

a. Containerships

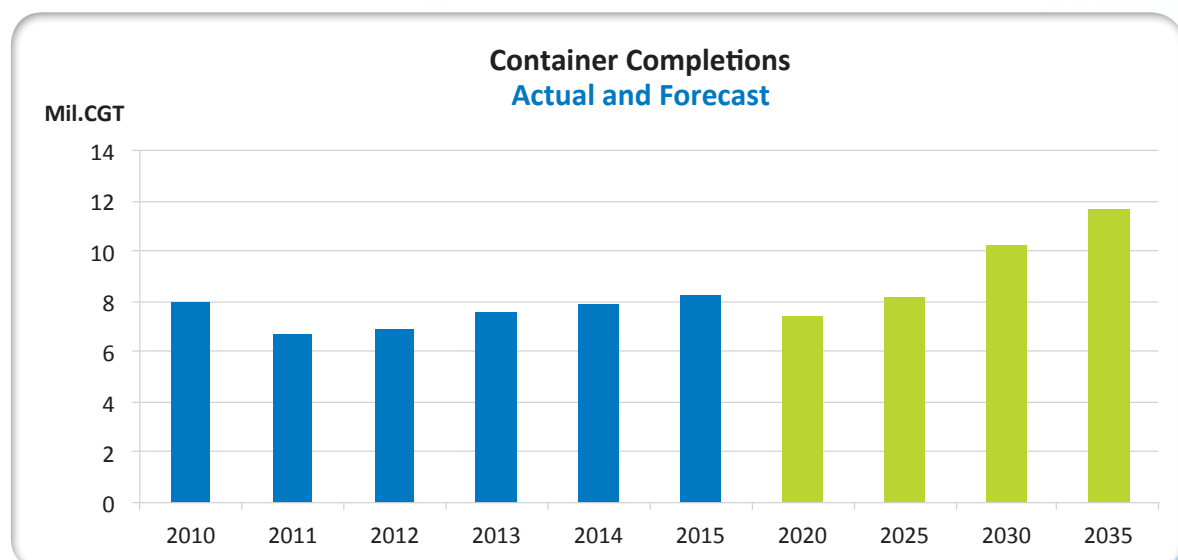
Containerisation has played a crucial role in the development of global trade. It greatly reduced the cost of international trade and increased its speed, especially of consumer goods and commodities. Standardised containers made it possible to ship increasing volumes of goods around the globe in a cost-effective way. The constant growing of containerisation's significance is a reflection of the changes that have occurred over time in the international system set up of manufacturing and production. Between 1982-2005, containerised trade grew 3.5 times as fast as the world GDP and 40% faster than international trade overall. Approximately 90% of non-bulk cargo worldwide is moved by containers stacked on transport ships. The Chinese share of the total container volume handled in the world has increased from 16% in 2000 to 31% in 2015.

Slow economic growth in 2015 resulted in limited expansion of container trade. Volumes increased by 2.4% to 175 mln TEU in 2015. For a long time, containerised trade flows could be predicted by looking at the performance of world GDP with the multiplier effect of the container volume growth ranging between three to four times the growth of GDP. In the recent years, 2010-2015, containerised trade has grown around 1,5-2,5 times as fast as world GDP. The development is that in the year 2016 global container demand is struggling to achieve a GDP-to-trade multiplier of one.

Nowadays, the biggest container ships in the world can carry up to 19,200 TEUs. Containerised shipments have increased due to globalisation and world trade growth, but also compared to other shipping segments due to the fact that a container's shipping price is not linked to the distance, like general cargo ships, but to parameters like availability, supply and demand. In addition, compared to RO-RO ships, containerships are much more flexible and growingly cost effective. The structural changes that container shipping are undergoing will provide large economies of scale and the demand and supply ratio will continue to put pressure on container freight rates.

Containership Completions Actual and Forecast

The figure below shows the containership completions in million CGT's for years 2010-2015 and forecast of 5-year-average of completions until year 2035.



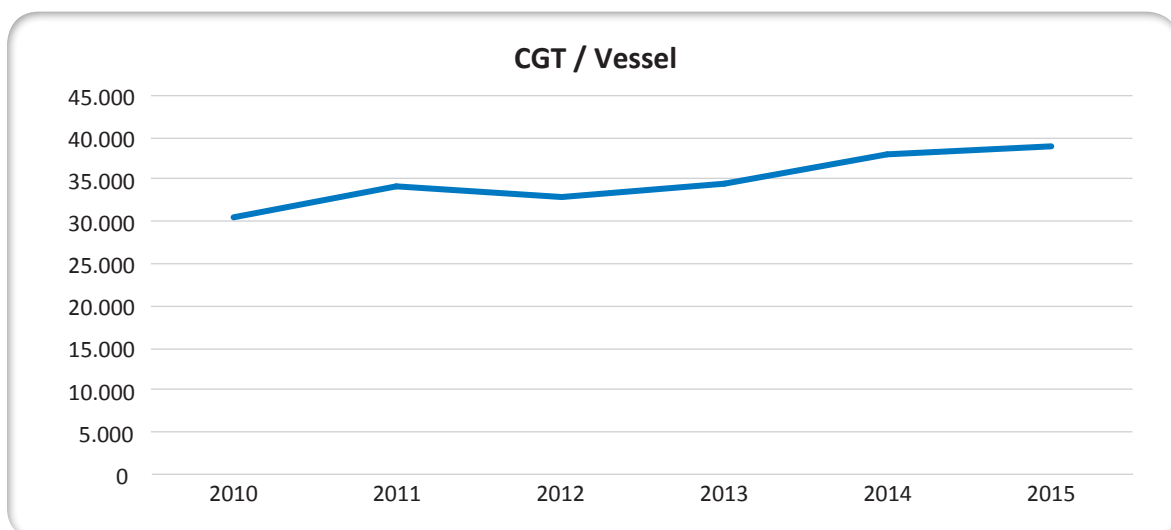
Source: SEA Europe

In 2015, 212 containerships were delivered (8,25 mln CGT). As in the previous years, over 90% of containerships are built in Asia (China and South Korea). There is now overcapacity in the market so it is expected that deliveries of containerships will decrease in the coming 5 years. There is no room for many new orders very soon, since the current orderbook will cover a large part of the demand.

In the past years, the fleet grew unevenly. There was a shift to larger ship sizes when the focus was cutting unit costs per transported TEU by having larger ships. The ultra large containership segment (ULCS) especially contributed to the growth and currently accounts for 18% of the total fleet in TEU. There was annual growth of 45% between 2011 and 2016 of the ULCS fleet (12,000 TEUs and larger). Vessels over 10,000 TEUs accounted for 55% of the total capacity delivered in 2015. They now make up approximately a quarter of the current world fleet, up from less than 5% in 2011. Vessels of this size currently make up around three quarters of the total orderbook, so the share is about to grow.

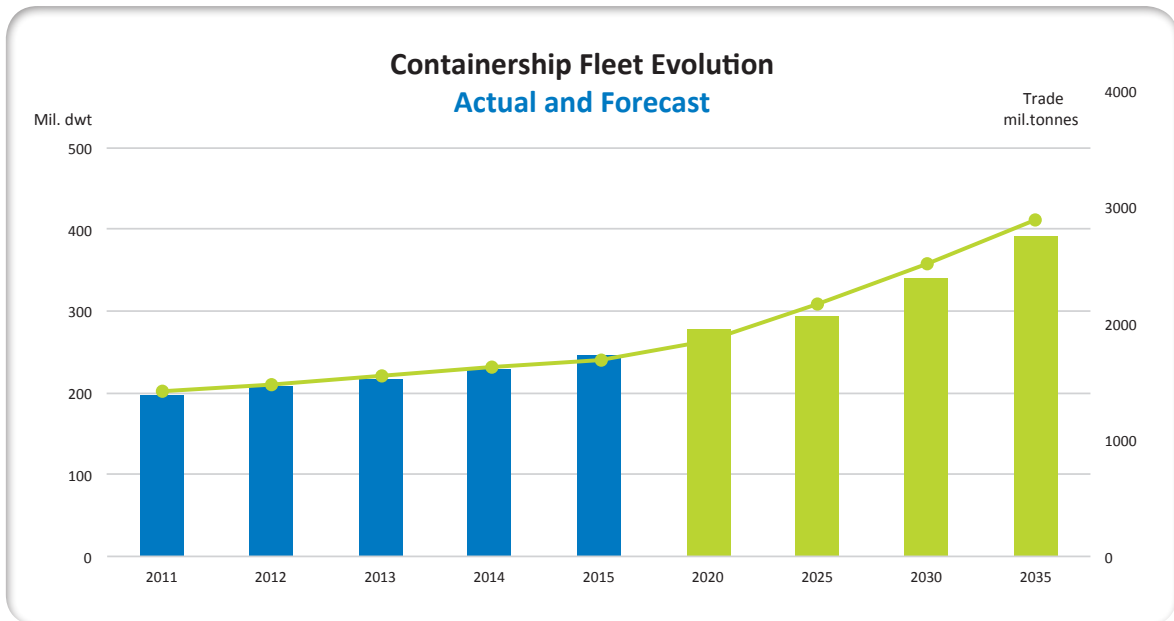
Supersized containerships are leading to overcapacity. It is estimated that the demand for very large containerships is coming to an end because it has resulted in low freight rates and also ports struggle to turn them around efficiently, causing the total system cost to rise. This is why it is estimated that ULCS orders will decrease significantly. There will also be more demand for feeders to serve the big ships delivered. In the old Panamax segment, there is also overcapacity as these ships are not any more the most efficient way to transport goods through the Panama Canal and finding new uses has been difficult, as they are inefficient for most other container trades.

The figure below shows the CGT per vessel, that has been increasing in recent years.



Source: SEA Europe

In 2015, the containership fleet amounted to 246 mln DWT (5,214 vessels, 19.7 mln TEU), which means 6.5% growth compared to previous year in DWT. The container fleet in percentage of world's total fleet is around 14% in DWT. The containership fleet will grow following the trade growth.

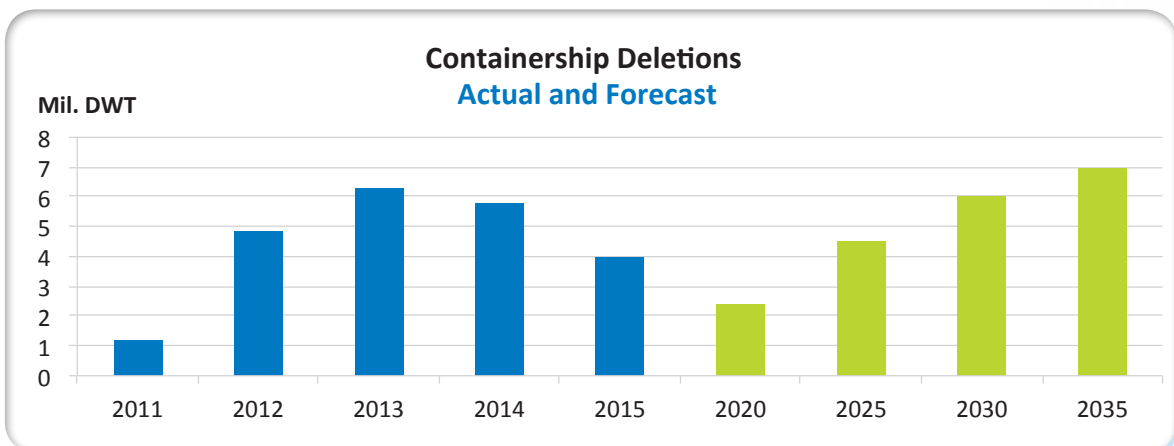


Source: SEA Europe

Container fleet requirement forecasts for 2020 / 2025 / 2030 / 2035 are 278,53 / 294,04 / 341,50 / 392,91 mln DWT.

Containership Deletions Actual and Forecast

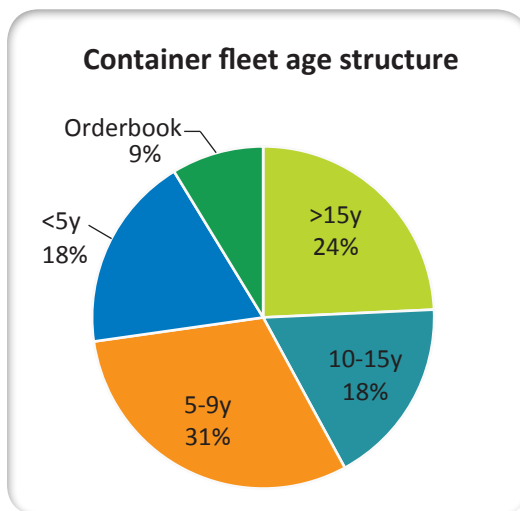
Containership demolitions reached a record level in 2013, when 197 vessels ~ 435,000 TEU were removed. After 2013, demolition decreased and 2015 116 vessels were demolished. Year 2016 was again a record busy demolition year. Especially deletion of old Panamaxs which are becoming obsolete due to the new Panama Canal expansion has been high. Higher demolitions will help to stabilise the industry. Today, the fleet is quite young and demolitions are expected to increase further again after 2025. The size of ships being scrapped is also expected to increase and the age of demolition is expected to decrease.



Source: SEA Europe

Containership fleet age structure

In 2016, approximately 24% of total containers are over 15 years old. In 2015, the average age for containerships was 11.5 years. The orderbook (at the end of 2015) covered 9% of the fleet.



Source: SEA Europe

Slow Steaming

Slow steaming started in 2007 - 2008, along with the financial crisis, when the market started to face an oversupply of tonnage, declining freight rates and increasing bunker prices. Through slow steaming vessels save bunker fuel, which is the largest component of operating costs structure. So, the practice of deliberately slowing down the speed of a ship was based mainly on economic reasons.

Nowadays, despite the continued low oil prices, slow steaming is still a common practice due to the fact that reduced fuel consumption leads to less air emissions and enable more energy efficient operation. In addition, slow steaming keeps over 1 million TEU employed, the equivalent of 5-8% of the global container fleet capacity. If vessels speed up, it will probably lead to overcapacity in the market and put downward pressure on freight and charter rates. Slow steaming might even be a normal practice for the future.

Container Shipping Business

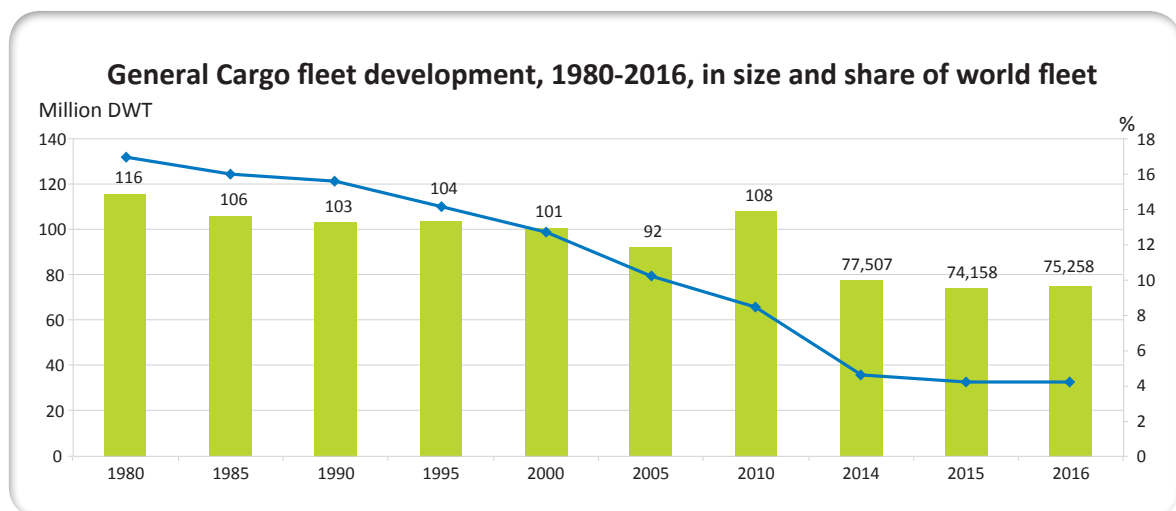
The current cheap slot cost will affect in a positive way the container shipping profitability and actual slots costs are expected to decline at faster rate than average freight rates. Bunker prices have fallen since early September 2014 reducing the largest cost element for ship operators. The main beneficiaries of a lower oil price are containership companies, which benefit directly as bunker is not a passed through cost in container shipping. Another effect of the low oil price is the return of the feeder vessels onto the market offering lower bunkering prices per unit. In recent years, feeders have been passed by for being more expensive and slower than large vessels.

The container shipping business is also changing and operators are forming new alliances to increase operational efficiency. The alliances formed in the market limit the amount of port calls due to the large vessels for the main routes, which results in an increased number of feeders especially for small ports and shorter shipping routes. Also Hanjin Shipping went bankrupt, a reminder of the severity of the situation of the industry. We can also notice a predilection for eco-friendly designs.

b. General Cargo ships forecast

Background and fleet profile

For a century, the general cargo ship was the workhorse of global seaborne trade. This all started to change with the advent of the containership in the late 1960s. By the mid-80s, classic general cargo vessels were being sent off to the scrapping beaches in droves, as containerships pushed these ships out of more and more trades. As the classic general cargo ship left the scene, the composition of the general cargo fleet tilted more and more towards short sea cargo ships below 10,000 DWT carrying capacity on the one hand and multipurpose and heavy lift tonnage on the other hand. As of January 1st, 2016, over 80% of the active general cargo fleet in terms of numbers of vessels consisted of general cargo ships smaller than 10,000 DWT. Despite these changes to the composition of the general cargo fleet, the decline in size and market share of this fleet continued. Of course, there were certain periods of revival (as seen in the graph below), but overall the general cargo fleet has declined quite sharply in size, from 116 million DWT in 1980, to 75 million DWT as of the beginning of 2016. Because the total merchant fleet expanded sharply in the same timeframe, the general cargo fleet's share of the world merchant fleet has declined much more severely, from 17% in 1980 to 4.2% at the beginning of 2016².



Note: Bars indicate fleet size, while the line indicates market share.

Source: UNCTAD review of maritime transport, issues 2012, 2015 & 2016). This graph is meant as an indication and is based on Clarkson's data. The numbers may not match those used in the SEA Europe forecast, which is based on IHS Fairplay data.

While general cargo vessels have been replaced by containerships in many trades, there are some regions where volumes and port infrastructure do not (yet) allow replacement by containerships. More importantly, there are several trades for which container vessels are not suitable. Examples are short sea shipping and heavy lift shipping. These two shipping segments had a good run during the economic boom prior to the Lehmann crisis of 2008. Short sea shipping, in Europe in particular, benefited from strong economic growth in various EU economies and plentiful financing, especially in Germany and the Netherlands, where the KG³ and CV⁴ capital structures attracted many new investors. Heavy lift shipping rode the wave of demand for project cargoes to China, as that country rapidly became the world's factory. Heavy lift and multipurpose tonnage is very suited for the transport of outsized or breakbulk cargo: things that do not fit well in a container.

2) UNCTAD, Review of Maritime Transport 2016, pg. 31

3) KG=Germany Limited Partnership

4) CV=Dutch Limited Partnership

The economic boom of the mid-00's led to a sharp recovery of the size of the general cargo fleet, from 92 million DWT in 2005, to 109 million DWT in 2009 and 2011⁵. Unfortunately, the recovery was shortlived as the general cargo fleet saw a very sharp decline in the years from 2011 onwards: in the space of four years (2011-2015) the fleet declined from 109 million DWT to 74 million DWT: a decrease of 32% and the worst decrease on record since 1980.

As of January 1st, 2016, the general cargo fleet as per the registers of IHS Fairplay, consisted of 14,811 ships. These are all vessels carrying an IMO number and they are classed by IHS either as "In service/commission", "Laid up", "In casualty or repair" or "Converting/rebuilding". Of this total, 13,905 vessels are classed as "General Cargo Ships". Heavy lift and multipurpose ships account for another 461 ships. The remainder of the category is made up by niche tonnage such as deck cargo ships, livestock carriers, semisubmersible heavy lift ships and the lone yacht carrier.

A large part of the fleet was (and is) very old: some 7,075 vessels or 48% of the fleet is at least 25 years old. At the same time, 3,763 vessels or 25% of the fleet is at most ten years old. The high proportion of old vessels indicates significant fleet renewal potential in the years ahead. Unfortunately, trends in recent years have shown that the amount of vessels scrapped every year quite often exceeds annual newbuild deliveries. As newbuilds tend to be larger than the vessels they replace, the decline in terms of tonnage is less pronounced than the decline in numbers of vessels.

Recent market developments and market drivers

With the European short sea shipping industry currently in the doldrums, ordering of newbuilds for this segment has slowed down significantly in recent years. Low freight rates, lack of finances on the shipowners' side and unwillingness of banks to finance newbuilds have left only a few European owners able to order newbuilds. When these owners do order newbuilds, the new ships tend to be much more efficient than the ships they are replacing, in order to reduce fuel consumption, harmful emissions and to comply with the EEDI⁶ design criteria of the IMO⁷. Hulls are being optimised and installed engine power is being reduced, compared to older vessels. The large Dutch short sea shipowner, Royal Wagenborg, has indicated that its latest 22,000 DWT newbuildings of the R-BORG class burn two thirds less fuel than the 8,400 DWT ships from the late 90s they are replacing. Despite being almost three times larger, the R-BORG series has 15% lower installed engine power than its late 90s fleetmates⁸.

Short sea vessels with Open Top notation, able to sail without hatchcovers, are also on the rise. These vessels are particular suited to ferry windmill parts to offshore windfarm installation projects. The very latest generation of these open top vessels has been adapted further to include a Dynamic Positioning system, increasing suitability for the offshore windfarm market. In recent years, many heavy lift vessels for project cargoes have been built as well, but this segment is currently also suffering from overcapacity and low rates, resulting in an early withdrawal of vessels with lower lifting capacities. Last but not least, the issue of sulphur emissions is firmly on the cards for short sea vessels, as many trade in present or future Sulphur Emission Control Areas, coupled with the global sulphur cap for shipping of 0.5% per 2020⁹. While some ships have been retrofitted with sulphur scrubbers, these installations are proving too large or too expensive for most short sea ships. Meanwhile, yards in Europe and China are starting to deliver the first short sea ships fuelled by LNG-burning dual fuel engines. Further on the horizon, issues like remote monitoring, unmanned ships and battery-powered ships are coming up.

5) UNCTAD review of maritime transport 2010, pg.30 & UNCTAD review of maritime transport 2012, pg.31

6) Energy Efficiency Design Index

7) International Maritime Organisation, a United Nations agency

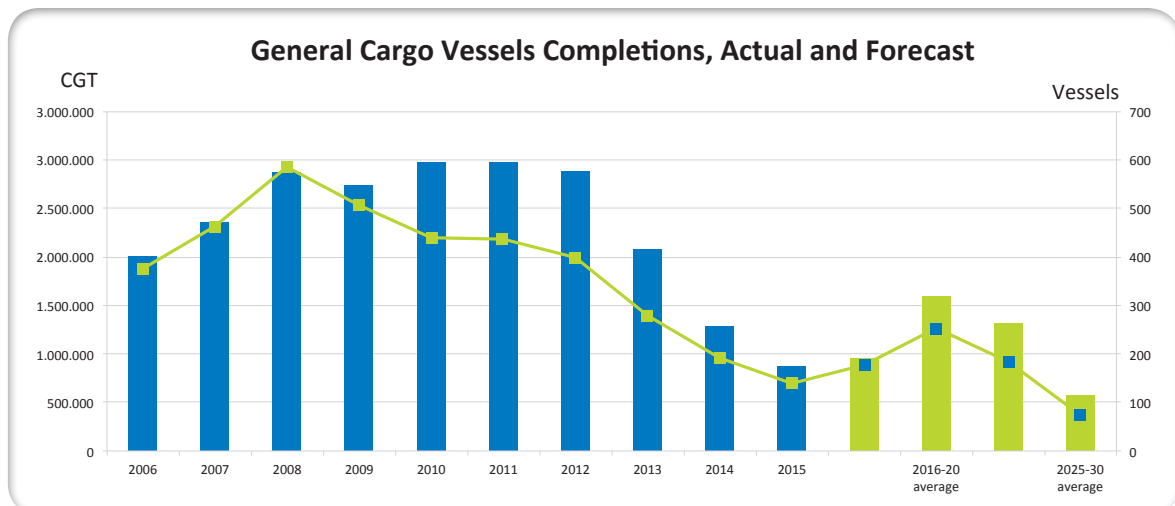
8) Presentation by Albert Engelsman, Royal Wagenborg, 10/9/'15

9) IMO.org, 15/11/'16

As indicated before, there is a significant overcapacity and a severe lack of financing for newbuilds in the European short sea sector. Dutch short sea expert, Johan Wagelaar, only sees a balancing of demand and supply in the European short sea market by 2020, providing demand growth remains at 2% per year and newbuild contracting remains low¹⁰. Contracting of general cargo newbuilds worldwide is in fact currently very low, resulting in a sharp drop in expected newbuild deliveries, from over 1.9 million CGT for 2016, via 1.06 million CGT in 2017 to a mere 476,000 CGT in 2018. Deliveries for 2016 will probably end lower than expected due to delays on newbuilds, resulting in slightly higher final numbers for 2017. Upon closer examination, over 300,000 CGT of the current general cargo orderbook was contracted before 2013, raising doubts whether this tonnage will be delivered at all.¹¹ On the upside, some new contracting for 2018 deliveries is still to be expected, as general cargo tonnage generally has fairly short lead times. Nevertheless, the outlook for the next few years for yards specialising in general cargo tonnage is grim. An improvement of newbuild contracting towards the end of the current decade (2018-2020) would seem likely though, given the significant scrapping potential of the existing fleet, exacerbated by upcoming new environmental regulations as detailed before. In addition, the orderbook-to-fleet ratio for the general cargo fleet at the beginning of 2016 was low at approximately 4.6% in CGT terms.

SEA Europe forecast

SEA Europe predicts a relatively modest demand requirement for on average 177 general cargo vessel deliveries or 1,039 million CGT per year for the period 2016-2020. For the period 2021-2025, the demand recovery for general cargo ships is expected to peak at an average of 253 vessel deliveries per year or 1.73 million CGT. The peak in demand wanes in the second half of the 2020s as an average of 184 deliveries per year will be required, amounting to an average 1.73 million CGT per year. In the longer run, however, we expect the world's general cargo fleet to resume the declining trend it has exhibited over the years. Our forecast for the period 2031-2035 is, therefore, decidedly bearish, at an average 74 newbuild deliveries per year or 616,000 CGT per year. Demolition numbers are expected to remain firm throughout the entire forecasting period, oscillating between 323 and 340 ships per year or 1.3 to 1.4 million CGT per year. There are simply that many older ships in the general cargo fleet.



Source: SEA Europe, November 2016 / IHS Fairplay, 2016

10) Johan Wagelaar, Tristan Beumer; The European Short Sea market in perspective, Volume III, 2015, pg.26

11) Data source: IHS Fairplay, updated to end August 2016

Uncertainties and possible future demand drivers

Of course, there are many developments and circumstances which are hard to predict in a demand requirement forecast. Perhaps intra-Asian trade will grow so fast that there will be a sharp increase in Asian demand for short sea vessels. Alternatively, a lot of this new intra-Asian traffic could be containerised immediately. Another interesting potential development could be that of unmanned ships, which might generate so many savings that wholesale replacement of existing manned ships by newly built unmanned short sea ships turns out to have a solid business case.

In the heavy lift and project cargo sector, a continuous push for larger and more capable ships (mainly in terms of lifting capacity) could generate a premature fleet replacement of the existing ships. While the Chinese economy could be reaching maturity, the One Belt One Road (OBOR) initiative or “Maritime Silk Road” of the Chinese government might generate renewed intense demand for heavy lifters. Also, a continued growth of several energy- and resource-rich African countries could spur heavy lift demand. At the time of writing however, the fate of many of these sub-Saharan “boom” economies is hanging in the balance.

Finally, the SEA Europe forecast is a demand requirement forecast, which by its very design cannot take into account ordering of new ships because of low yard prices or easy access to funding for example. Annual fluctuations in ordering are also extremely difficult to forecast. Therefore, SEA Europe issues average numbers. The forecast can serve to give an idea of the required amount of tonnage in the future and to stimulate serious discussion on the future demand for ships.