

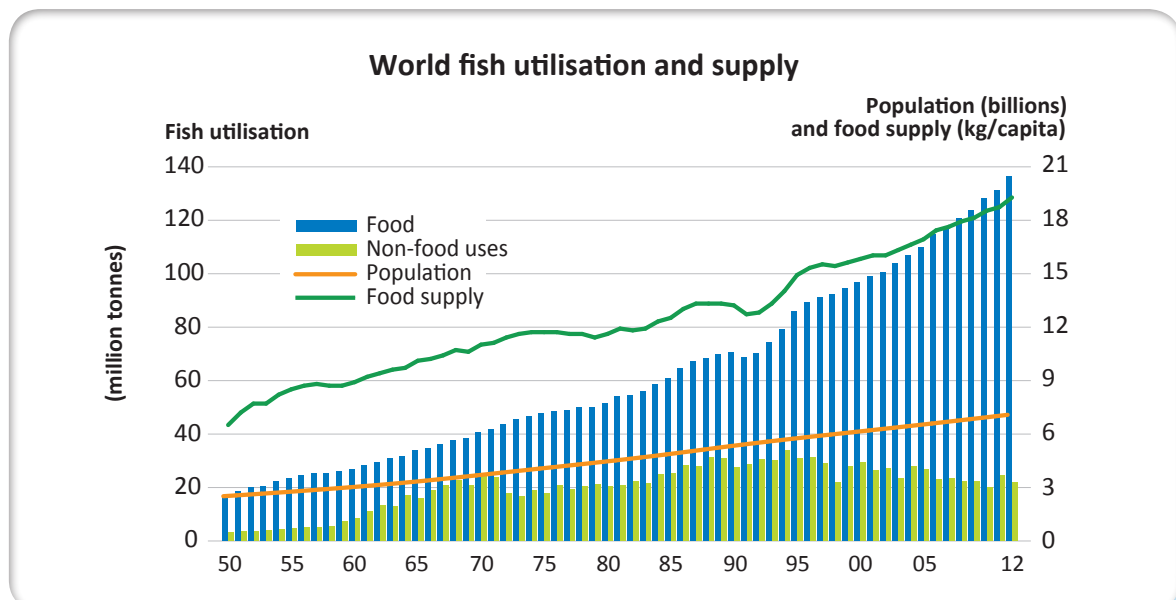
Newbuilding Requirements: Other Non-Cargo Carrying Vessels (ONCCV)

a. Fishing Vessels

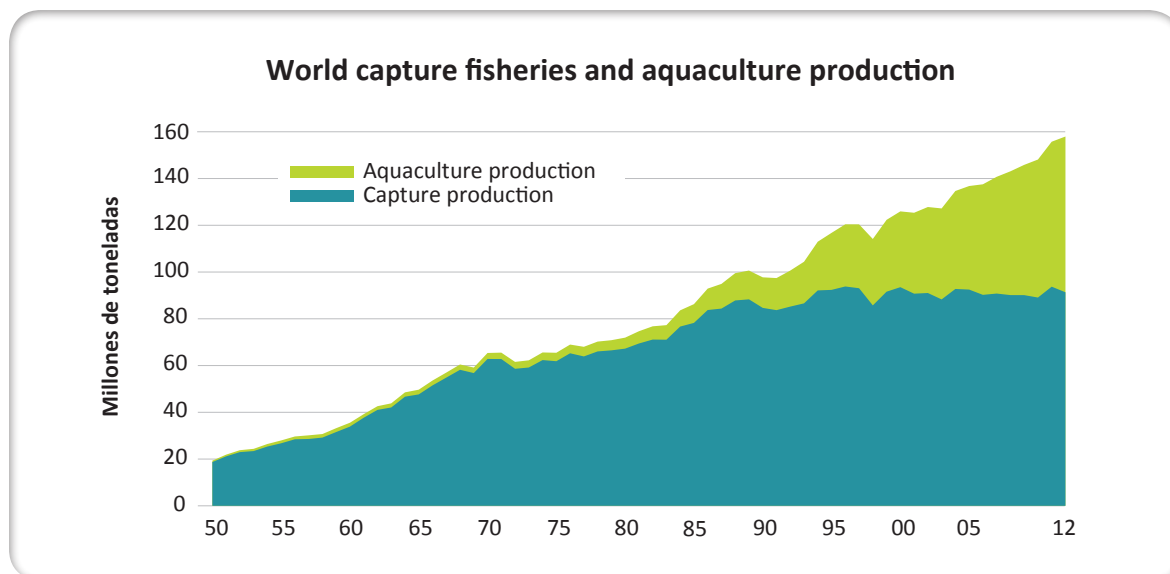
Demand for fishing vessels is driven by the global population. This is because of the main use of fish as food. Given the expected population growth, it follows its future growth to meet this need. However, there are additional factors to consider.

The future market for fishing vessels is one of the hardest markets to predict of all vessel types. This is largely due the fact that fleet size is mostly dictated by government policies rather than market requirements. Several studies have shown that fish stocks have been seriously overfished in many areas of the world. Several countries have established targets to tackle national overcapacity of fishing fleets. A rise in fish quota restrictions is, therefore, to be expected. That is why the global fishery production in marine waters remains uniform between 78-83 million tonnes. Coupled to these restrictions is a likely decrease in the world fishing fleet size. At the same time, a rise in the number of vessels active in fish farming is to be expected. There will still be a newbuild requirement for fishing vessels, as a certain degree of fleet renewal will be necessary to replace part of the current ageing fleet. Global fish production has grown steadily in the last five decades, with food fish supply increasing at an average annual rate of 3.2 %, outpacing world population growth at 1.6 %

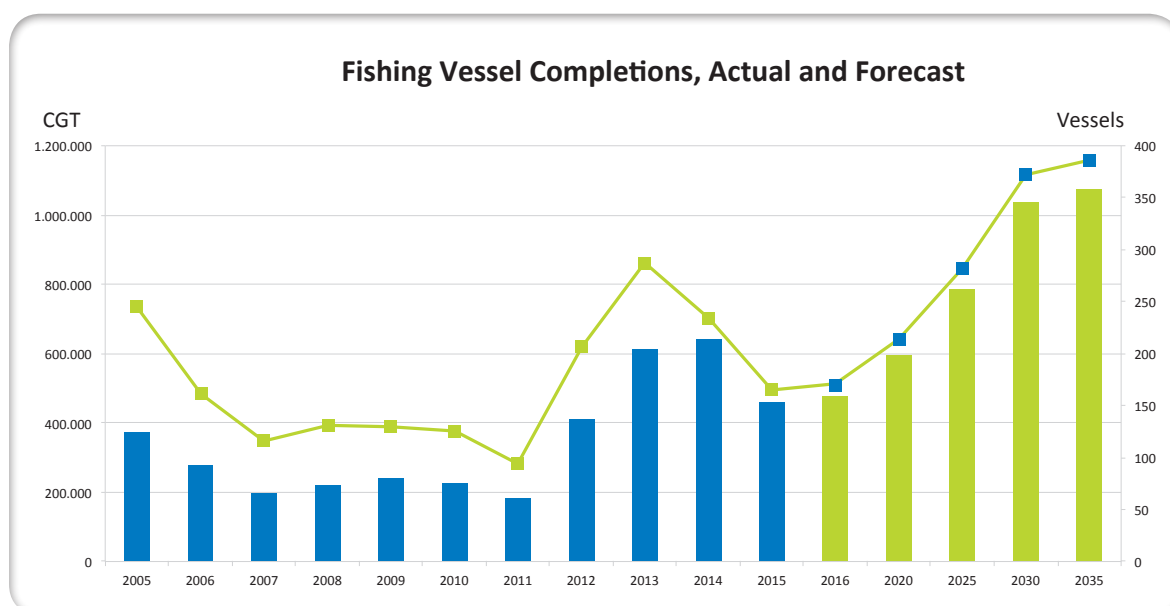
The total world fishing fleet as per IHS Fairplay currently numbers over 22,000 vessels (above 100 GT) with a total tonnage of 9.8 million GT (The total number of fishing vessels in the world was estimated by FAO to be about 4.72 million in 2012, 90% of them less than 12 m LOA). Basis of our forecast is the assumption that the current fleet will shrink by 25% to 8.3 million GT by 2035. A high level of scrapping is expected in the coming years due to the age of the fleet. Currently, more than 50% of the ships are over 30 years old. Newbuild deliveries are expected to rise from around 215 vessels in the period 2017-2020 to around 386 vessels per year in the period 2031-2035. While the latter may seem like a significant amount of vessels, it is still lower than the amount of vessels deleted from the fleet in that same period, resulting in a further drop of the fleet size.



Source: Food Agricultural Organisation (FAO)



Source: Food Agricultural Organisation (FAO)



Source: SEA Europe

Note: The bars represent CGT, while the line represents number of vessels.

b. Research Vessels

The market for research vessels is basically divided into two categories: the oceanographic research vessels (ORV) owned by government entities used for oceanographic research disciplines (physical, biological, chemical, marine geology and geophysics, ocean engineering and atmospheric science) and the geophysical seismic research vessels (SRV) owned by private companies and used in the offshore oil and gas industry. Order levels for government oceanographic research vessels (ORV) are driven by government planning and government budgets, while order levels for the seismic research vessels (SRV) related to the offshore industry are linked to the growth in exploration activities for oil and gas.

Seismic Research Vessels (SRV)

The level of exploration activities is related to expectations about the future price of oil and gas. Before the onset of the economic crisis, contracting of particularly seismic research vessels (SRV) peaked at 17 vessels per year in 2008. Afterwards, it never returned to the same level, despite the quick recovery of the oil price after the severe dip of 2009. The reasons for this low level of contracting might lie in the backlog of vessels ordered before the crisis and the rise in size and complexity of newbuilds. Orders for SRV hovered around five units per year between 2009 and 2014, when orders went down even further. The oil price went down considerably from mid-2014 onwards and is presently quite low. This has had an immediate effect on the investment plans for oil and gas exploration. Owners of seismic research vessels are recording losses and vessels are being laid up or, the older less competitive vessel, scrapped.

For oil and gas exploration, struggle with low vessel utilisation, as demand keeps declining for exploration work in new frontier fields, day rates are already at severely depressed levels. As some indication is that current seismic demand is potentially as low as around 30 SRV, while the current active fleet is up around 66 SRV. This low demand is expected to remain fairly low in 2016 and 2017. It can take a couple of years to develop new plans for new fields, especially when they are sophisticated and complex subsea projects in deep waters.

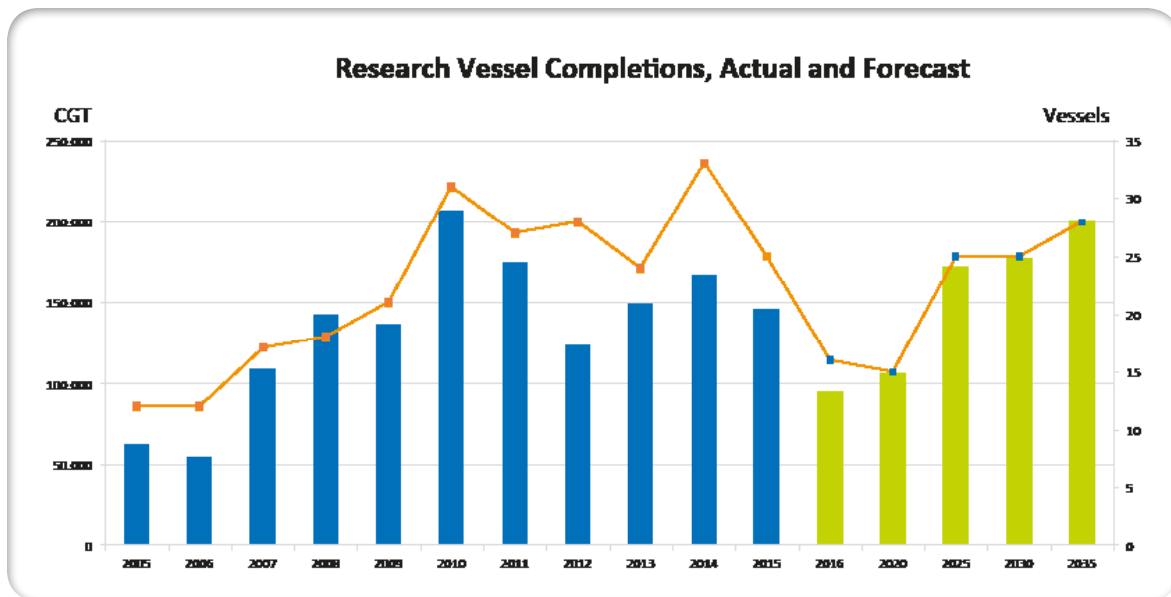
However, in the longer term, oil companies must keep up their exploration activities or else their known oil and gas reserves will decrease too much. In addition, almost half of the existing fleet of close to 700 survey ships was built before 1984. Recovery of exploration activities and fleet renewal will help to restart investment in SRV vessels, but it remains to be seen whether the contracting levels of 2007-2008 will be reached again.

Oceanographic Research Vessels (ORV)

As mentioned before, orders for government owned research vessels are related to government budgets. It will come as no surprise that these budgets have been under serious pressure in Europe and the USA in recent years. On the other hand, the newly emerging economic powers of China, India and some South American countries are spending a lot of money on expansion of their oceanographic research fleets as they venture out further in the quest for energy sources and other raw materials.

The existing fleet of research vessels (government and private (energy industry)) will need replacing: almost half of the existing fleet of close to 1,000 research vessels is 30 years of age or older. Over a quarter of the existing fleet dates from the 1960s and 1970s. Due to the aforementioned budget constraints in mature Western economies, it is highly likely that existing research vessels in those countries will be replaced by fewer but larger and more capable research vessels. China and India will in all likelihood keep expanding their research fleets for at least a decade, while Russia will need to replace about half of its existing fleet in the next decade: 46 of the 87 Russian flagged research vessels were built in 1984 or before.

Due to fleet replacement, scrapping is expected to rise in the mid-term, from 20,000 GT per year to nearly 60,000 GT per year by 2035. Part of this increase in scrapped tonnage will be due to an increase in absolute numbers of vessels being scrapped, but part of it is also due to the growth in size of research vessels being retired. Research vessels built in the early 1990s measure 2,700 GT on average, while vessels built before 1985 measure about 1,100 GT on average. Deliveries of newbuilds are expected to average 20 vessels per year for the period 2016-2025 with an average tonnage of around 3,400 GT per vessels. For the period 2026-2035, deliveries are expected to increase to 26 vessels a year with an average size of 4,500 GT per vessel, reflecting the gradual growth in size of vessels witnessed in the past decades as well.



Source: SEA Europe

Note: The bars represent CGT, while the line represents number of vessels.

c. Tugs

Drivers behind tug orders

Growth in the world fleet of tugs is driven by growth in world seaborne trade, which in turn is related to world GDP growth. While seaborne trade appears to have settled on a lower growth path since 2011, it is still growing nevertheless.

Growth in world trade means more vessel movements. Most of the larger vessels require tug assistance. In order to accommodate all these extra vessel movements, a lot of ports are being expanded or newly constructed, mainly in Asia, Africa and South America.

Not only the rise in vessel movements is driving newbuild orders for tugs. Another driving force is fleet renewal. Large port tug operators in Europe, Asia, the Middle East and the US are ordering or operating energy efficient and environmentally friendly tugs with new propulsion forms, such as hybrid propulsion (battery/diesel) or dual fuel engines fuelled by LNG or diesel. This fleet renewal by major tug operators is not directly leading to an increase in scrapping of old tugs. Tugs simply have extremely long lives, although we cannot rule out that in the future, tug lives will be cut short by environmental regulations, as has also happened with some large ship types, like oil tankers and passenger ferries.

Fleet profile

“Tugs” are defined here as sea-going vessels listed in the registers of IHS Fairplay in the categories Tug, Pusher Tug, Articulated Pusher Tug and Salvage Tug. The world fleet of tugs in these categories numbered about 17,300 vessels at the end of 2015. This represented an increase of around 600 vessels compared to the end of 2014¹². 38% of the current tug fleet was delivered in the last ten years, whereas 28% of the fleet is aged 35 years and older. Main builder countries for tugs in the past ten years have been Indonesia, Malaysia and China (not necessarily in that order), taking a 60% market share in terms of numbers of tugs delivered annually.

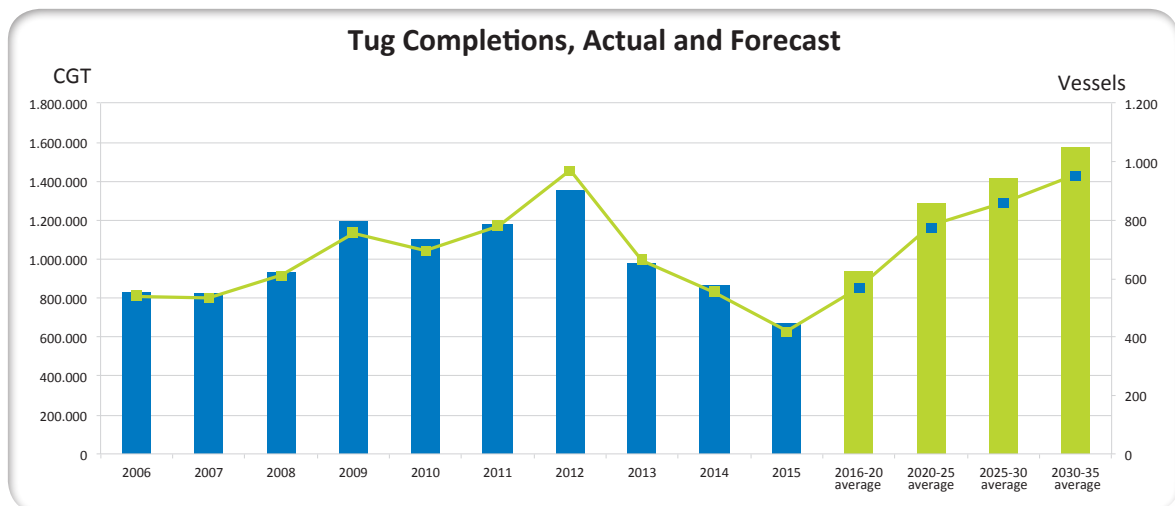
12) IHS Fairplay World Register of Ships, 1/1/'16

The average size of the vessels delivered since 2006 is 305 GT. Deliveries from 2006 onwards have been averaging around 650 vessels, but they have been on a downward trend since the peak in 2012, when 970 tugs were delivered. 2015 saw the delivery of a mere 419 tugs. Scrapping of old tugs is very hard to trace, but our best estimate is that around 90 tugs per year have been deleted from the fleet in recent years.

Forecast

Deliveries of tugs are expected to remain subdued for the next few years, due to the aforementioned slowing of world seaborne trade growth. Compared to the 2015 forecast, we have, therefore, reduced by 10% the tonnage expected to be delivered in the period 2016-2020 in our new forecast.

We now expect to see 570 tug deliveries per year in the aforementioned period. As the world tug fleet continues to grow by around 3% per year, while scrapping gradually increases, we expect tug deliveries to gradually rise to around 956 units per year in the period 2030-2035. This again is a decrease of around 10% compared to the previously expected peak of 1,050 units per year around 2025. A slowdown in expected seaborne trade growth and lower than expected scrapping have led to this deferral and lowering of peak production.



Source: SEA Europe / IHS Fairplay, 2016

Note: The bars represent CGT, while the line represents number of vessels.