

Norwegian Maritime Equipment Suppliers 2016

KEY PERFORMANCE INDICATORS AND FUTURE EXPECTATIONS

Cover photo: An eBird Seismic Streamer
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Preface

Over the last years, we have seen large changes in the demand for maritime equipment in different market applications, both in volume and technology. Such dramatic changes in the market challenges the industry, in our case both away from the traditionally sound offshore markets and at the same time into new areas like offshore wind, aquaculture and not least into environmental technologies. Our industry is characterized by its adaptiveness - it can change its focus according to demand. This adaptiveness of Norwegian maritime companies is the reason why Norway still is one of the world's leading centres for global maritime equipment producers.

This year's report, the third year we produce such a document, demonstrates the importance and the structure of the maritime industry in Norway. In addition, the report tries to visualize in what degree market change is shaping the industry. Menon Economics have written this report on behalf of the Maritime Department of the Federation of Norwegian Industries. The basis for this report are financial reports from the calendar year 2015 in addition to questionnaires and interviews to get the respondents' outlook on the current situation.

We thank Menon Economics for their dedication to finding objective facts and the thoroughness of their work in compiling this study, making the report a useful tool for all interested parties.

Oslo, 23 October 2016

Lars Gørvell-Dahl

Director, Maritime Dept., Federation of Norwegian Industries



Summary and conclusion

Norway is home to a world leading cluster of maritime companies that deliver high-class shipping services globally, new and innovative ships, leading technological and financial services and world-class maritime equipment. In 2015 the Norwegian ship equipment manufacturers' turnover reached over NOK 76 billion, they achieved a value creation of NOK 21 billion and employed more than 20,000 people. The industry is **a significant part of the Norwegian maritime cluster**. Maritime equipment manufacturers experienced tremendous growth from 2004 to 2008, when sales almost trebled and profitability rose. The industry has since experienced a much lower rate of growth and in 2015 turnover fell by 5 percent. Profitability has also been declining for the last years. The value of the Norwegian krone fell substantially from 2014 to 2015 hiding an even larger fall in turnover. The fall also made Norwegian produced goods and services more competitive on the global market.

The companies within the industry are exposed to **considerable international competition**. This is illustrated by the fact that almost 90 percent of turnover comes from markets outside of Norway. Norwegian-based companies have been able to take world-leading positions because of their ability to innovate and increase their productivity. The companies deliver half of their products and services to the global offshore market, making them highly dependent on the development in this market. **In total, ship equipment suppliers export goods and services to a value of almost NOK 60 billion**. This is equivalent to 8 percent of Norway's total exports of goods and services (excluding oil and gas). When we include the suppliers of drilling equipment to floating rigs and structures, exports increase to NOK 90 billion or 12 percent of Norwegian exports (when oil and gas exports are excluded).

For 2016, the turnover is expected to fall by 12 percent. The ship equipment producers are highly dependent on the offshore market, and therefore strongly affected by the falling demand for new offshore vessels. We see a further reduction in market sentiment in the short term compared to last year's report. Current order books are approximately 70 percent of the yearly turnover and have fallen sharply in the past 12 months. 2017 is expected to be a somewhat better year than 2016, but might still result in a reduction in activity.

While the short-term outlook is bleak, the long-term trends suggest large growth opportunities for the equipment manufacturers. Offshore wind, maritime tourism, aquaculture and other maritime operations provide new growth opportunities for the industry. The survey conducted in connection with this report suggests that fisheries, offshore wind and traditional maritime markets will increase their relative importance for the industry.

Environmental technology seems to be another focus for the industry. 7 out of 10 respondents say that environmental technology is an important dimension of their current product offering. In addition, 62 percent state that their company has increased its focus on environmental technology in the last 2 to 3 years.

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1. The maritime industry – one of Norway’s biggest and most important industries

Maritime equipment suppliers are part of one of Norway’s biggest and most important industries: the maritime industry. It is important to look at equipment suppliers within a larger context since the development experienced by equipment producers is and will continue to be dependent on the strength of this entire segment. The maritime industry in Norway is strong and has a long history. In 2014 the industry was behind collective value creation of NOK 188 billion in Norway and employed more than a hundred and ten thousand people. The industry is competitive in the global arena and generated a third of Norway’s exports (excluding oil and gas). Value creation has declined in 2015 due to weak offshore markets, but still the industry plays a key role for the Norwegian economy. The industry is also represented along Norway’s entire coastline, and in certain coastal communities it totally dominates value creation within the local economy.

Norway is one of the world’s leading maritime nations. Norway is home to only one thousandth of the world’s population, yet the country is a major power within the international maritime industry. Norwegian-controlled shipping companies own around six percent of the value of the world’s fleet of ships, and Norwegian companies are leading in a large number of fields. In ship financing, in legal institutions, in certification, and in the construction of ship equipment and drilling equipment, Norwegian companies are among the best known. In addition, Norwegian companies are responsible for a constant flow of

innovations in ship design, propellers, equipment and services. Many of these innovations contribute to improving the environment and climate.

One of the reasons for the Norwegian maritime industry’s international success is that the companies have had a high growth in productivity – in other words, they are managing to produce more with fewer employees. This has led to higher levels of productivity, but also increased wage levels. In fact, the average wage level in the Norwegian maritime industry is fifty percent higher than the average for Norwegian companies as a whole. This productivity trend can again be explained by two other characteristics of the industry in Norway: it is knowledge-based and innovation-driven. It is the people who possess the knowledge and create the innovations. Knowledge is developed and distributed in the interaction between the players, and innovations are created and implemented within that same interaction. In the research project called “A knowledge-based Norway”, the interaction between experience-based skills and research-based knowledge was identified as one of the industry’s most important competitive advantages. Operational skills from actually working at sea are a key factor in this interaction.

Delimiting the maritime industry

The size and significance of any industry are determined by how it is defined, and it is therefore important to have a clear and concise



definition which puts clear limits on what is to be included and what is to be excluded. Menon has developed the following definition of the maritime industry as a whole through a series of projects:

- All businesses that own, operate, design, build, supply equipment or specialist services to all types of ships and other floating entities

In addition, we have subdivided the industry into four main groups:

- Shipping companies
- Maritime service providers
- Shipyards
- Maritime equipment producers

Maritime equipment suppliers – definition and subdivision into groups

This study focuses on maritime equipment suppliers. We have narrowed the definition of maritime equipment manufacturers as follows:

- Specialist equipment suppliers for ships and other floating entities.¹

We have also subdivided the maritime equipment manufacturers into two main groups with six associated subgroups. In the report we focus on the first main group: **Ship equipment.**

The following figure illustrates how we have defined the equipment suppliers and subdivided them into subgroups. For each individual subgroup, the logos of three players in the subgroup have been highlighted. It is worth mentioning that we define maritime equipment suppliers rather more broadly in this publication than in other contexts, since we are also including design activities and trading companies. In other Menon-reports (such as the Maritime Forum's "Maritim verdiskapingsbok" [Eng: Maritime Value Creation Book]) trading companies and design are included under maritime services.

¹ Some of the equipment is also installed on rigs and/or FPSOs. An FPSO (Floating Production, Storage and Offloading) unit is a floating, mobile platform used in the offshore oil and gas industry for processing and storing petroleum during production at an oil field. As a rule, FPSOs are normally designed like a ship, but units such as Sevan cylindrical-hulled vessels and spar buoys are also considered to be FPSOs.

SHIP EQUIPMENT

Ship equipment consists of five subgroups:

- **Mechanical equipment** is a relatively extensive group that includes suppliers of cranes, winches, propellers and engines. This is equipment that has to carry out mechanical operations such as lifting or contributing to propelling ships forward.
- **Electrical and electronic equipment** includes operations that focus on electrical and electronic components. That could include specialist hardware, software, electrical propulsion systems, bridge equipment or DP (dynamic positioning) systems².

- **The group dealing with design typically includes ship design companies such as Møre Maritime.** The group also includes companies with a rather broader focus such as LMG Marin, which offers design packages for ships and rigs.
- **Other operating equipment** involves manufacturers of equipment necessary for everyday ship operations. This includes suppliers of items such as marine paint, lubricants, cables, chains and lifeboats.
- The last group under ship equipment is **trade**. This includes companies that buy and sell goods for operating and maintaining ships, or act as dealers for equipment to other players such as shipyards in Norway and abroad.

 <p>Mechanical equipment • Cranes, winches, propellers, engines etc</p>	
 <p>Electrical and electronic equipment • DP, software, specialised hardware, bridge equipment, sensors etc</p>	
 <p>Design • Ship design</p>	
 <p>Other operating equipment • Paint, lubricant, cables, chains, life-boats etc</p>	
 <p>Trade • Agents, wholesalers and distributors</p>	

² Dynamic positioning (abbreviated "DP") systems are systems for keeping ships or other vessels such as rigs or FPSOs in the same position above the seabed without the use of anchors, and instead utilizing propellers and thrusters.

DRILLING AND OFFSHORE EQUIPMENT FOR SHIPS AND RIGS

Drilling and offshore equipment for ships and rigs is today almost totally dominated by a few companies which principally supply drilling

packages to rigs. This includes complex and expensive components such as BOPs³, drill bits, risers and the supply of services related to these.



Drilling and offshore equipment for ships and rigs
• Drilling packages and related equipment, etc.



Focus is only on the companies' maritime activity

In the report, the only figures presented will be those related to the maritime part of operations. As the figure below shows, total turnover within

the various subgroups would have been much higher if all operations in the various companies had been included.

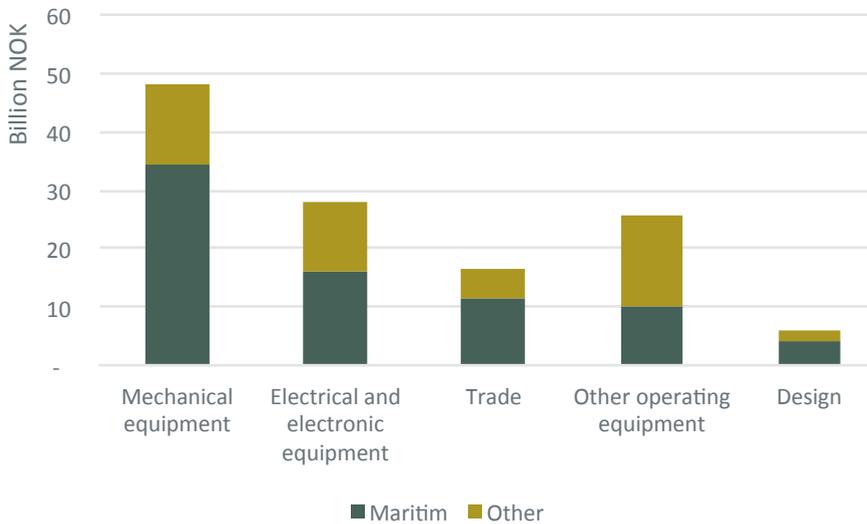


Figure 1: Turnover for ship equipment suppliers broken down into maritime and other turnover 2015. SOURCE: MENON (2016)

³ A BOP (Blowout preventer) is a large valve that envelops an oil well. It is positioned on the seabed or on the platform deck and is intended to stop any potential blowouts in conjunction with drilling operations.

2. 1 500 Norwegian ship equipment producers saw a combined turnover of NOK 76 bn in 2015

Our data in this report covers more than 1 500 manufacturers, designers and traders of ship equipment. In 2015 they generated a total turnover of NOK 76 billion and employed more than 20,000 people. Combined, they generated more than NOK 21 billion in value added to the Norwegian economy. On average, each employee contributed close to NOK 1.1 million to Norwegian GNP. This makes the ship equipment producers an important contributor to Norwegian industrial production and a key industry in Norway.

The figure below illustrates the size of the different segments that make up the ship equipment group. Based on the illustration we can see that mechanical equipment is clearly the largest single group measured in value creation, followed by electrical and electronic equipment. Combined, these two sub-groups stand behind

60 percent of the ship equipment manufacturers' value creation in 2015.

In addition to the ship equipment producers, drilling equipment generated a value creation equivalent to NOK 9.9 billion, down from NOK 10.9 billion in 2014. Combined with ship equipment, these groups were responsible for a total value creation of just over NOK 31 billion in 2015.

The table below presents the key financial numbers for the different sub-groups in more detail. From the table we can see the size of the different segments and the profitability level they experienced in 2015.

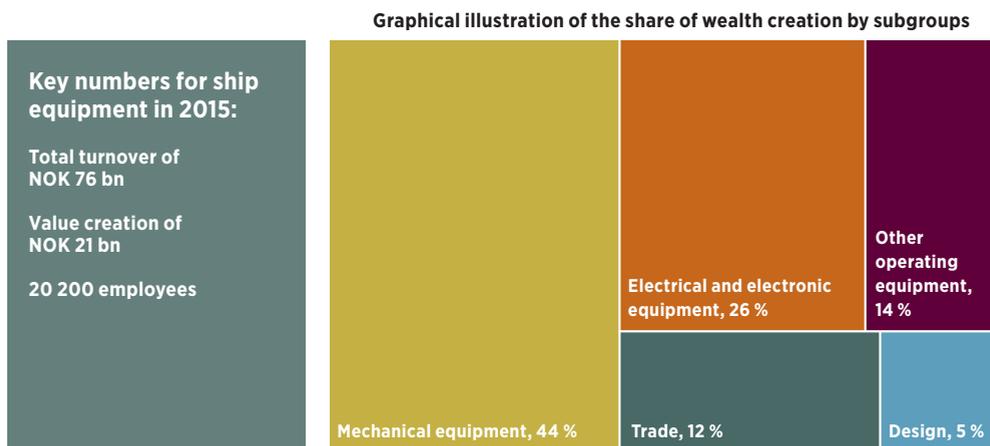


Figure 2: Key performance indicators for manufacturers of all types of maritime equipment, 2015. SOURCE: MENON (2016)

Subgroup	Turnover (NOK bn)	Wealth creation (NOK bn)	Operating margin	Employment
Design	4.2	1.0	4.9 %	1 002
Other operating equipment	10.1	2.9	4.1 %	3 010
Trade	11.3	2.5	5.4 %	2 268
Electrical and electronic equipment	16.3	5.6	5.1 %	5.072
Mechanical equipment	34.3	9.3	2.4 %	8.840
Ship's equipment	76.2	21.3	3.8 %	20 192
Drilling equipment	34.5	9.9	9.3 %	4 524
Total for all equipment supplies	110.6	31.4	5.5 %	24 715

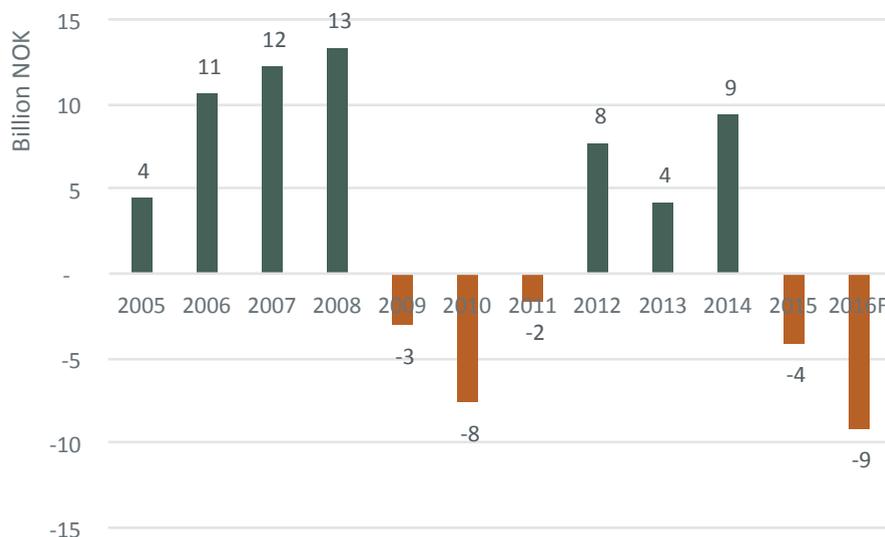
Figure 3: Key performance indicators for manufacturers of all types of maritime equipment in 2015. SOURCE: MENON (2016)

2015 saw a reduction in the ship equipment producer's activity

After a period of strong growth from 2004 to 2008, manufacturers of ship equipment were affected badly by the financial crisis in 2008. The last years have seen a steady growth in turnover again, though at a slower pace than before 2008. 2015 again saw a fall in activity with turnover being reduced by 5 percent. Especially producers of mechanical equipment were affected badly, with a reduction in turnover

of 7 percent. This decrease in turnover comes largely as a result of reduced activity levels in the offshore markets. Since a majority of the turnover is based on exports, the continued depreciation of the Norwegian krone in 2015 counteracted the nominal impact of less activity in the maritime industry. As a result of a weaker NOK, activities with a cost base in Norway became more competitive in the international market, increasing the competitiveness of Norwegian operations in the global market.

Figure 4: Change in turnover from the previous year for Norwegian manufacturers of ship equipment, 2005-2016. The value for 2016 is estimated. SOURCE: MENON (2016)



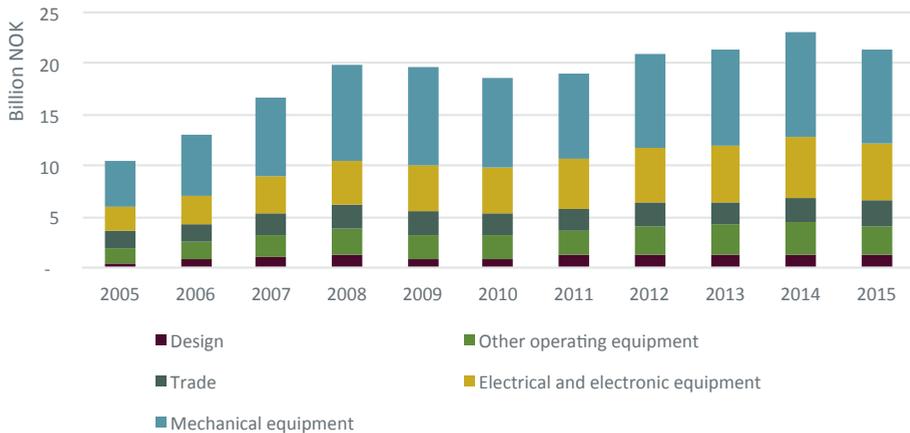


Figure 5: Value creation among ship equipment manufacturers broken down by subgroup, 2005-2015. SOURCE: MENON (2016)

Both small and large players are influenced by the reduced activity levels in the maritime industry. For the larger players, 2015 marked the first year since 2011 where their combined turnover decreased. The five biggest enterprises who account for well over a third of maritime turnover, decreased their turnover by 6 percent compared to 2014.

2016 seems set to become another difficult year for the ship equipment manufacturers. Based on the survey results this report rests on, we estimate a reduction in turnover for 2016 of 12 percent. If this number is correct, turnover in 2016 will be NOK 67 bn. That is less than the turnover before the financial crisis in 2008. From 2014 to 2015 the Norwegian krone weakened dramatically towards most major currencies. In the report we report numbers in Norwegian kroner. Since most companies have their majority of turnover from abroad, this means that the actual fall in activity was larger than what we see in the numbers here. At the same time the falling NOK also made Norwegian products and services relatively cheaper on the international market, increase the competitiveness.

Ship equipment producers' value creation equalled NOK 21 billion in 2015

Value creation followed the same development as turnover in 2015. For ship equipment value creation fell about 7 percent, slightly more than the 5 percent decrease in turnover. Value creation fell in every subgroup except for trade. The largest decreases came in the two largest subgroups, mechanical equipment and electrical and electronic equipment.

Interestingly, the major players took almost the whole decrease in value creation alone. The five biggest enterprises reduced their value creation by 13 percent in 2015, compared to 2014. The small and medium sized companies' value creation as a group remained largely unchanged between 2014 and 2015.

The change in value creation largely varies in accordance with the change in turnover. Value creation rose sharply from 2005 up until the financial crisis in 2008. In the two following years, value creation followed the decrease in turnover. From 2010 to 2011 value creation increased although turnover fell slightly. Between 2011 and 2014 both turnover and value creation increased every year, before falling back somewhat in 2015.

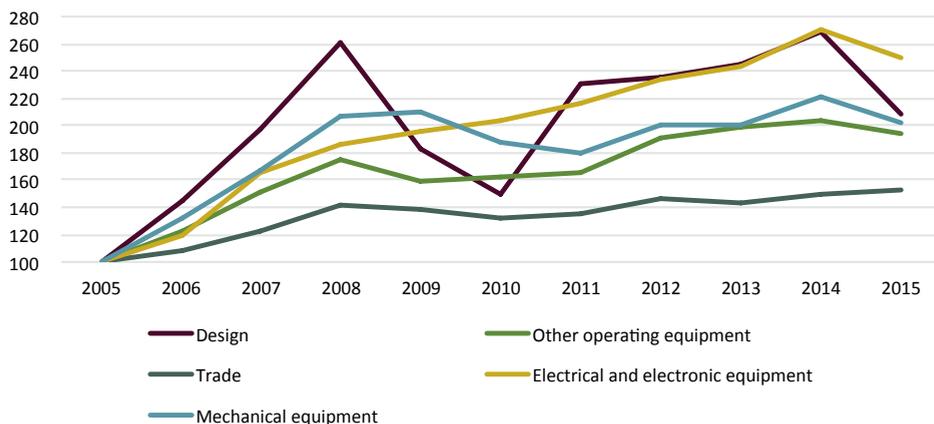
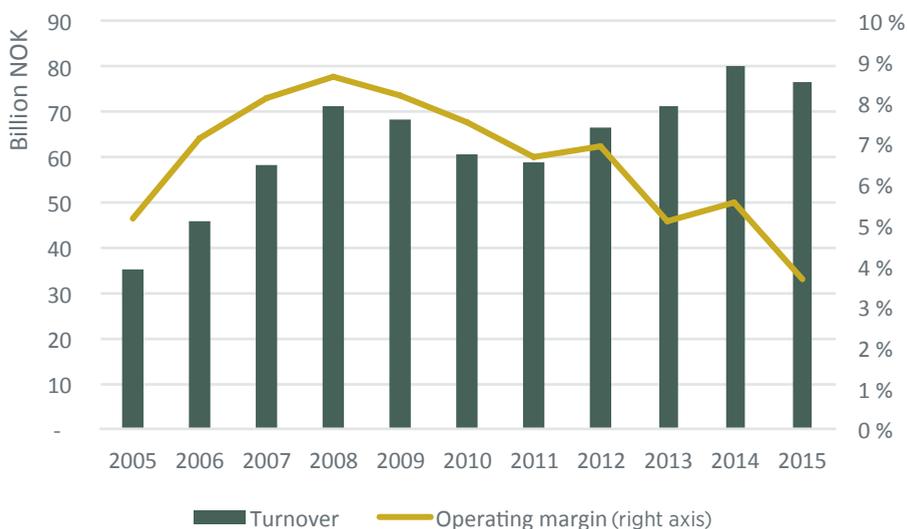


Figure 6: Developments in value creation for the various subgroups, 2005-2015. Standardized (index=100 in 2005). SOURCE: MENON (2016)

Up to the financial crisis in 2008 all subgroups experienced continuous growth, although at different rates. Electrical and electronic equipment stands out as the lonely group that continued its growth in the aftermath of the financial crisis. From 2011 onwards, every subgroup saw growth

in the period up to 2014. In 2015, all subgroups experienced a decrease in their value creation except for trade. Ship's design is by far the most volatile subgroup when it comes to value creation. Design follows the same trends as the maritime industry as a whole, although with a

Figure 7: Turnover and operating margin⁴ for ship equipment suppliers, 2005-2015. SOURCE: MENON (2016)



⁴ Operating margin is measured as operating profit (EBIT) as a percentage of turnover.

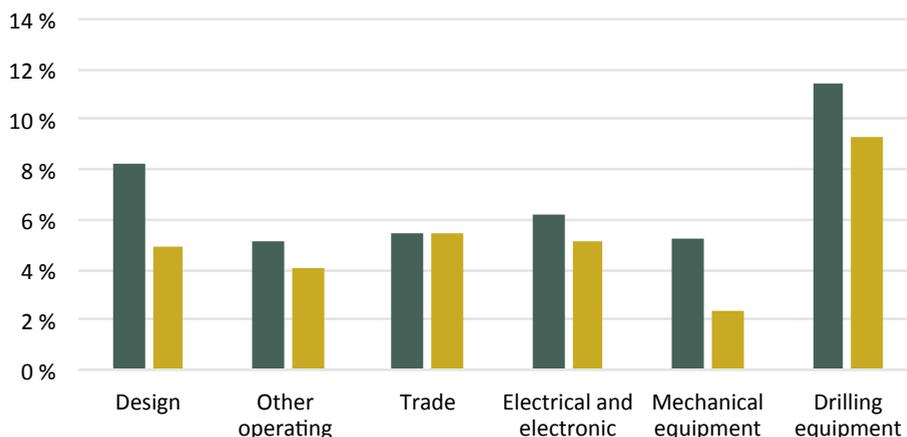


Figure 8: Operating margins (EBIT) among manufacturers of ship equipment and other equipment, 2014 and 2015.
SOURCE: MENON (2016)

larger amplitude. Mechanical equipment and other operating equipment have had similar growth paths throughout the whole period. Trade has by far had the lowest growth rate in the period as a whole. This subgroup is also a lot less volatile than all other groups.

Profitability fell sharply in 2015

Despite major variations in economic conditions, during the period from 2004 to 2014 ship equipment suppliers have experienced a relatively stable operating margin of between 5 and 8 percent. The operating margin has largely followed the trend in turnover, but since 2011 we have experienced a divergence between profitability and turnover growth. While turnover has increased since 2010, the profit margin has kept falling. 2015 saw the lowest level of profitability in this decade with a profit margin of under 4 percent. A healthy profitability for the manufacturers is important so that they have the possibility to invest in R&D efforts and in equipment to increase innovation and profitability. The falling profitability is a danger to the innovative abilities of the equipment manufacturers.

During the period 2005-2015, the average operating margin for the whole group was 6.6 percent. A profit margin of 6.6 percent could generally be regarded as satisfactory and is equivalent to the average operating margin in Norwegian trade and industry⁵ during the same period. At the same time, the next graph shows that the operating margin was much higher for drilling equipment in 2014 and 2015. The drilling equipment industry is dominated by large individual players such as NOV and MH Wirth, which both have delivered good results in recent years. Another relevant comparison would be the profit margin for Norwegian yards. While the shipyards' operating margins have historically been a few percentage points lower than those of the equipment suppliers, the difference in margins has been lower in recent years. This is probably related to higher than normal returns in yards, rather than to weak performance from the equipment manufacturers.

⁵ Compared to trade and industry excluding oil operating companies and the financial industry.

The county of Hordaland together with Møre og Romsdal county is behind almost half of the industry's value creation

If value creation in the industry is broken down on a regional basis, it is evident that there are two counties that clearly dominate the statistics: *Hordaland* and *Møre og Romsdal*. These two counties are dominated by the operations of two companies in particular: Rolls Royce Marine in Møre og Romsdal and the Frank Mohn companies in Hordaland (now part of Swedish Alfa Laval). Rolls Royce Marine has experienced an enormous growth during this decade, but profitability has been negative for the last three years. This also explains the large decline in value added for Møre and Romsdal in 2015. All counties saw a reduction in value creation in 2015, except for Vestfold and Oslo which experienced a small increase.

It should also be noted that a total of 11 of Norway's counties are represented in the figure above by a value creation of more than NOK 500 million. In other words, the industry is significant

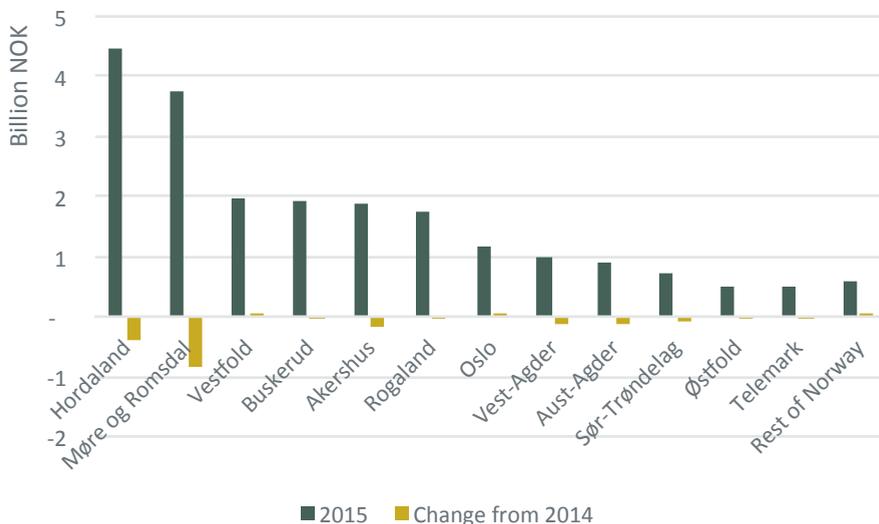
throughout large parts of the country, although Western Norway dominates with more than 50 percent of overall value creation.

The equipment manufacturers are becoming less dependent on the offshore market

Figure 10 below displays the turnover share from offshore markets for each sup-group. Almost half of the equipment manufacturers' turnover are sales related to the offshore oil and gas market⁶. This is a significant drop of more than 10 percentage points since last year's report. This is probably more a function of the reduction in the offshore market than an actual increase in traditional markets. Still, the effect is that traditional markets increase their relative importance combined with growth in new market applications.

The dependence on deliveries to the oil and gas industry is high. The size of the offshore oil and gas market is expected to fall further in 2016 and will force the producers to either produce equip-

Figure 9: Value creation in 2015, by county, and change in value creation from 2014. SOURCE: MENON (2016)



⁶ There is some uncertainty around the share as the number of companies answering this question has been low and it has been difficult to estimate the share for the remaining companies.

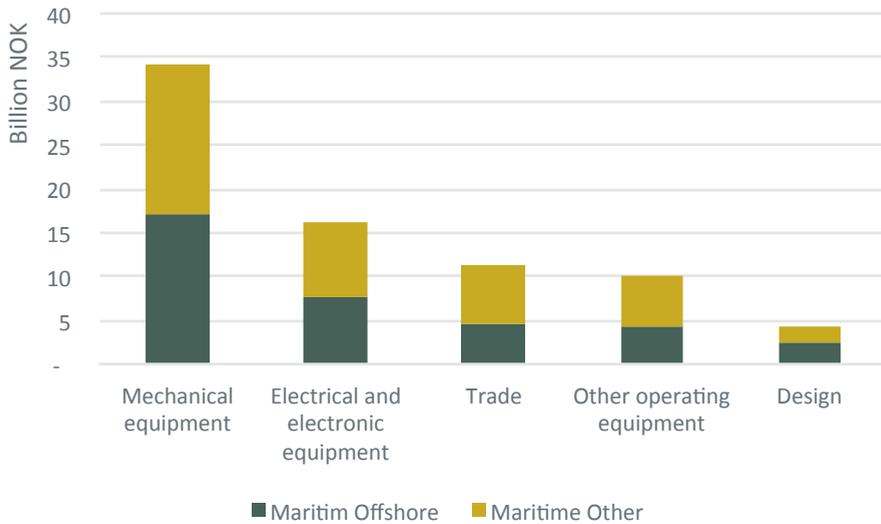


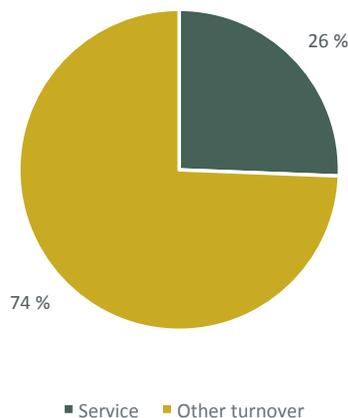
Figure 10: Share of the maritime turnover from offshore markets, 2015. SOURCE: MENON (2016)

ment for new markets or reduce their activity. Looking at the different groups, we can see that dependency on the offshore market is high in all groups, but somewhat higher for producers of mechanical equipment and designers compared to producers of other ship equipment.

Spare parts and service accounts for around a quarter of the turnover

Our survey indicates that around 25 percent of the companies' turnover is related to service and spare parts⁷. This is a clear increase since 2014. The share of the turnover relating to spare

Figure 11: Share of turnover from spare parts and services, 2015. SOURCE: MENON (2016)



⁷ Trade is not included here. Because of a low response rate on this question, combined with little information on this subject from other sources, this figure is uncertain.



parts and service is interesting for two reasons. Firstly, the profit margin on such offerings is often higher than for regular sales of equipment. Secondly, it could be an interesting business as sales often are more stable than for the equipment itself. Most maritime equipment is sold to yards to be utilized in new builds, and this market can be highly volatile, while the market for spare parts and service is more stable as the total world fleet is more stable. It will be interesting to follow the development of this percentage in future reports.

The share of spare parts and service (“after-sales”) varies between the different segments. While the share is a bit higher than the average for electrical and electronic equipment, it is significantly higher for other operating equipment. This is due to the high share of service relating to sale of lifeboats where Harding and Norsafe are world-leading. For mechanical equipment, the share is lower than the overall average.

3. With more than 90 percent of ship equipment being exported, the equipment manufacturers have a global focus

The maritime industry is by nature international, the end product being shipping of natural resources and goods between countries and continents. Nevertheless, export of ship equipment from Norway is remarkably high. Almost 90 percent of ship equipment from Norwegian companies ends up as exports⁸. In 2015, Norwegian ship equipment suppliers exported goods and services to a value of NOK 57 billion, which equates to 8 percent of total Norwegian exports of goods and services⁹. If exports of drilling equipment are added, this figure is a full 12.5 percent.

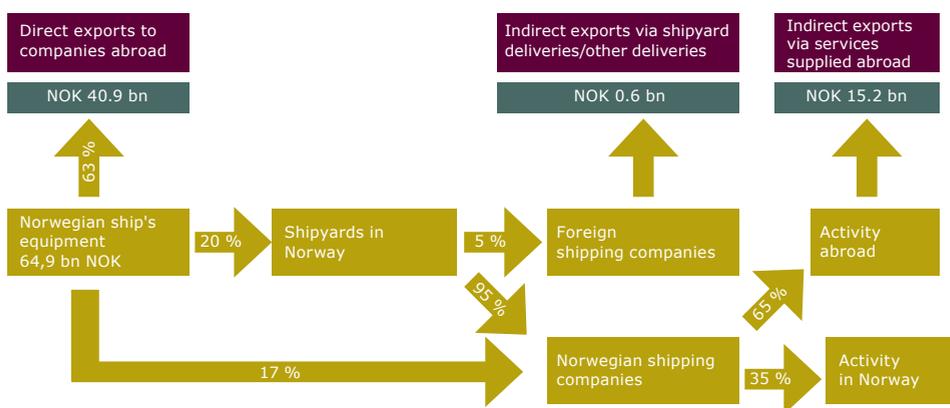
The figure below shows that exports largely go straight from Norwegian manufacturers to

customers abroad. 63 percent of the equipment is sold directly to shipyards and shipping companies in other countries. The remaining 37 percent go via shipyards in Norway or through the shipping companies that are also active abroad¹⁰. The various routes exports can take are illustrated in the figure below. The data for exports are based on the responses to the questionnaire in connection with this report.

The equipment suppliers are one of Norway's most significant export industries

Whereas seafood is generally considered to be one of Norway's most important export industries, and regarded as an important pillar for

Figure 12: Exports of ship equipment from Norway in 2015. SOURCE: MENON (2016)



⁸ We have not included the trading companies in the export figures. This is because we want to avoid counting exports twice since the goods would first be sold from the manufacturers to the trading companies and then be sold on.

⁹ 9 percent of all exports of goods and services excluding exports of crude oil and natural gas.

¹⁰ More information about data quality is found in the appendix.

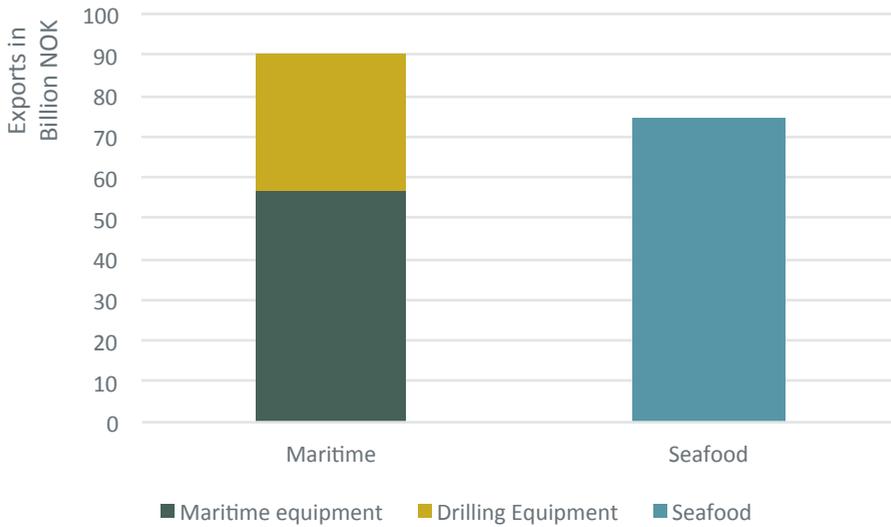


Figure 13: Export value for maritime equipment as compared to seafood exports in 2015. SOURCE: MENON/SSB.

Norway’s future economy when the oil and gas business eventually declines, it is less publicly evident how important exports of Norwegian maritime equipment are for the society. In 2015, seafood products to a value of NOK 75 billion were exported (Norges Sjømatråd, 2015). Ship equipment alone constituted an export value of

NOK 57 billion. If exports of drilling equipment and marine specialist equipment are added, exports are clearly larger than seafood exports, with a total export value of NOK 90 billion.

4. The short-term prospects are bleak, while the long-term opportunities are huge

While the previous chapters have focused on the historical development, this chapter will be looking forward to evaluate how the industry will be developing over the next few years.

In the questionnaire survey, which provided the basic data for this report, 80 companies responded as to how they expected their turnover to develop in 2015 and 2016. On this basis, we have estimated a negative expected growth in turnover from 2015 to 2016 of 12 percent. If this estimate is correct, 2016 will represent the sharpest fall in activity in this decade.

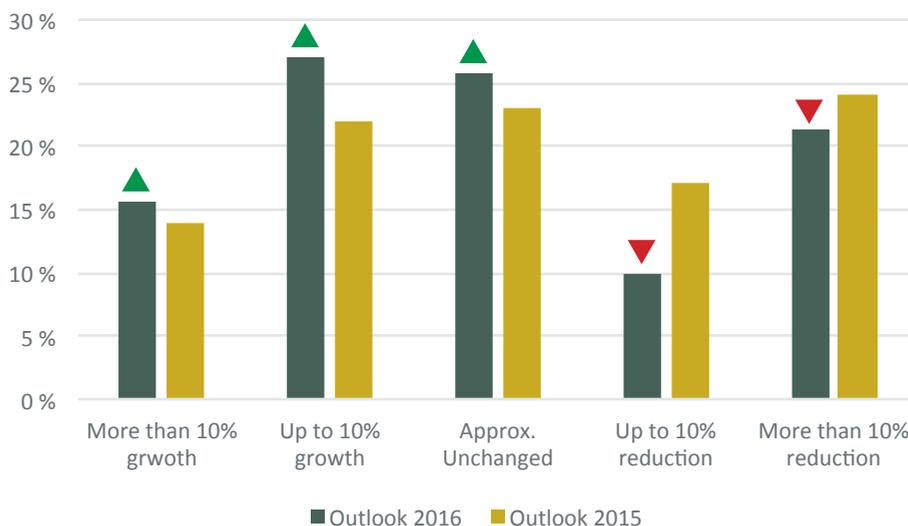
In last year's survey respondents were asked about their anticipated growth in turnover for the next year. Here only 36 percent assumed that their turnover would increase the following year. When asked the same question this year,

our respondents are somewhat more positive with 43 percent expecting growth in the following year. Still, almost one in three respondents assumes that the turnover will fall further in 2017.

The order books have fallen in the past 12 months

In the survey, the companies were asked to enter the level of their current order books. The analyses show that ships equipment manufacturer's order books are equivalent to NOK 45 billion as of September 2016. This is a reduction of more than 20 percent compared with the same numbers from last year. If the trading companies are disregarded, the ship equipment suppliers have a turnover of NOK 65 billion, and the order books will then equal about 70 percent of the

Figure 14: Expected growth in turnover for the next year in 2015 and 2016. SOURCE: MENON SURVEY 2015 AND MENON SURVEY 2016



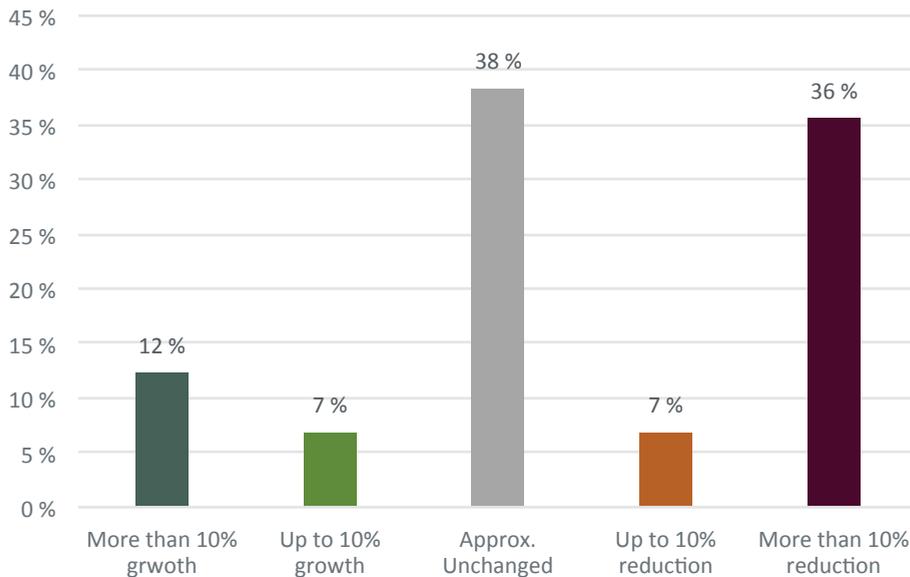


Figure 15: Change in order books over the past 12 months. SOURCE: MENON SURVEY 2016

turnover from 2015. This is a significant drop from last year's survey where the order book/turnover-ratio equalled 90 percent.

If the various groups are examined, the ratio between order books and turnover varies from 49 percent for ship design to 75 percent for mechanical equipment. The absolute size of the order books varies according to the size of turnover for the various subgroups.

The trend as regards changes in order books over the past 12 months is also considered to be very negative. Almost half of the respondents report a reduction in their order books, of which most report strong decline. 38 percent report little or no change, while less than 20 percent of respondents report an increase. These answers are well in line with the observed changes in the order reserves from 2014 to 2015. The order books totalled NOK 45 billion in 2015, down more than 20 percent from NOK 58 billion in 2014.

The reduction in activity is a result of lower activity especially in the offshore sector

The reduction in the world order book seen over the last few years indicates a lower activity level

at least for the coming years. Since a peak of 15 000 vessels in the world order book in the beginning of 2009, the current order book is now less than a third at 4 500 vessels. A similar reduction is found in offshore ships where the order book is down by almost 50 percent since the beginning of 2015.

The graph below shows the strong relationship between offshore newbuilding activity and the ship equipment producers' activity. The blue line is the number of offshore vessels in the world order book, while the orange bar graph is the turnover for Norwegian ship equipment producers. The strong reduction in the world order book for offshore vessels in 2016 suggests a further decline.

Long-term growth prospects are positive

While it seems clear that Norwegian ship equipment manufacturers will see activity falling also in 2016, the long-term perspective for the industry seems positive. Ocean-based economic activity is expanding quite rapidly, driven by developments in global population, economic growth, trade, rising income levels and technological developments. According to OECDs

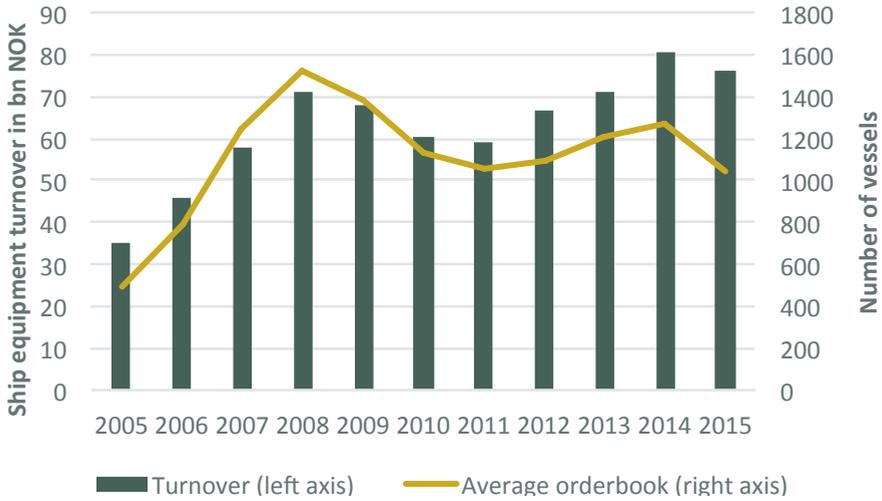
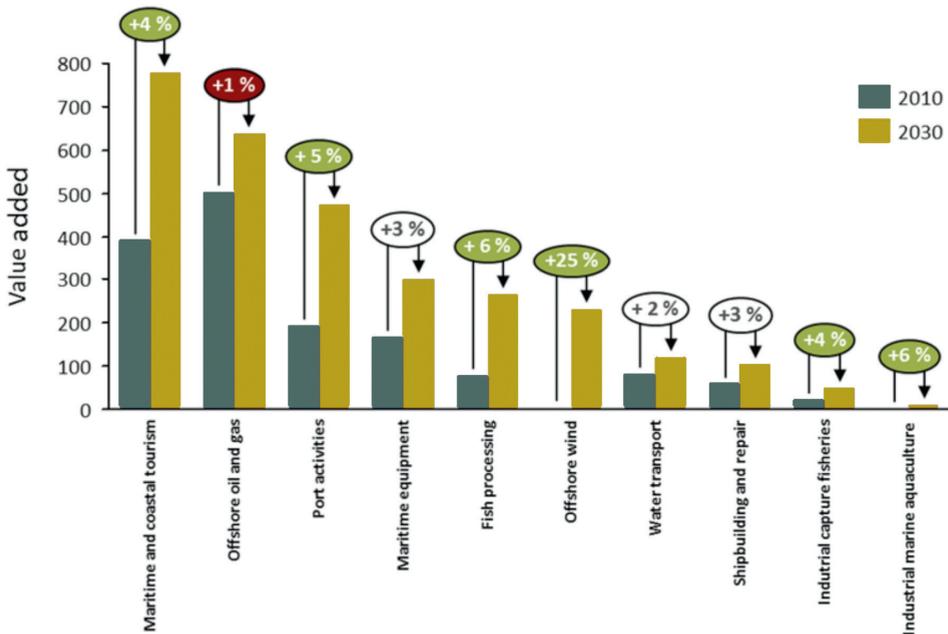


Figure 16: Norwegian Maritime Equipment producer's turnover compared to the world offshore orderbook. 2005-2015. SOURCE: MENON (2016) AND CLARKSON (2016)

recent report “The Ocean Economy in 2030”, ocean-based industries have the potential to outperform the growth of the global economy as a whole. They except a particular strong

growth in marine aquaculture and offshore wind, but also a strong growth in maritime tourist activities, port activities, shipbuilding and repair and equipment production. Maritime oil and

Figure 17: Size of different ocean industries in 2010 and in 2030 measured in value-added. The numbers are annual growth rate for the period. SOURCE: OECD (2016)



gas activities are expected to grow slowest with an annual growth rate of 1 percent. Still oil and gas activities are expected to be the second largest ocean industry in 2030, only overtaken by tourism.

If these predictions come true, the industry in Norway will continue to adapt from focusing mainly on oil and gas developments to a broader set of industries. Our survey indicates that the equipment producers are trying to shift their focus towards other ocean industries. While this shift seems like a natural move in the current market situation, oil and gas activities will be the most important market for equipment producers for several years to come.

Fisheries and aquaculture will become more important for the maritime industry

Fisheries and aquaculture are expected to become relatively more important to the maritime industry in the coming years. The activity within fisheries and aquaculture is expected to grow in Norway and is hence a natural focus area for the maritime industry. Traditional shipping is expected to remain important, while the importance of oil and gas is expected to decrease.

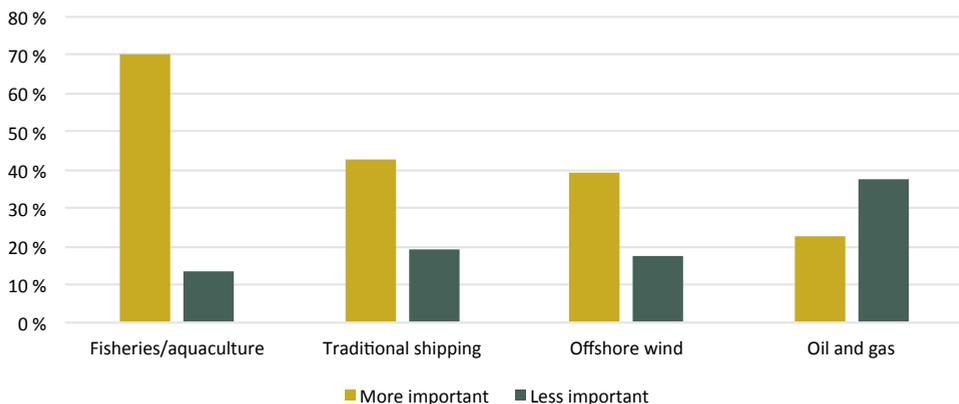
Respondents were asked what industries they thought will be more important in the coming years than they are today. About 70 percent believe that fisheries and aquaculture will be much more important or somewhat more important in the next 3 to 5 years than it is today. Somewhat surprisingly, a larger share of the respondents think that traditional shipping will be more important than what is the case for offshore wind, compared to today's levels. The growth opportunities in oil and gas are generally thought to be small in the coming years, with just above 20 percent of respondents thinking oil and gas will be more important than today. Still this market will remain the most important market for the coming years.

Environmental technology is increasingly becoming an area of focus

Most maritime companies have a stronger focus on environmental technology today than in the past. Customer demands, new growth markets and future regulations are important factors behind the increased focus on environmental technology.

71 percent of the respondents regard environmental technology as greatly, very or somewhat important to their goods or service supply as of today. In addition, 62 percent stated that the

Figure 18: Share of respondents answering that the given industry will be more important in 3-5 years than it is today. SOURCE: MENON SURVEY 2016



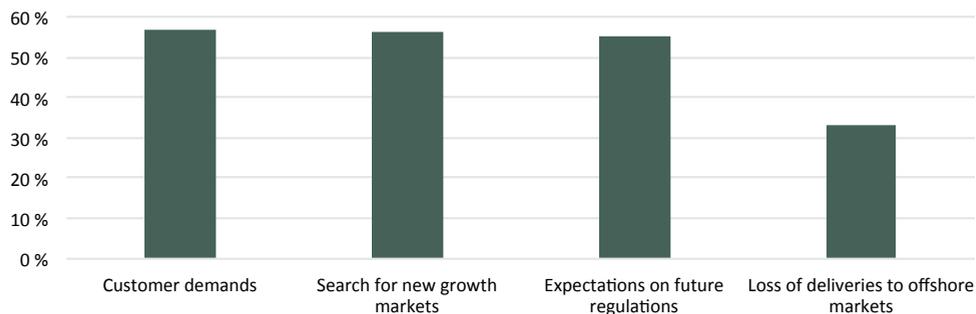


Figure 19: Share of respondents answering that the given factor has been important for their environmental profile the last years. SOURCE: MENON SURVEY 2016

company has increased its focus on environmental technology in the last 2 to 3 years. Customer demands, search for new growth markets and expectations on future regulations are seen as equally important factors for the commitment to develop environmental technology, with

about 55 percent regarding this as important for commitment to environmental technology for all the three of the factors. Interestingly, the loss of deliveries to offshore markets is not seen as an important factor for the willingness to develop environmental technology.

Appendix 1:

Data registry and survey data

The report is based on a registry of all Norwegian entities that deliver accounting information to Brønnøysund Register Centre. Changes from previous editions are related to changes in companies that are included or excluded. Minor changes in the numbers for 2014 have occurred as a number of firms released their official 2014 figures after the conclusion of the report in 2015. Changes may also occur as the maritime share differs. Menon will then update the historical numbers based on the most recent maritime share, so that the numbers are comparable also historically. Another challenge in this year's edition of the report is that official registries have changed the way they count an employee. We have gathered data from the companies themselves to overcome this hurdle, but for the remaining companies we had to make estimations based on registry data and the answers from the survey.

The survey was sent out in August and September 2016 to 672 respondents and received a total of 74 responses. To assure ourselves that the survey was representative of the selection we analysed, we focused on obtaining responses from all of the largest companies since these dominate overall activity in the industry. We were largely successful in doing so. The design group consists of less than 10 large entities, and here we have very few respondents. This means that uncertainty is

high when it comes to answers from this group. Annual reports and news articles have been read carefully to fill in the blanks as well as possible for important non-respondents.

In this survey we only wanted to include the maritime share of the companies' turnover. The reason for this is that a number of companies such as ABB, Siemens and Jotun are major suppliers of the maritime industry in Norway, but are not viewed as maritime suppliers since most of their activities are aimed at other industries. The maritime share was given by the firms themselves in the questionnaire, either in 2015 or 2016.

The subdivision into the various subgroups was made on the basis of the companies' own valuation (from the questionnaire), or, if this was not available, on the basis of industry codes and/or our own knowledge of the companies. Some of the largest companies have operations spanning the various categories and for the largest of these, an assessment was carried out as to whether activities needed to be subdivided between the different subgroups. For other companies, this is less of a problem since they have a number of separate firms that can be positioned within the different categories. The export data was mainly gathered in the survey, but also combined with information from earlier surveys Menon has completed.

Appendix 2:

Key performance indicators for the industry 2014 & 2015

Employment (2014-2015) in subgroups and main groups

Subgroup	2014	2015	Change
Design	1 055	1 002	-5 %
Other operating equipment	3 138	3 010	-4 %
Trade	2 405	2 268	-6 %
Electrical and electronic equipment	5 221	5 072	-3 %
Mechanical equipment	9 624	8 840	-8 %
Ship's equipment	21 443	20 192	-6 %
Drilling equipment	5 661	4 524	-20 %
Total for all equipment suppliers	27 104	24 715	-9 %

Turnover in billion NOK (2014-2015) distributed into subgroups and main groups

Subgroup	2014	2015	Change
Design	4.5	4.2	-7 %
Other operating equipment	10.3	10.1	-2 %
Trade	11.2	11.3	1 %
Electrical and electronic equipment	17.2	16.3	-6 %
Mechanical equipment	37.1	34.3	-7 %
Ship's equipment	80.3	76.2	-5 %
Drilling equipment	43.7	34.5	-21 %
Total for all equipment suppliers	124.0	110.6	-11 %

Wealth creation in billion NOK (2014-2015) distributed into subgroups and main groups

Subgroup	2014	2015	Change
Design	1.2	1.0	-13 %
Other operating equipment	3.0	2.9	-5 %
Trade	2.4	2.5	2 %
Electrical and electronic equipment	6.1	5.6	-8 %
Mechanical equipment	10.2	9.3	-9 %
Ship's equipment	22.9	21.32	-7 %
Drilling equipment	10.9	9.9	-9 %
Total for all equipment suppliers	33.9	31.3	-8 %

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