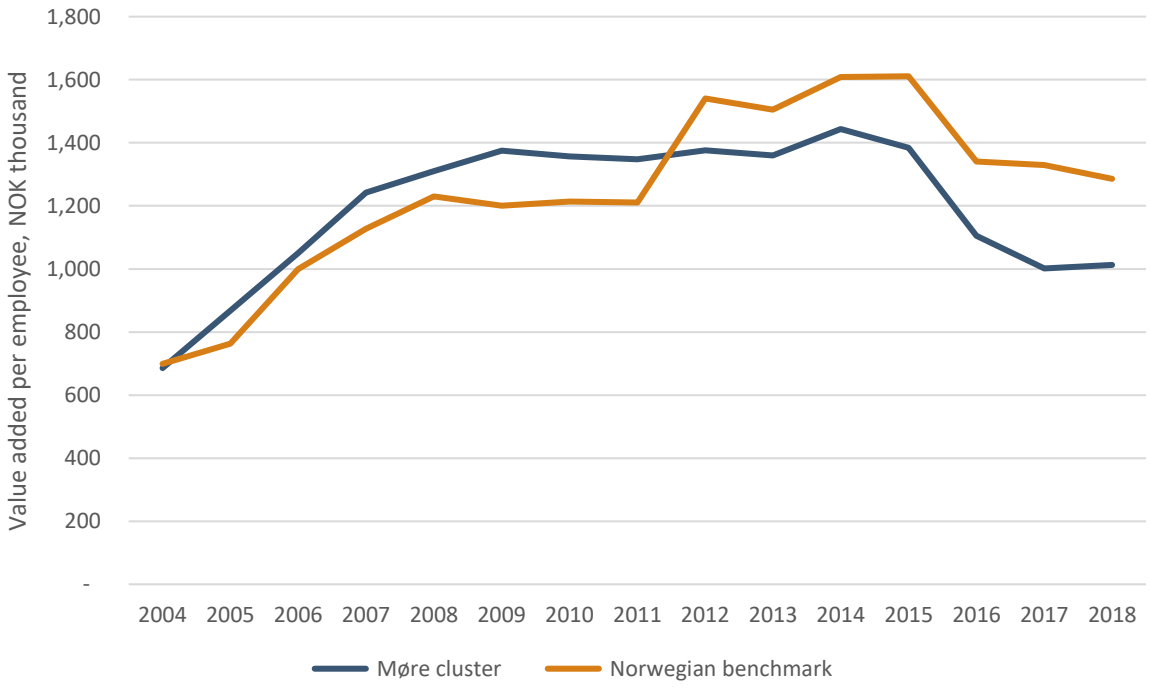
[7] It Is important to note that the value added per employee-measure is sensitive to changes in employees and capital from one year to the next. This could lead to a trend-shift larger than what is "real". For instance, if a company hires employees to prepare for higher activity, this can show up in the form of lower productivity from one year to the next.

[8] The development in the benchmark is driven by positive development in the offshore shipping segment. Companies like Polarcus, Farstad and the DOF and Technip subsidiary Techdof Brasil AS contribute to a positive development in the value added per employee in the benchmark.

benchmark is still large compared to previous years. This indicates that the Møre cluster's competitiveness is still facing challenges in times to come.

There are several potential explanations for this decline. The first is that the traditionally tightly integrated value chain, once the key feature of the Blue Maritime cluster, is becoming "looser" and the cluster linkages are weakened. As the shipping companies have not ordered ships for years, the yards needed to find new customers and new relationships. More generally, customers and suppliers outside the region have become more important. These characteristics can affect productivity as they influence both products and services demanded, business models and relationships.

Figure 3-2: Development in productivity (value added per employee) between the cluster and the national benchmark. Weighted average based on the cluster's share of employment in each segment. Source: Menon (2019)



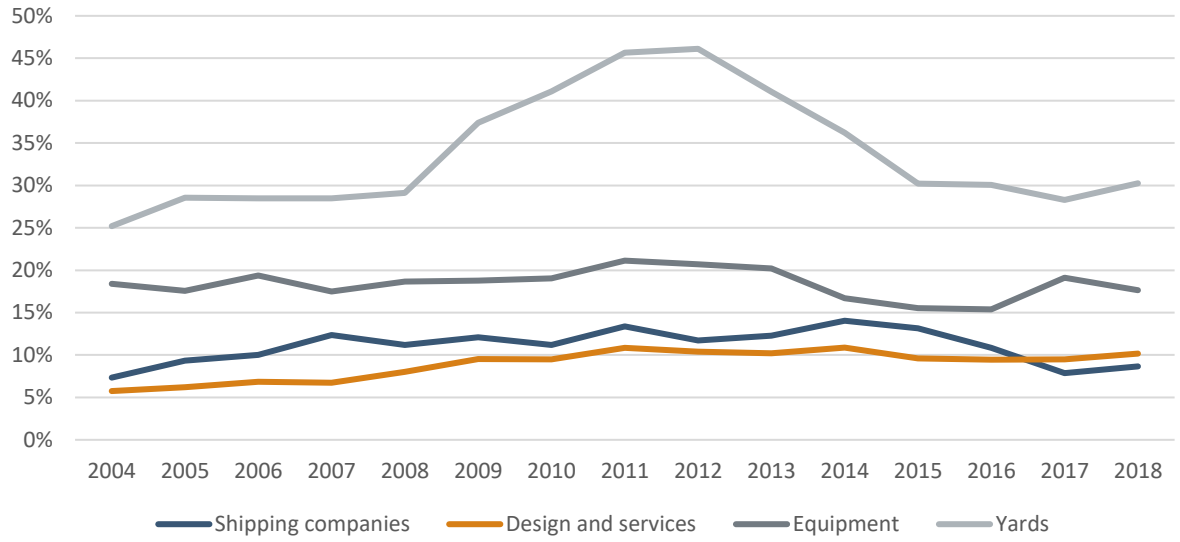
The graph illustrates the value added per employee in the two groups. It shows that value added per employee increased by more in Møre compared to the benchmark between 2008 and 2011. In 2012, the benchmark caught up and passed Møre. Again, this was driven in part by the introduction of productive offshore companies like DOF Subsea. Productivity in the cluster remained stable from 2009 and increased slightly before falling rapidly in 2014. Productivity in both groups fell between 2014 and 2016. In 2017, value added per employee in the cluster was back at the 2006-level, which is still the case in 2018.

3.1.3. Møre's share of value added in the Norwegian maritime industry remains on par with the last years

A more intuitive way of looking at the cluster's development compared to the domestic industry is to examine the cluster's share of domestic value added. This can illustrate the cluster's "market share" of the national market.

On an aggregate level, from 2004 until 2011 the cluster's share of the national value added increased from 10 to 16 per cent. Since then, this share has been falling to 12 per cent of the value added in the national industry in 2018. Overall, the development has differed greatly between the segments over time and it is therefore meaningful to look closer at the value added in the maritime industry at segment level.

Figure 3-3: Møre's share of the value added in the maritime industry. Source: Menon (2019)



There is substantial variation in the relative performance at the segment level, as seen in the figure. The shipping segment has experienced a steep decline in market share, driven by the Farstad/Rem-exit, decreasing by 6 percentage points between 2014 and 2017, while increasing to 9 per cent in 2018. On the other hand, the equipment manufacturers in Møre have performed relatively well, delivering 18 per cent of the value added nationally. For the equipment manufacturers, it is also important to note that this increase is partly explained by the poor performance of some of the leading companies in the benchmark. For instance, companies like National Oilwell Varco have experienced a dramatic fall in activity and will therefore represent a significantly lower share of the value creation among the national benchmark of equipment manufacturers.

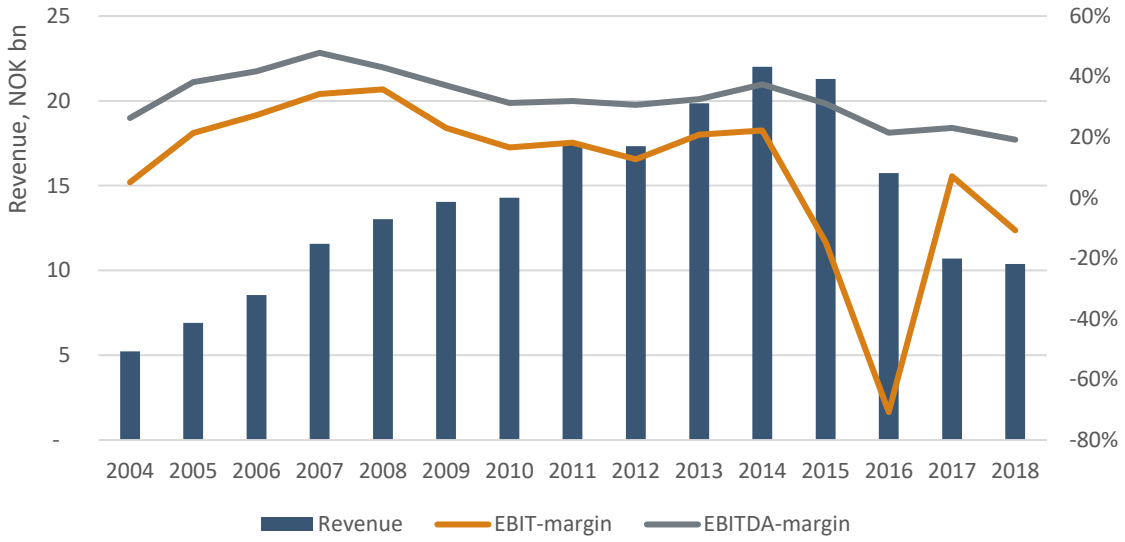
Yards is the segment where Møre continues to have the largest national share. This has stabilized at around one-third of the total value added for yards. Still, Møre's share of value added in this segment fell from 46 per cent in 2012 to 28 per cent in 2017, before slightly increasing to 30 per cent in 2018. The design and services segment is the most stable segment when it comes to Møre's share of national value added and has been around 10 per cent over the last decade.

3.2. Shipping companies are still struggling with oversupply and being profitable

Revenue among the shipping companies fell by three per cent in 2018. This represents the fourth consecutive year of falling revenues, but the decline has slowed significantly, and companies are expecting increased income in 2019. Value added and employment developed in line with revenue in 2018, with value added falling by five per cent and employment by 2 per cent.

Figure 3-4: Development within the shipping segment. Graph: Turnover and EBIT-margin for the shipping companies[9]. Table: KPI for the shipping segment. Source: Menon (2019)

	2016	2017	2018	Change 2017-18
Value added	9.2 NOK bn	6.3 NOK bn	6.0 NOK bn	-5%
Employment	4400	3500	3400	-2%



A tale of two stories

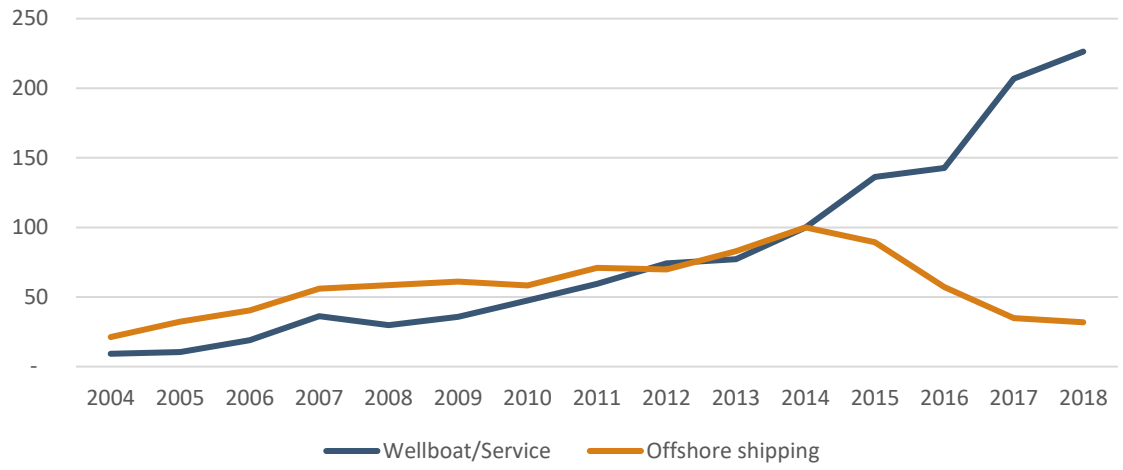
The shipping sector consists of two segments within the industry which have developed very differently since 2014. The offshore shipping segment has developed negatively since the reduction in oil prices. If we look at value added, the offshore shipping segment has experienced negative growth in value added every year since 2014. Between 2014 and 2018 the value added has decreased by 68 per cent.

For the wellboat/service segment, the story is entirely different. Since 2014 the value added in this segment has increased by a total of 126 per cent, as seen in Figure 3-5. These companies have thrived by offering services like transport of smolt and fish to the aquaculture industry. This becomes clear when we look at the Norwegian orderbook, where the total number of well/service boats has increased from 3 vessels in January 2015 to 14 in 2019. Well/service boats made up 12 per cent of the Norwegian orderbook value in 2019.

Still, the offshore shipping companies are larger than those operating in the aquaculture segment. This explains why the shipping market, in aggregate, presents negative numbers in terms of both value added and operating profits in 2018.

[9] The large decline from 2016 to 2017, as observed in Figure 3-4, is largely driven by the exit of Farstad and Rem from the cluster.

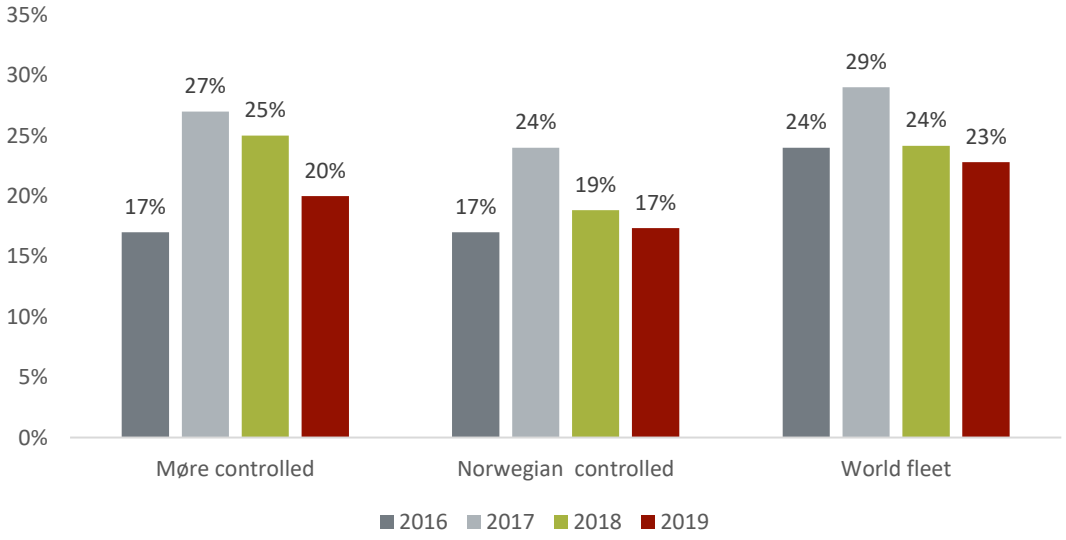
Figure 3-5: Development in value added for the wellboat/service segment vs. the offshore shipping segment. Indexed in 2014. Source: Menon (2019)



Fleet utilization is better – but the offshore companies still struggle with a high share of laid-up vessels

The offshore companies operate in a global market, and after the oil-price shock in 2014, the global offshore shipping industry was struck. As a result of this downturn in activity, a substantial share of the fleet was laid up. Consequently, the reduction in the number of laid-up ships seen now indicates that the market situation has improved as ships are being prepared to go back into service.

Figure 3-6: Share of the respective groups' offshore fleet that is laid up. Source: Clarkson/Menon (2018)

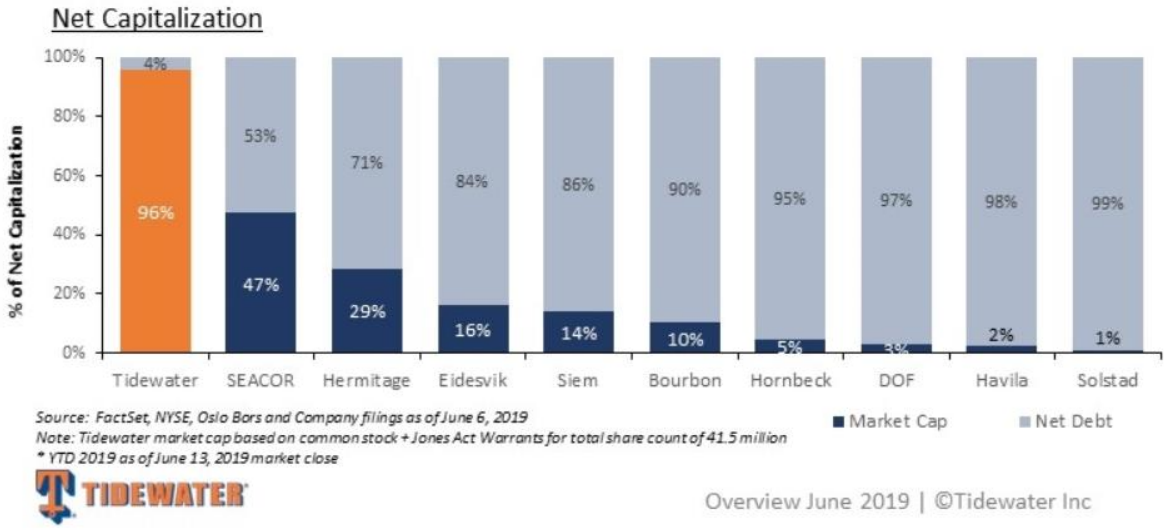


In 2016, the Møre and the remaining Norwegian-controlled fleet had a significantly lower-than-average share of the fleet laid up compared to the world fleet. Two years later, this situation worsened for the Møre-controlled fleet: the percentage of vessels laid up increased to a level that was higher than the world average. Meanwhile, the remaining Norwegian-controlled fleet still had a significantly lower-than-average share of vessels laid up. As of September 2019, 1 in 5 vessels in the Møre-controlled fleet are laid up, which is 3 percentage points lower than for the world fleet. The remaining Norwegian fleet still has relatively fewer ships laid up compared to Møre and the rest of the world, with 17 per cent of vessels laid up.

Norwegian owners are highly leveraged – which reduces their international competitiveness

The graph below illustrates one of the most significant challenges for both Møre-based and Norwegian owners. The offshore shipping companies in Norway have high debt levels compared to their international competitors. Financial costs make up a large share of the input costs in the industry. Due to this, it will be difficult for Norwegian shipping companies to compete against the larger international players with a lower level of debt.

Figure 3-7: Market value as the share of Net Capitalization. Source: Tidewater (2019)



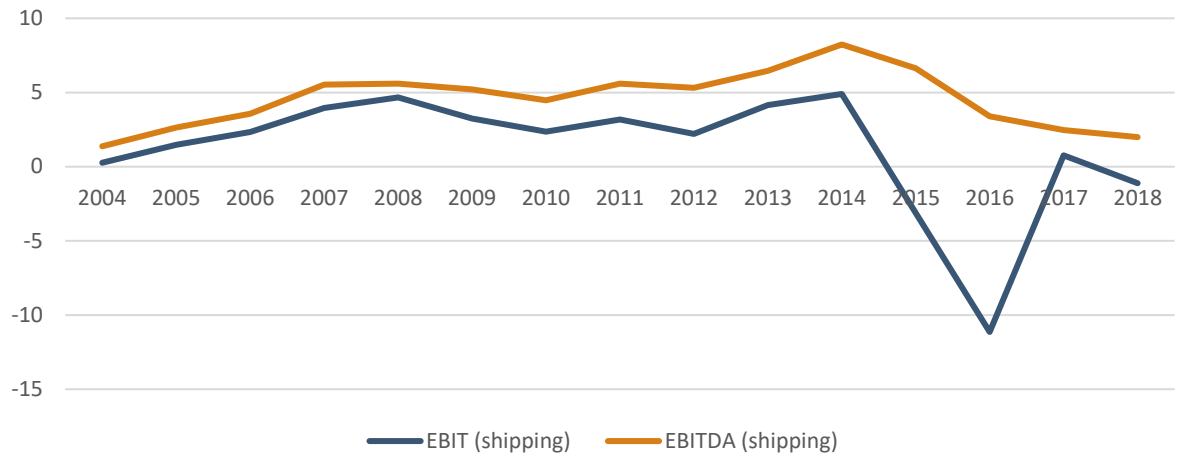
Are the losses taken? – It will depend on the development in fleet value

2016 was characterized by write-downs of values in the shipping segment. The EBIT-margin analysis earlier in this report includes the cost of depreciation and amortization, which is a vital part of the more capital-intensive segments in the cluster, like the shipping segment. It is therefore interesting to compare the EBIT to the EBITDA (excluding depreciation and amortization) for the shipping companies.

The interesting point here is that the EBIT and EBITDA converged in 2017. The value of the depreciation and amortization in 2017 was similar to the gap between the two metrics (EBIT and EBITDA) in the period before the significant write-downs in 2015 and 2016. This did at the time suggest that the majority of the losses were taken in 2016. However, this year we see that the gap between EBITDA and EBIT has increased again. Havila, Bourbon and Olympic all had significant write-downs in 2018, with Havila writing down almost NOK 900 million.

As seen in Figure 3-8, substantial losses were taken in 2016, and Olympic alone wrote down NOK 1.9 billion. In the following year, it seemed like some of the losses taken in 2016 were too large and Olympic reported negative write-downs of NOK 536 million. However, in 2018 Olympic ended up writing down almost NOK 200 million again, suggesting that the losses were not yet dealt with after all.

Figure 3-8: EBITDA and EBIT. Source: Menon (2019)



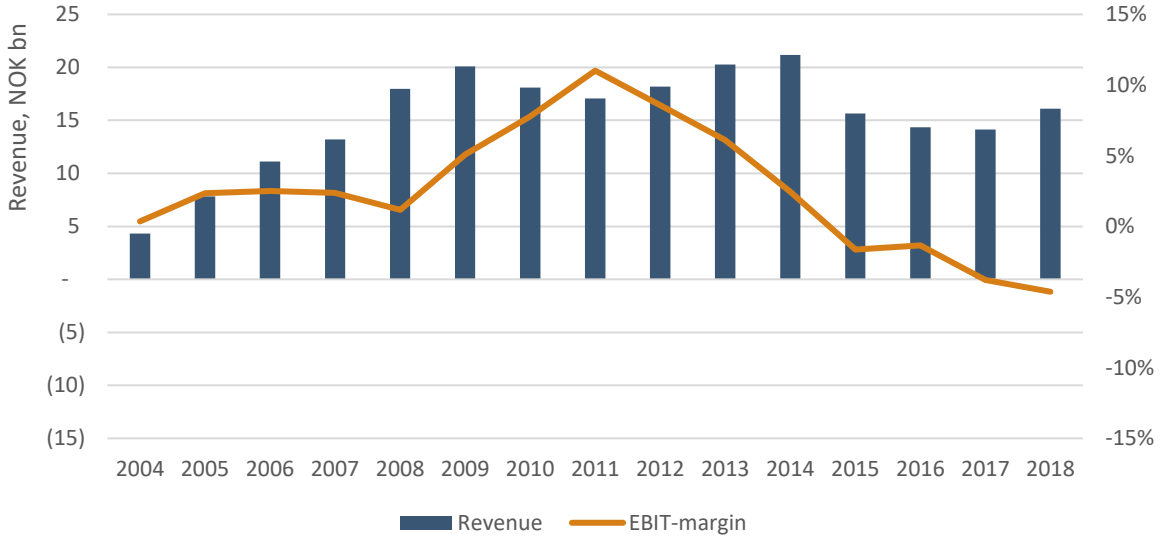
The development in the fleet valuation is hard to foresee. However, some say that 1 200 PSVs and AHTS need to be removed from the 2019-fleet to make utilization return to 80 per cent[10].[11] A more stable valuation of assets is crucial in order to reduce risk and bring down the financial costs.

[10] *Of the peak of previous up-cycle*
[11] *Nordea (2019)*

3.3. The cruise segment drives activity at the yards up – but there are still problems with profitability

Figure 3-9: Development within the yards segment. Graph: Turnover and EBIT-margin for the yards. Table: KPI for the yards segment. Source: Menon (2018)

	2016	2017	2018	Change 2017-18
Value added	1.8 NOK bn	1.5 NOK bn	1.6 NOK bn	8%
Employment	3000	3000	3300	10%



Møre og Romsdal is the most critical region for shipbuilding in Norway. All production of cruise ships in Norway takes place in yards located here. A vast majority of offshore vessels have also been produced here for the last ten years. Between 2014 and 2017 almost 1000 employees lost their jobs at the yards. Now the yards are hiring again, and in 2018 the Møre yards employed nearly 3 300 people. By 2020 they expect to reach 3 400 employees. This is the highest level since 2014. Not all yards are expecting growth in employees though. In September 2019 Kleven announced a restructuring of the company resulting in a planned cut-back of 100 employees over the next year.[12]

The yards are highly leveraged and will need to deliver profits soon

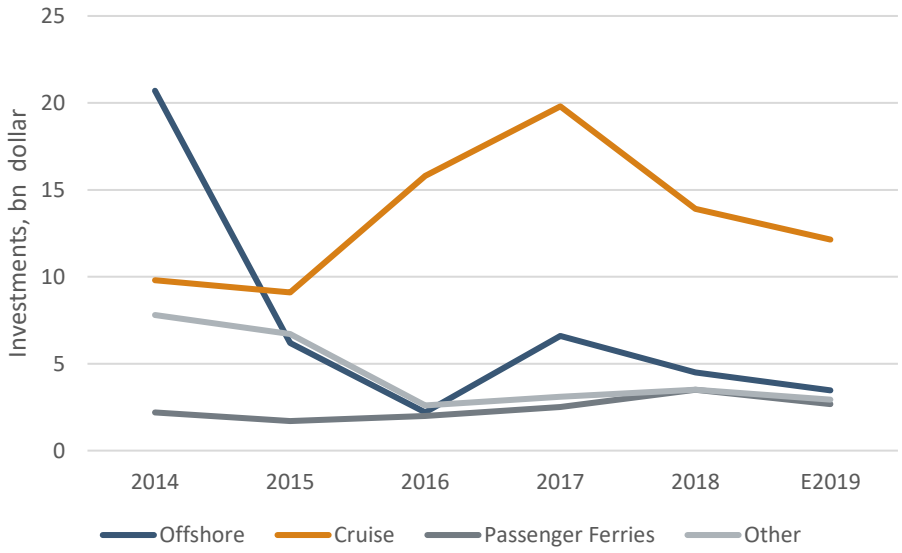
The yards are still struggling to be profitable. As the new-building activity fell, the yards engaged in fierce competition for new contracts. This has pushed down margins and the four major yards, Vard, Kleven, Ulstein and Havyard, have taken significant losses. Due to Vard's losses over the last five years Fincantieri, Vard's Italian owner, has recapitalized the company with NOK 900 million in new equity and an equal-sized loan in September 2019. In 2015 and 2017 Fincantieri also converted parts of Vard's debt to equity.[13] The restructuring of Kleven in September this year resulted in "Nye Kleven" which is controlled by the banks and Hurtigruten in a transition period.

[12] *Kleven 20.09.2019, https://www.kleven.no/nyhende-artiklar/ny-start-og-ny-kontrakt-for-kleven-verft*
[13] *Finansavisen 20.09.2019, https://finansavisen.no/nyheter/industri/2019/09/19/6962073/fincantieri-blar-opp-med-lan-og-egenkapital*

Møre yards are well-positioned in the cruise market

According to Clarksons Shipyard Monitor, the annual investment in cruise vessels has more than doubled between 2015 and 2017. From 2017 going forward the investments have gradually declined. The expectations for 2019 show some decline, but at a slower rate, which might indicate a stabilization of the global investments in the cruise segment. This could be a sign of a maturing market. In 2019 it is estimated that investments in the cruise market are more than four times as large as for the passenger ferries market, and more than 30 per cent larger than other specialized vessels combined.

Figure 3-10: Investments in specialized vessels 2014-E2019, billion dollars. Source: Clarksons (Shipyard Monitor)/Menon (2019)



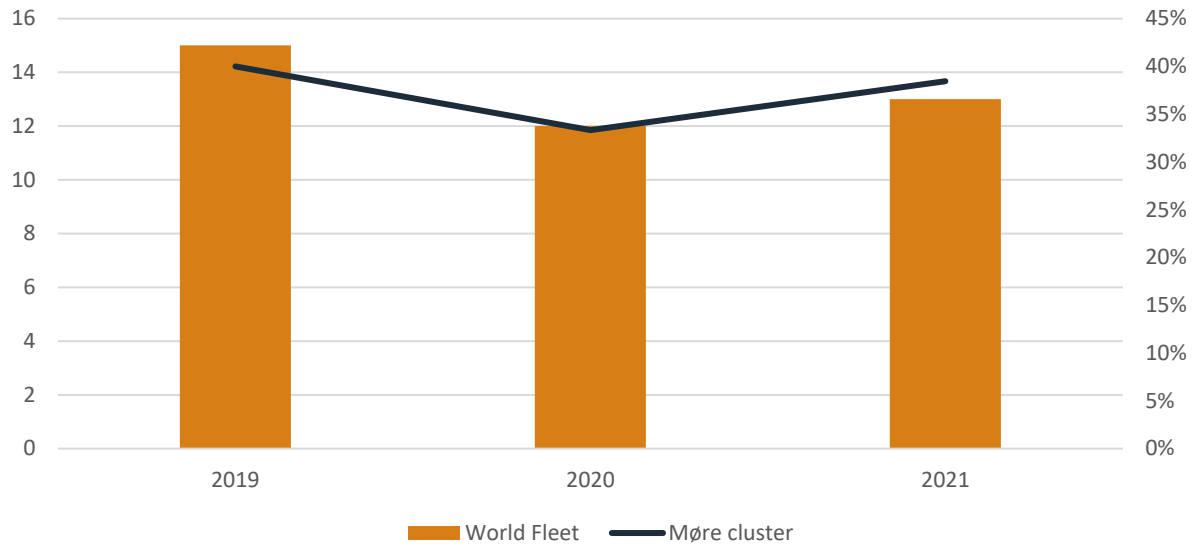
If we take a closer look at orderbooks for the global cruise market, it becomes clear that the Møre yards have positioned themselves well. Of all cruise ships in the orderbooks between 2019 and 2021, the Møre yards have a significant share of 21 per cent. If we narrow the market down to vessels less than 50 000 tonnages, the share increases to 38 per cent.

Most of these vessels are going to be produced by Vard, which may be a result of Fincantieri's position as a significant player in building cruise ships. Fincantieri may therefore help Vard to succeed in the transition from the production of OSVs to cruise ships by sharing some of its expertise. For example, Viking Ocean, a cruise line that has placed multiple orders with Fincantieri, has also placed orders with Vard. Another contributing factor may be that Vard has multiple yards and great flexibility in moving personnel between them. The other two Møre yards that have cruise vessels in their orderbooks are Kleven and Ulstein.

Apart from the production process, Ulstein has designed a series of expedition cruise ships that will be built by CMIH in China.[14]

[14] https://ulstein.com/sunstones-chinese-built-cruise-vessels

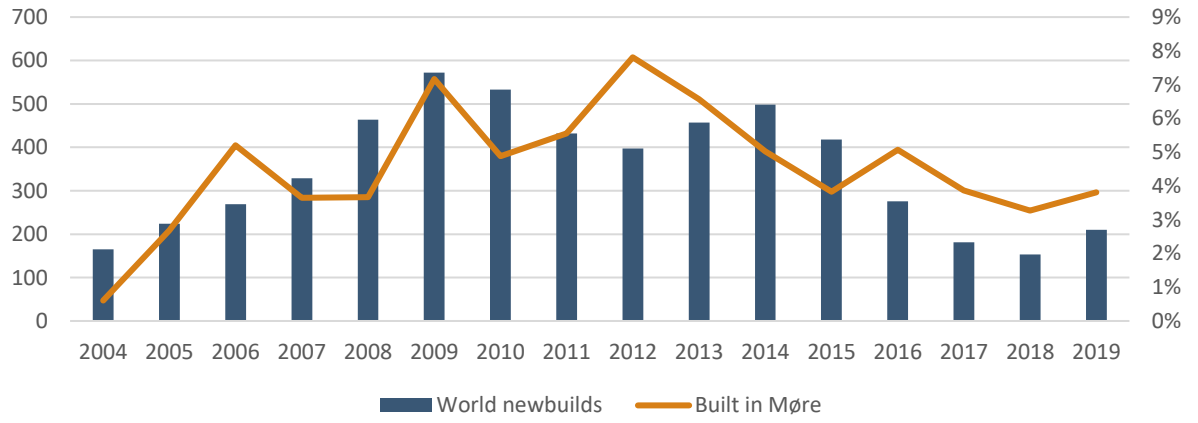
Figure 3-11: Total number of cruise vessels in orderbooks globally (left axis) and Møre's share of the world market (right axis). Cruise Industry News, Annual Report 2019/Menon (2019)



Demand for offshore vessels have fallen dramatically – and the Møre yards have lost market shares

Delivering highly specialized and offshore vessels has been the main driving force for the performance of the yards (and the whole maritime cluster) in Møre. However, as the offshore market has experienced significantly lower activity levels and massive oversupply of vessels, the market conditions for offshore-dependent yards have been harsh. The Møre yards peaked with a market share of 8 per cent in 2012. From 2014 onwards the newbuild market for offshore vessels has decreased steadily until 2018, with a slight increase in 2019. Møre's share of the worlds newbuild market has halved since 2012 and is currently around 4 per cent of the world market for offshore vessels. The orderbook value follows a similar pattern, where Møre's share dropped from about 5 to 2 per cent of the global orderbook value between 2013 and 2018.

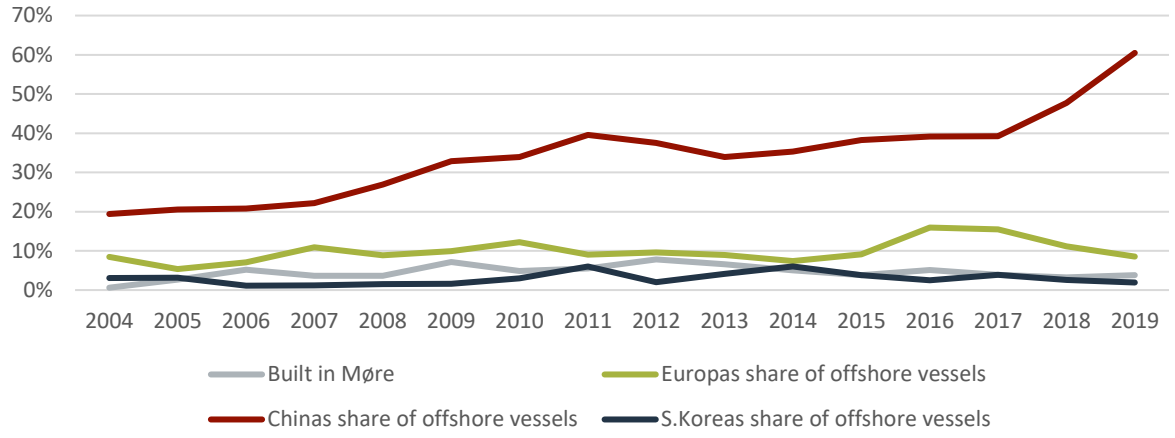
Figure 3-12: Annual deliveries of offshore vessels world-wide and Møre's share of these deliveries. Source: Clarksons/ Menon (2019)



China is taking over the market for offshore vessels, and in 2019 the country has a market share of 60 per cent of the total deliveries. European yards have lost market share since 2015, down 7 percentage points to 9 per cent in 2019. South Korean yards' market share has been stable over time.

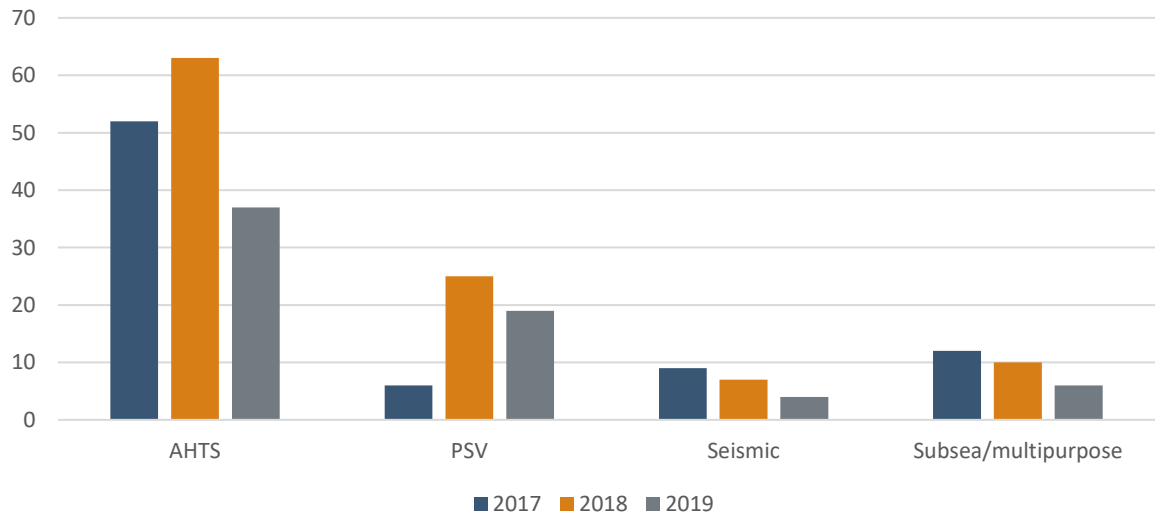
China is traditionally known to produce at low cost and production is often standardized. This may indicate that demand for specialized vessels, such as those produced in Møre, has decreased. Another contributing factor might be that Chinese yards now have obtained a similar level of expertise and are able to capture market shares due to lower costs. Whatever the reason, the Møre yards are struggling to maintain their market share, while the Chinese yards have increased theirs from 35 per cent in 2014 to 60 per cent in 2019.

Figure 3-13: Share of world's offshore vessels, newbuild by year. Source: Clarksons/Menon (2019)



Few OSVs are scrapped despite the oversupply. Around 55 AHTS vessels were scrapped each year in 2017 and 2018. In August 2019 this number is below 40, suggesting similar numbers as the last 2 years at year-end. For PSVs, six were scrapped in 2017 and 25 in 2018. So far in 2019, 19 PSVs have been demolished. Low scrapping value compared to other types of ships and the high cost of conversion for reuse in other segments makes the opportunity cost for vessels that are laid up relatively smaller for OSV vessels than others. This may explain the relatively low scrapping rate in the offshore segment, and the fact that ships are laid up for an extended period. This gives an annual scrapping rate in 2018 of 1.5 and 2.8 per cent, for PSV and AHTS. For seismic and subsea/multipurpose vessels, 2.5 and 1.5 per cent of the total fleet was demolished in 2018.

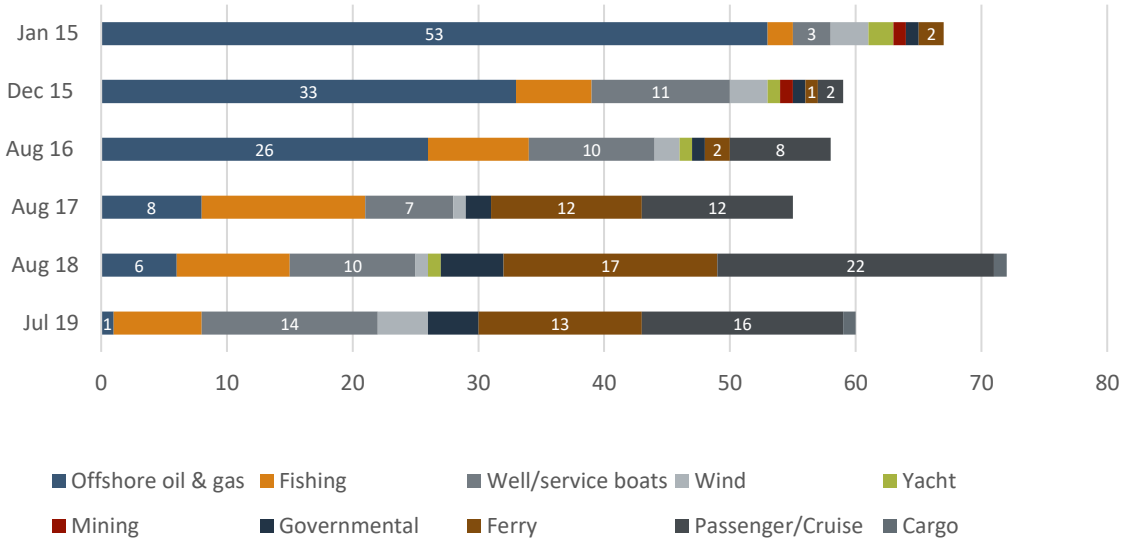
Figure 3-14: Scrapping of AHTS, PSV, seismic and subsea vessels (in numbers) 2017-sep. 2019. Clarksons/Menon (2019)



A story of restructuring capability – offshore's share of the yards' orderbook reduced from 80 to 2 per cent in four years

From January 2015 to July 2019 the offshore oil and gas segment in Norwegian orderbooks has decreased dramatically from 80 to 2 per cent of the total number of vessels in the orderbooks. In January 2015 there were 53 offshore oil and gas vessels in the orderbook, by July 2019 this was reduced to 1 single ship. The combination of lower demand and cancellation of existing contracts have forced the yards to look for alternatives.

Figure 3-15: Number of vessels in the Norwegian orderbook in July 2019 split by type of vessel. Source: Norsk Industri (2018)



As we can see from Figure 3-15, the yards have managed to position themselves in alternative markets, and as discussed, the cruise market is becoming more critical than ever before. Also ferries and fishery (including well/service boats) are becoming a part of the new dominating block of the orderbook, replacing the offshore oil and gas segment. These three segments now represent close to 85 per cent of the orderbook, which is an increase of more than 70 percentage points since January 2015.

The increased amount of orders in the ferry market is a result of the ongoing renewal of the Norwegian ferry fleet. There has also been a focus on green energy which has offered new business opportunities. Havyard has become an important player in the ferry market and delivered four fully electric ferries to Fjord1 in 2018. In 2019 Havyard is delivering seven additional ferries.[15]

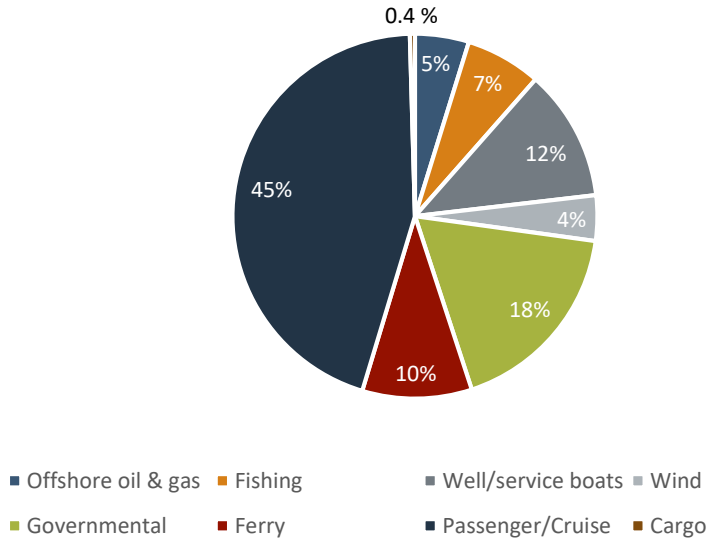
Norwegian yards' orderbooks are down from last year's record-high value – still more diversified than ever

The orderbook value for Norwegian yards is down by 21 per cent to NOK 33.5 billion in 2019, compared to the previous year's record high at NOK 42 billion. Still, this is the same level as the value of the orderbook in early 2015. Cruise vessels are, as last year, taking up close to 50 per cent of the orderbook value at Norwegian yards. Fishery (including well/service boats) has a share of almost 20 per cent of the total orderbook value in 2019.

[15] *Havyard, Annual Report 2018,* *https://www.havyard.com/download?objectPath=/upload_images/7F0197C50AEB4DB8B5C5D7DE92E25641.pdf*

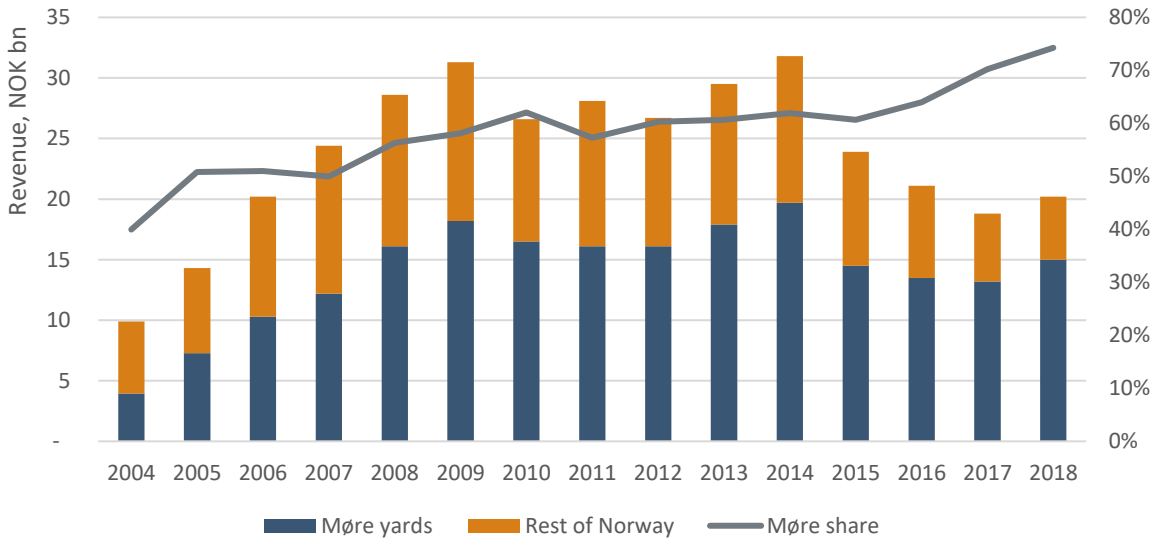
Governmental ships are making up 18 per cent of the total value and ferries 10 per cent. A majority of the orderbook value in Figure 3-16 is attributed to the Møre yards.

Figure 3-16: Value of Norwegian orderbook in August 2018 split by type of vessel. Source: Norsk Industri (2018)



Judging by the self-reported order reserves at the Møre yards in this year's survey, the cluster continuously increases its market share of deliveries from Norwegian yards in terms of value. We see clear evidence of this trend in the development of the Møre yards' percentage of income among the bigger yards in Norway (Figure 3-17).

Figure 3-17: Historical development in revenue – yards with revenue above NOK 100 million in 2018. Menon (2019)



The yards with revenue above NOK 100 million are to a larger degree involved in the building of new ships, compared to smaller yards which are more likely to be involved in repairs etc. These larger yards have a harder

time finding new opportunities when traditional markets are weakening. Norwegian yards experienced a decline in revenue post-2014. However, between 2014 and 2018 Møre yards have managed to capture market shares from other Norwegian yards. An important factor that could explain this is the Møre yards' shift towards the cruise segment. As seen in Figure 3-17, the large Møre yards have started to earn more money in the new market segments in 2018. However, they are still struggling with profitability.

3.4. The large equipment manufacturers are struggling while the SMEs remain profitable

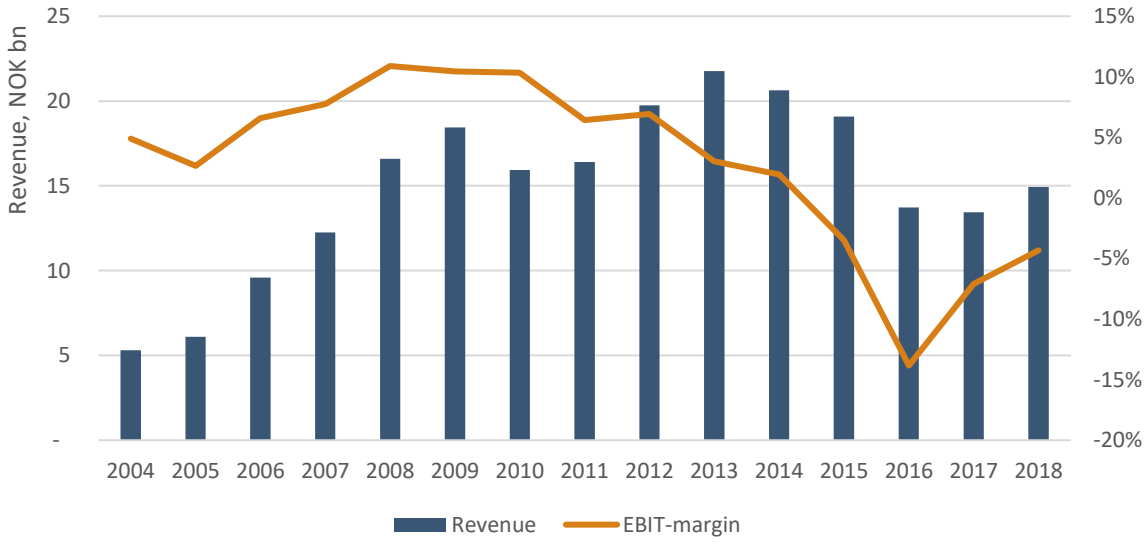
Revenues are once again pointing up for the equipment manufacturers. The continued decrease in revenue between 2013 and 2017 saw a third of the segment's income disappear. In 2018, revenue increased by 11 per cent. Combined with better operating margins, though still negative, value added grew as well.

Employment fell by 2 per cent in 2018, solely driven by continued down-sizing in the old Rolls-Royce Marine – now Kongsberg Maritime CM. For the other members of the segment, employment increased slightly in 2018.

With the poor performance in the offshore shipping segment, the equipment manufacturers contribute with an increasing share of the value added in the cluster. In 2017, they contribute with 27 per cent, the highest share for the equipment manufacturers since 2008.

Figure 3-18: Development within the equipment manufacturers segment. Graph: Turnover and EBIT-margin. Table: KPI for the equipment manufacturers segment. Source: Menon (2018)

	2016	2017	2018	Change 2017-18
Value added	3.0 NOK bn	3.4 NOK bn	3.9 NOK bn	14%
Employment	4700	4600	4500	-2%



The Møre cluster is home to some of the world's leading equipment manufacturers with Rolls-Royce Marine at the forefront. Through several acquisitions, Rolls-Royce Marine grew into the largest equipment manufacturer in the cluster, accounting for more than half of the revenue within the segment. In recent years, Rolls-Royce has struggled. Since the peak in 2010, Rolls-Royce's revenues have fallen with almost 60 per cent, and since 2014, it has had an accumulated operating loss amounting to more than NOK 4 billion. Developments within the segment have consequently been dominated by this one player.

Kongsberg Maritime completed the planned take-over of Rolls-Royce Marine in April 2019. How Kongsberg will integrate the newly acquired company is not yet completely clear. It remains to be seen how Kongsberg is planning to steer the old Rolls-Royce Marine onto a profitable course.

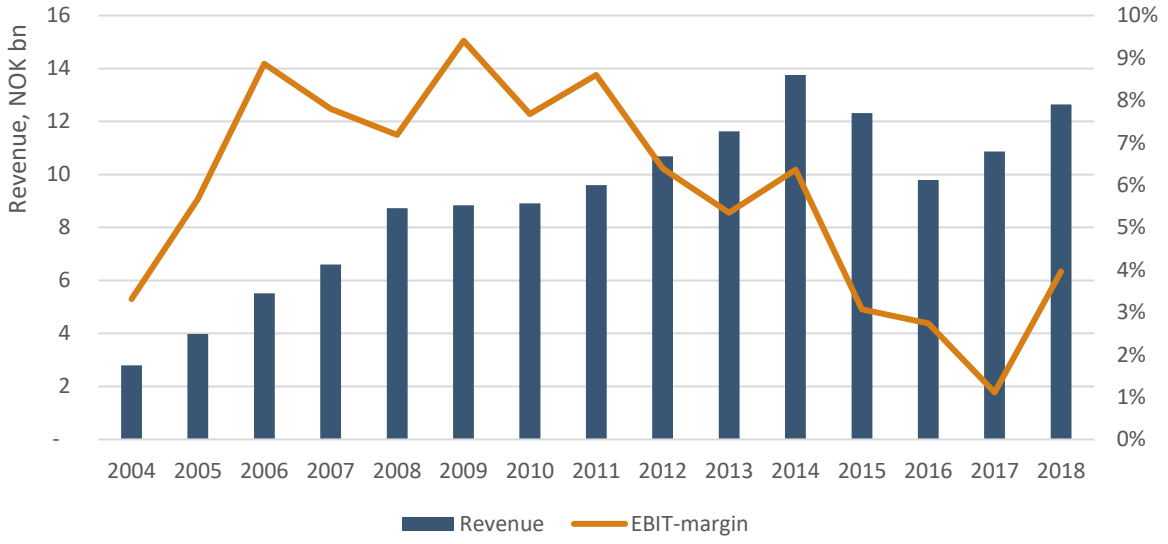
The weak aggregate results on a segment level hide the fact that besides the largest companies in this segment, the remaining companies are still profitable. Profitability for the small and medium-sized companies in the equipment segment has also fallen in the last years. Still, they delivered a positive net operating profit in 2016 and 2017, illustrating that many of these companies have been able to stay profitable.

Like last year, the SME's are outperforming the largest players in the equipment segment. The average operating margin among companies in equipment is 6 per cent, compared to the combined measure of -4 per cent. A closer look at the segment reveals that 60 per cent of the companies have a positive operating margin, which indicates that the large companies are the ones struggling to adapt to new market conditions. 23 per cent have a lower operating margin than -4 per cent. The larger companies are struggling partly due to lack of demand from traditional customers, like the yards, but also because of large investments in R&D.

3.5. Services is the most stable segment of the cluster

Figure 3-19: Development within the services segment. Graph: Turnover and EBIT-margin. Table: KPI for the service segment. Source: Menon (2018)

	2016	2017	2018	Change 2017-18
Value added	2.5 NOK bn	2.5 NOK bn	2.9 NOK bn	17%
Employment	2900	2700	3000	14%



The services segment consists of companies that provide services to other companies in the cluster or directly to foreign companies. Activities include trade, installation and service of ship equipment, and other specialized maritime services like ship design.

During the downturn after 2014, both revenues and value added fell significantly for the services segment. However, the activity in the services segment is far less volatile than in any other segment of the cluster. From 2014 to 2018 the value added fell by 17 per cent, which is far less than the decrease in the other segments

ranging between -28 and -61 per cent. If we look at revenue, the service segment's revenue fell by 8 per cent between 2014 and 2018, compared to the other segments, which ranged between -24 and -53 per cent. Moreover, with the continued downturn in shipping, the service segment contributed with its highest share of value added ever in 2018 at 20 per cent, surpassing last year's all-time high. The service segment is becoming more important for the cluster.

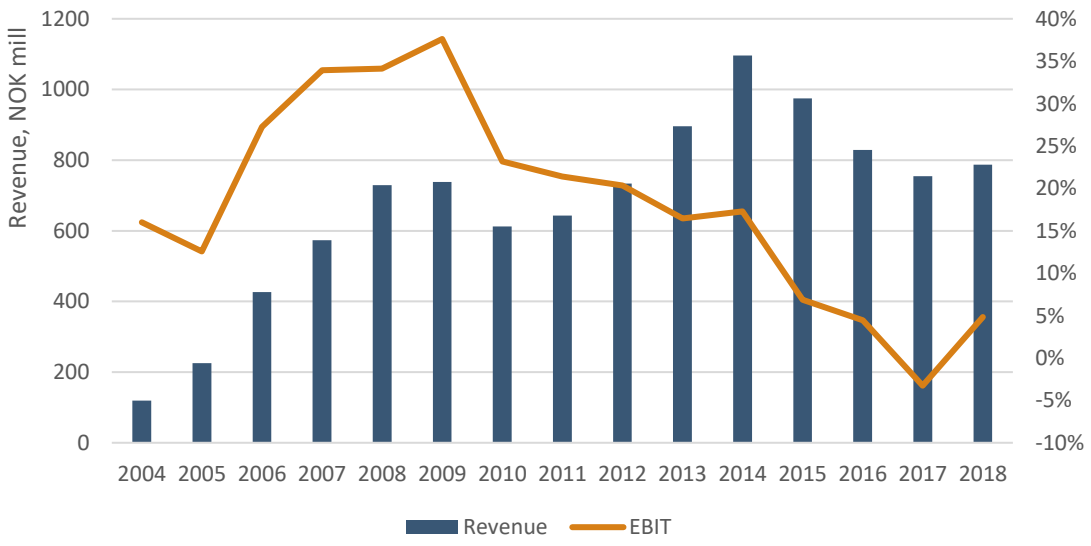
The single most important segment within services is technological services, like ship design or technologically demanding engineering services. It contributes to 65 per cent of the employment and 66 per cent of value added within services. Retail/trade also represents a significant share of this segment, especially for the revenues.

The service segment includes a diverse group of companies, delivering services to a broad set of clients. This makes it harder to benchmark the relative performance of the Møre companies on a segment level. Even within the individual segments, the companies target clients from different parts of the maritime industry, which makes the groups incommensurable.

The design companies have experienced tough market conditions

Design companies are a major driver for innovation and product development in the cluster and a key component of the valuation of ship concepts to the yards' customers. They play a significant role in proposing design solutions to ship owners, based on what the Møre yards and equipment producers can deliver. The Møre cluster design companies also design ships outside the Møre cluster. Three of the four big yards have an in-house design department.

Figure 3-20: Revenue and EBIT-margin for the design companies. Source: Menon (2019)



The design companies have been through a tough period with declining EBIT-margin since 2009 and falling revenue since 2014. However, in 2018 the EBIT-margin increased by 8 percentage points, from -3 to 5 per cent. The revenue increased by 4 per cent since last year.

Like the yards, design companies are also involved in the cruise market, both inside and outside the Møre cluster. Ulstein signed its fourth contract with the cruise line SunStone in February 2019. The expedition cruise vessels in

SunStone Ship's Infinity-series are produced at the Chinese yard CMHI with Ulstein's design solutions.[16] In the ongoing renewal of the Norwegian ferry fleet, Havyard Design & Solutions are designing all ferries produced by Havyard for Fjord1. Furthermore, the Fjord1 ferries that are built at Cemre Shipyard are designed by Havyard Design & Solutions.[17]

In the offshore wind segment, Ulstein signed a deal with Aeolus Energy Inc. in 2018 and is designing one SOV for the Florida-based company. Ulstein's entry in the North American market may mark a breakthrough for Norwegian design companies.[18]

[16] *Ulstein (2019), https://ulstein.com/news/2019/ulstein-har-fatt-kontrakt-pa-fjerde-cruiseskip-for-sunstone*
[17] *Sysla Maritim (2018), https://sysla.no/maritim/havyard-landet-storkontrakt-med-fjord1/*
[18] *Ulstein (2018), https://ulstein.com/news/2018/aeolus-energy-awards-sov-design-to-ulstein-first-jones-act-compliant-offshore-wind-vessel*

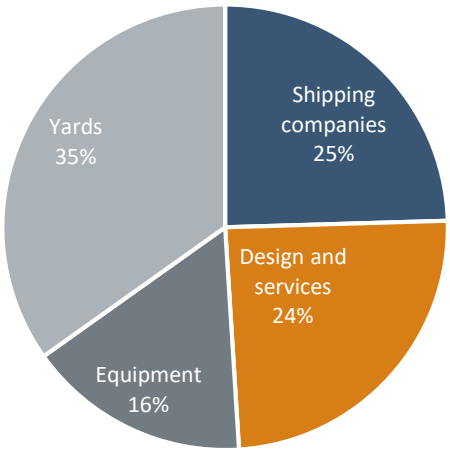
4. Looking ahead

Going forward, the Blue Maritime cluster is seeing a significant growth in orderbooks, and a large share of total orderbook value for yards, equipment manufacturers and design/service companies comes from the cruise and yacht market. The cluster is showing signs of disintegration, with customers and suppliers outside Møre becoming more important. Still, it is reasonable to assume that the equipment manufacturers' and design/ service companies' large share of orders from the cruise and yacht market is channeled towards yards in Møre. The cluster has a positive outlook on profitability and is more optimistic than the two previous years. However, to succeed in the future the Blue Maritime cluster expects to employ people with another skillset than today. Especially digital competence is deemed more important in the future.

4.1. Significant growth in orderbooks – the combined order reserve per August 2019 secures 19 months of operations

The companies within the Møre cluster have increased their order reserves substantially over the last year. The order reserves are estimated to stand at NOK 85 billion, now securing 19 months of operation compared to 14 months a year ago. Backlog value is equivalent to almost two years of operations for both the shipping companies and the yards. Order reserves are relatively smaller at the equipment manufacturers as backlog value makes up close to one year of operations. This is, however, a significant improvement from last year when order reserves made up about 7 months of operation.

Figure 4-1: Order reserves in the Blue Maritime cluster in August 2019. Source: Menon



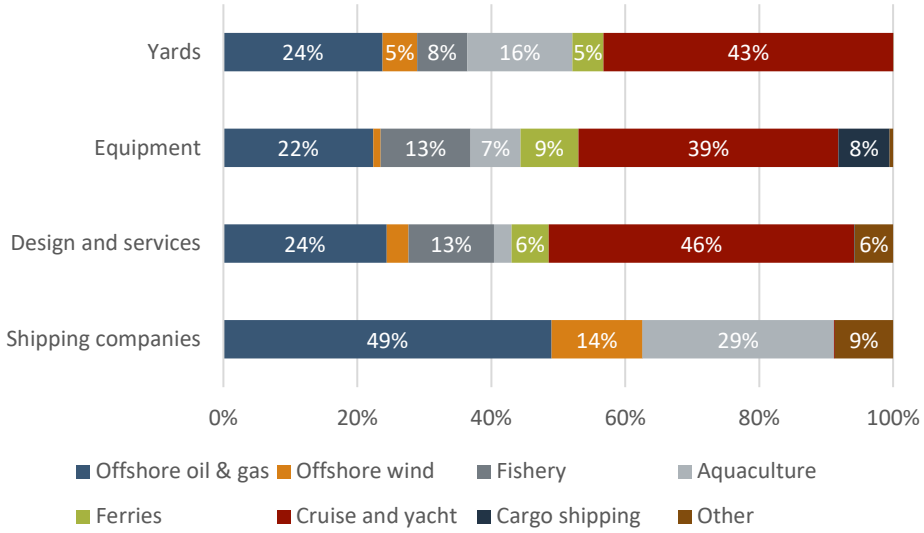
4.1.1. The cruise market makes up about 40 per cent of the order value in all land-based segments

The cruise segment makes up close to half of the order value in the land-based segment. Market segmentation is consistent with current revenue streams for the yards, shipping companies and service providers. Equipment manufacturers however have a substantially larger share of their order value from the cruise segment than the current revenue stream. This development is proof of the yards' importance as a motor in the cluster. The yards

have redirected a large portion of their deliveries towards the cruise segment over the last years. The equipment manufacturers have then in turn redirected towards the cruise segment as is now seen in the orderbooks.

Cargo shipping makes up a smaller share of order reserves than revenues for equipment suppliers. This is not necessarily an omen of the cargo shipping segment decreasing substantially in importance, but rather a sign of orders typically coming with shorter delivery times.

Figure 4-2: Orderbook value distribution in the Blue Maritime cluster in August 2019. Source: Menon (2019)



The order situation for the shipping companies is somewhat better than last year as well. Even though the situation has improved for the segment combined, there are considerable differences between the companies. Order reserves vary from between half a year of operations to five years at the current activity levels.

From this year's survey we observe that of those who are currently working within the cruise segment, 21 per cent report that they did not make deliveries to the cruise market in previous years and 15 per cent have only been in the market for one year. This illustrates how quickly the shift from offshore oil and gas towards other markets has taken place. Still, 63 per cent of those who currently are working with the cruise segment report that they have been making deliveries to the cruise market for 2 years or more.

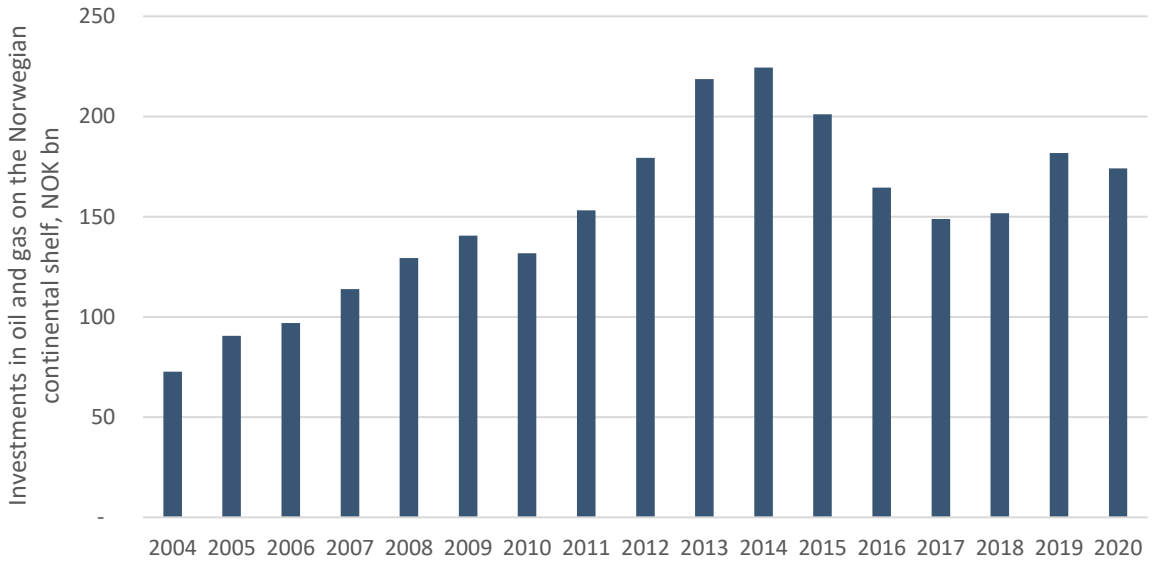
4.1.2. Investments in offshore oil and gas are increasing

Investments in oil and gas on the Norwegian continental shelf are increasing. The latest numbers from Statistics Norway suggest investments will grow by NOK 30 billion in 2019 and then be reduced slightly in 2020, but still remain well above 2017- and 2018-levels.

In line with the investment prognosis, our survey results show that almost half of the companies believe that oil and gas will be more important for their business, while only 20 per cent believe that oil and gas will be less important in the coming years.

Still, oversupply likely reduces the upside for both shipping companies and upstream suppliers making previous heights unrealistic in the short and medium term.

Figure 4-3: Investments in oil and gas industry in Norway 2004-2020. Expected numbers for 2019 and 2020. Source: SSB



4.1.3. All segments of the cluster expect offshore wind to grow in importance

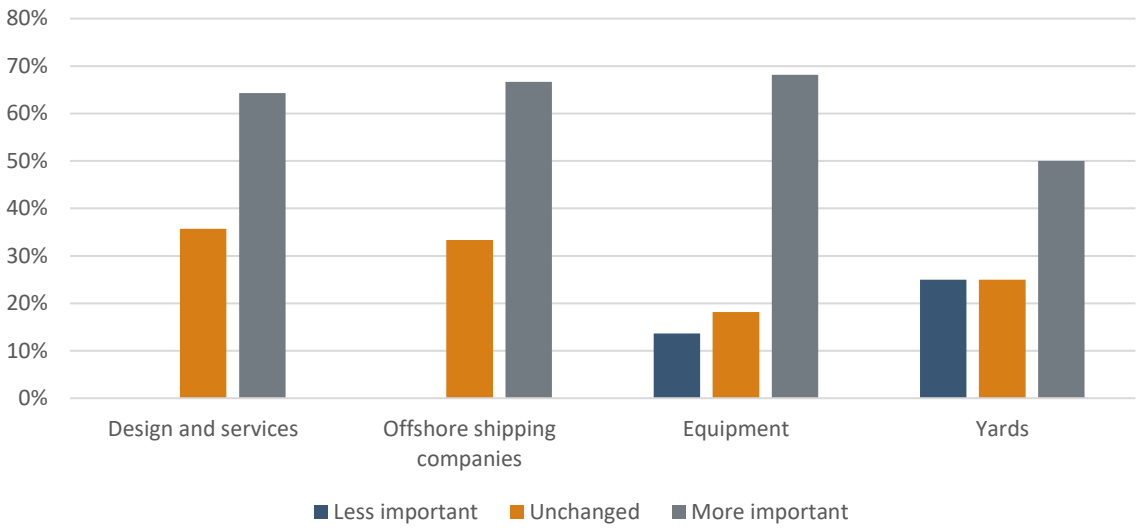
Increased importance from offshore wind markets is not yet seen in the orderbooks nor the current market segmentation for any of the land-based segments. However, according to our survey results, the land-based segments expect the importance of this market to increase substantially in the coming years. Reasons for the optimism can be found in expected investments in both fixed and floating offshore wind installations.

The offshore wind industry is developing quickly. In 2002 the first utility-scale offshore wind farm with a capacity of 160 MW was connected to the grid in Denmark. Since then the average project has moved to sites further from shore, in deeper waters and with higher wind speeds. The capacities of projects also grew, and deployment was enabled at a greater range of sites accessing better wind resources. The cost of offshore wind is falling and in 2017 the first contracts without any subsidies were awarded in Germany. If costs keep falling, the offshore wind market could grow substantially in the coming years.

In 2019 Menon[19] looked at the potential for value creation in the Norwegian floating offshore wind industry. The report concluded that in a high outcome scenario the floating offshore wind industry's value added will reach NOK 117 billion and have an employment effect of 128 400 full time equivalents in Norway over a period of 30 years. In this scenario, the potential global market share is estimated to be 20 per cent. This illustrates the potential found in the offshore wind segment.

[19] *Menon (2019), Verdiskapingspotensialet knyttet til utviklingen av en norskbasert industri innen flytende havvind*

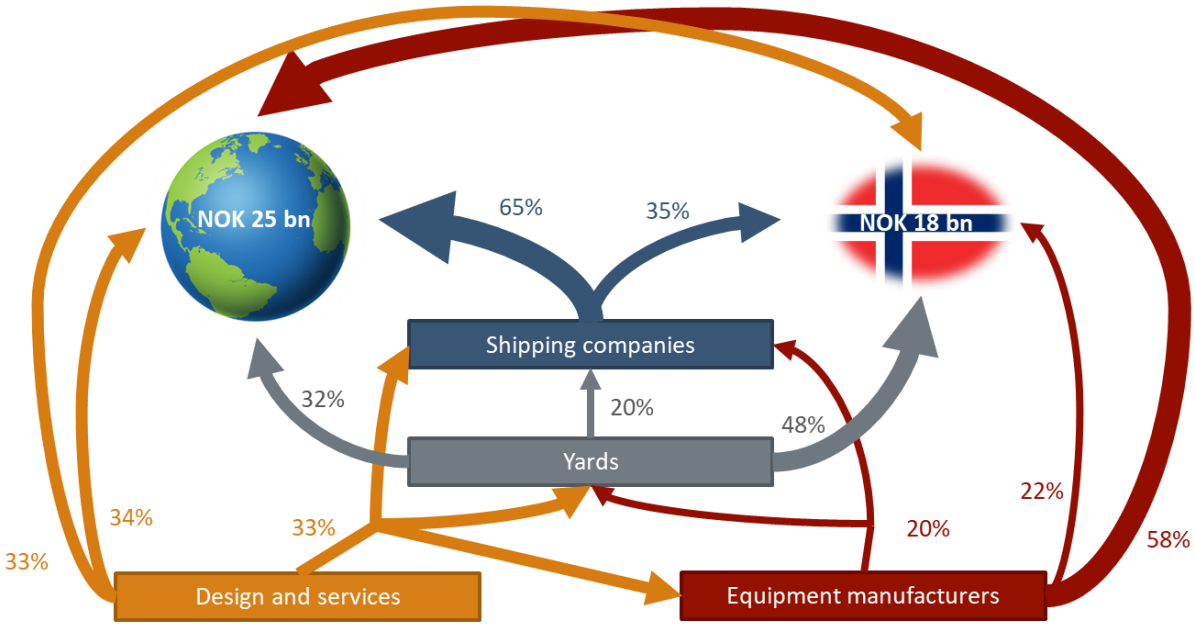
Figure 4-4: Respondents' outlook on the importance of the offshore wind market in 3 to 5 years by segment. Source: Menon (2019)



4.2. Local suppliers have become less important in the land-based segments

Historically, tight integration is essential for the agglomeration effects that have defined the cluster. As seen in Figure 4-5, the design and services segment sells its services to all other segments in the cluster. 33 per cent of its total sales value comes from trade within the cluster. The equipment manufacturers sell to the yards and shipping companies within the cluster. Around 20 per cent of their total sales value is made within the cluster. The Møre yards have 20 per cent of their total sales value created within the cluster. The shipping companies buy from all of the other segments in the Møre cluster, but only generate sales outside. All of the segments export goods and services outside the cluster, to other Norwegian and international companies. 65 per cent of the total sales within shipping are made outside Norway. For equipment manufacturers almost 60 per cent of total sales come from trade with international companies. For design and services, international trade accounts for 34 per cent of total income.

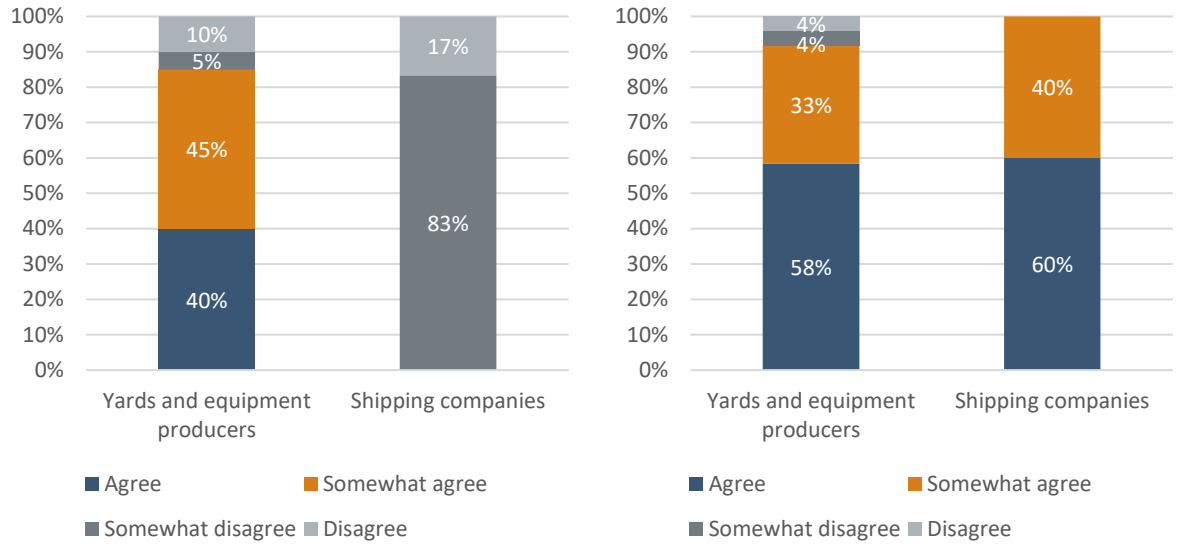
Figure 4-5: The value chain in the Møre cluster. Trade within the Møre cluster, the Møre cluster's trade with the rest of Norway and internationally. Source: Menon (2019)



An interesting element from this year's survey indicates that the cluster integration might be weakened. A majority of the yards and equipment manufacturers agree or somewhat agree that companies outside Møre have become more important than before when it comes to procurement. Shipping companies do not share this view, and most somewhat disagree to this statement, but relatively few entirely disagree. In addition to this, almost all companies within the Møre yards, equipment manufacturers and shipping companies to some degree agree to the statement that customers outside Møre have become more important than in previous years.

Still, the equipment manufacturers and design/service companies have a large share of their future orders from the cruise and yacht market. This suggests that they are shifting towards the same market segment as the yards, and the cluster's tendency towards disintegration might therefore be temporary.

Figure 4-6: Right: Procurement, companies outside Møre have become more important. Left: Customers outside Møre have become more important. Source: Menon (2019)



Exporting more outside Møre could mean that the cluster's goods and services are attractive to foreigners and other Norwegian companies. It could also mean that slower market conditions within the cluster force Møre companies to look elsewhere to sell their products. It is hard to determine which effect is dominating, but it is true that the activity within the cluster has been affected negatively by the oil price shock in 2014 and that customers in Møre have been more offshore oil and gas orientated than others.

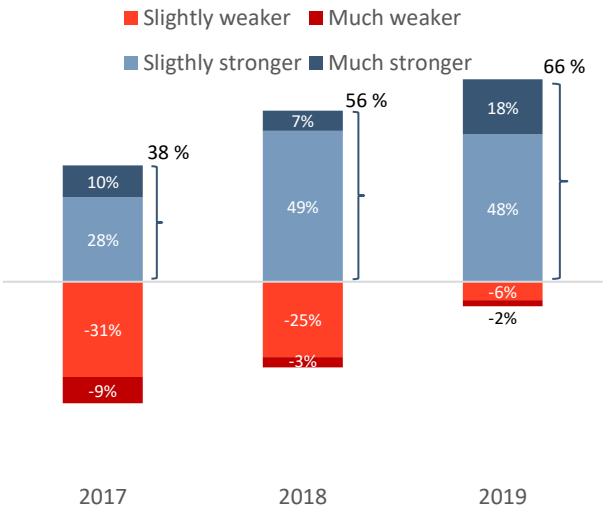
4.3. Future profitability is still expected to improve

Overall, this year's survey shows signs of improved expectation concerning increased profitability, compared to last year.

For the fourth year in a row, operating profitability in the Blue Maritime cluster is negative. Since 2014, the cluster combined has lost more than NOK 19 billion.[20] A difficult financial situation puts pressure on the balance sheets of the companies and limits the flexibility necessary to restructure and exploit new market opportunities.

However, over the last three years the cluster's view on future profitability has improved markedly. In 2017, 38 per cent of respondents expected improved profitability in 2017 compared to 2016. This year, as many as 66 per cent expect profitability to be better in 2019 than in 2018. Based on what we see in their

Figure 4-7: The cluster companies' expectation for operating profits: How do you expect that the operating profits will develop from last year's results? Source: Menon (2017, 2018 & 2019)



[20] *Accumulated EBIT for the cluster in 2015, 2016, 2017 and 2018*

income statements, the respondents are quite accurate in their beliefs about future profitability.

4.4. Does the cluster have the right competence to succeed in the future?

An important factor for the development in the Blue Maritime cluster is the competence of its employees. Both this and last year's survey indicate that around 40-45 per cent of the cluster companies experience that parts of the company's expertise have been outdated as a result of the restructuring process going on in the cluster in 2018 and 2019. Also, 85 per cent of the respondents this year say that they need to employ people with a different skillset to remain competitive in the future, compared to 80 per cent in 2018. This means that the cluster is still expecting to go through future restructuring concerning the employment situation.

Figure 4-8: Views of the competence of the employees in the Blue Maritime cluster. Source: Menon (2018 & 2019)

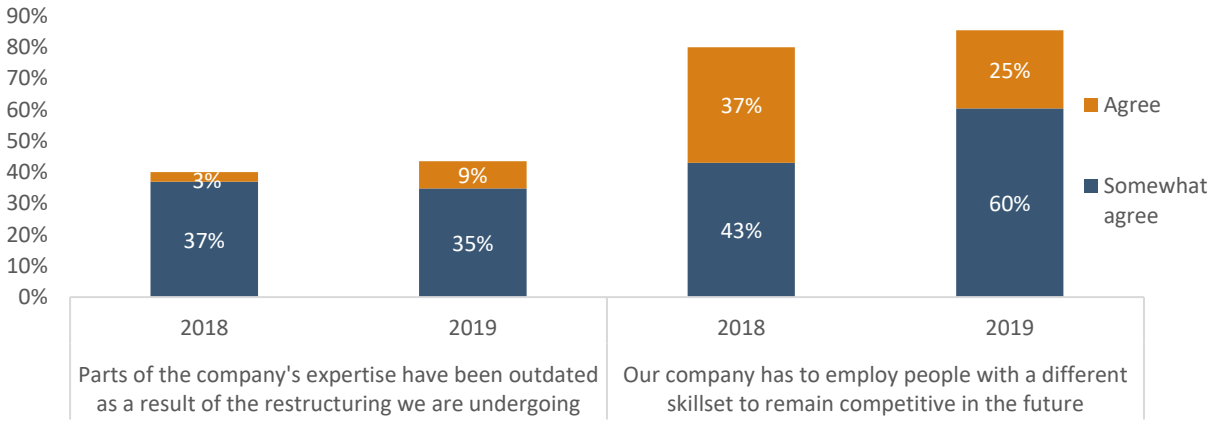
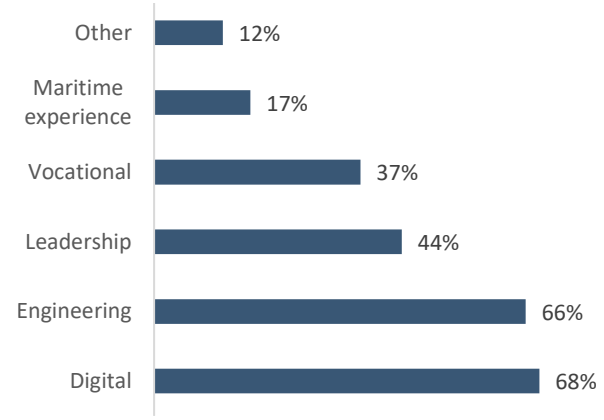


Figure 4-9: What kind of competence are you looking for in the future? Source: Menon (2019)



Of those who said they expect to employ people with a different skillset to remain competitive in the future, almost 70 per cent respond that they need people with a digital and engineering background. 44 per cent answer that they will need employees with a skillset in leadership and 37 per cent answer that they will need people with a vocational education. Less than 20 per cent expect that they will need to employ people with maritime experience[21].

The maritime industry obviously sees the need for digital competence and reports that it will need this expertise to a larger extent to succeed in the future. An important question is therefore whether the cluster companies have the will to invest enough into building competence to exploit the new opportunities and divert the threats that come with digitalization. To some extent, digitalization per se is not a new trend as it has been going on continuously for

[21] *People with experience from working at sea*

many decades. This new wave of digitalization, however, will demand fundamental restructuring of companies, including production processes, service deliveries, value chains and business models.

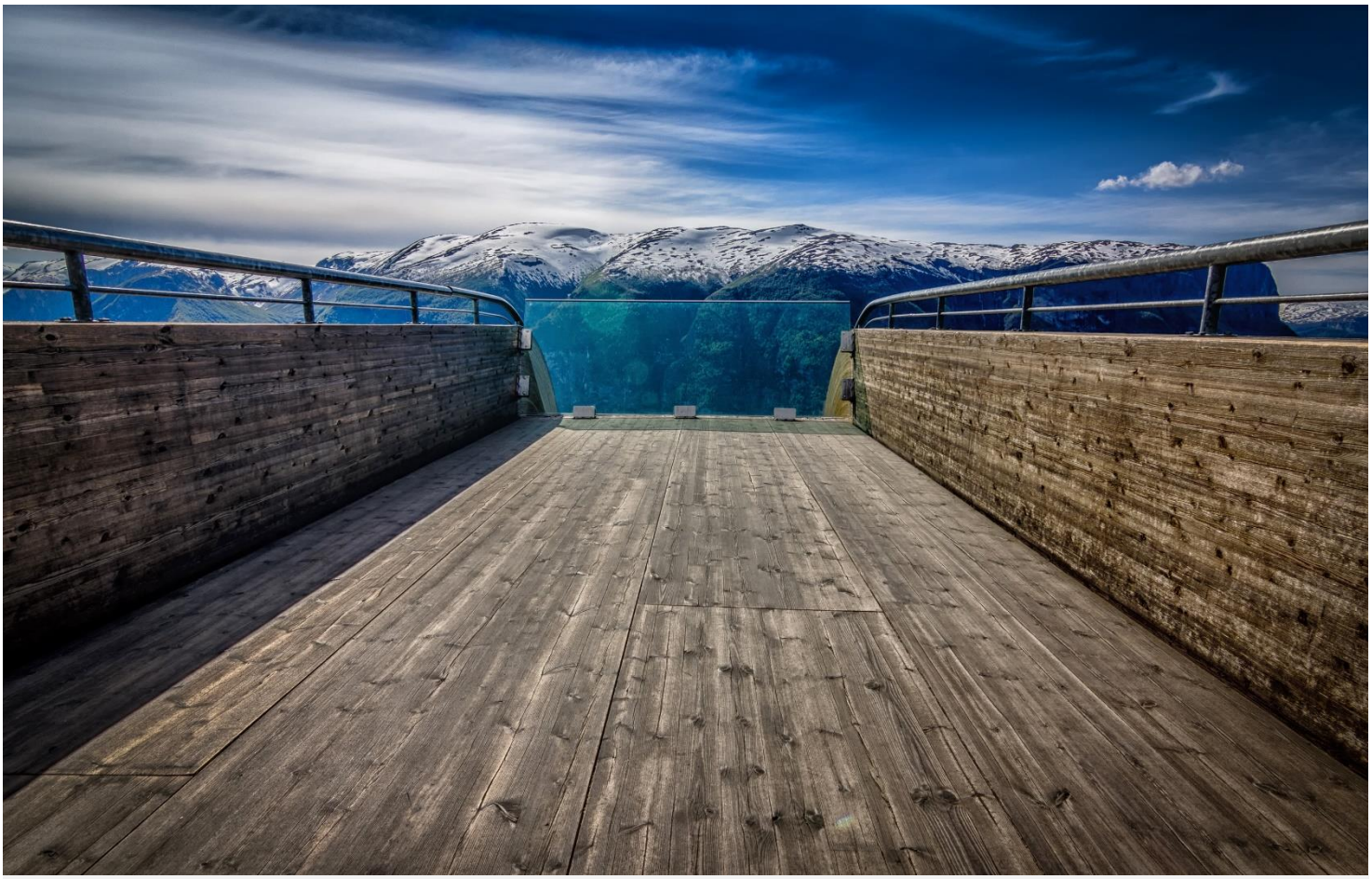
There has been a rapid development toward autonomous and «smart» ships. An interesting aspect is the arrival of Kongsberg Maritime in the cluster, after it bought Rolls-Royce Marine. Kongsberg and Rolls-Royce are both on the forefront of the digital transformation. It will be interesting to see whether the knowledge spillover will allow other companies to learn and develop within this field.

5. Appendix

5.1. Notes on financial statement

Vard Group AS's accounts became publicly available on September 24, 2019. The accounts show an operating result of negative NOK 1.9 bn (a negative operating margin of above 25 percent) with procurement cost exceeding revenue by NOK 1 bn. The relative size of procurement cost differs substantially from what was posted in the last quarterly report of Vard Group, Q2 2018. That report showed procurement cost representing close to 80 per cent of revenue for the first 6 months of 2018 and an operating margin of about negative 4 per cent.

In a press release concerning the 2018 results, Vard noted that the huge losses were in part down to various one-off effects and write-downs on the company's activities in Brazil. Vard was officially incorporated into the Fincantieri Group in late 2018. We believe the extraordinary bad results are in large part driven by accounting choices in the integration process and do not truly reflect the underlying performance of the Norwegian Vard yards. We have therefore superimposed the operating margin and procurement share of revenue from Vard's half-year results in 2018 on the accounts posted on September 24, 2019 for 2018.



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