



LNG BUNKERING POISED FOR GROWTH

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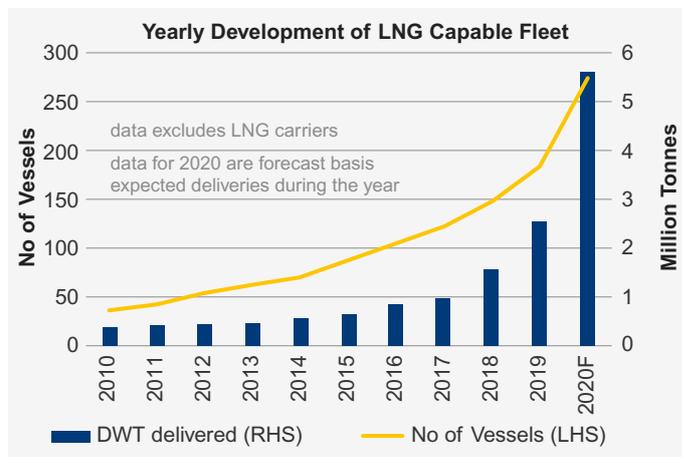
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1. LNG BUNKERING POTENTIAL ON DISPLAY IN 2019

New requirements for less polluting shipping bunkers have lifted interest in LNG as a maritime fuel. In the Port of Rotterdam, the volume of LNG bunkering grew by 240% y-o-y to 32K tonnes in 2019. Although this still represented only 0.4% of the port’s total bunker sales, officials consider LNG a key strategic pillar of the port’s broader energy transition ambitions and estimate sales in Rotterdam could surpass 1M tonnes by 2025-2030.

2. LNG-CAPABLE FLEET EXPANDS AT RAPID PACE

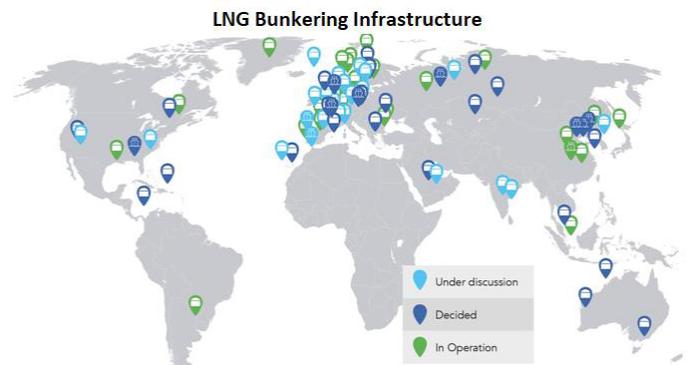
The development of the LNG-capable fleet has picked up pace and is projected to increase by around 50% y-o-y in 2020 in terms of number of vessels. The anticipated increase in terms of deadweight delivered is much higher at 120%, which indicates a shift towards larger LNG fuelled vessels. More specifically, the average DWT of LNG-capable ships that will be delivered in 2020 is estimated at 35K tonnes, which is around 20K tonnes higher than the average DWT of the existing LNG-fuelled fleet.



Growth of the LNG-capable fleet is poised to accelerate moving forward, as contracting of such vessels gained significant traction in 2019. Around 31% of all orders across 2019, basis CGT, were LNG fuel capable. Stripping out the LNG carrier orders (as these ships burn boil-off gas), this share was 17%, up from 7% in 2018. Notably, the share jumps to 26% in 2H 2019.

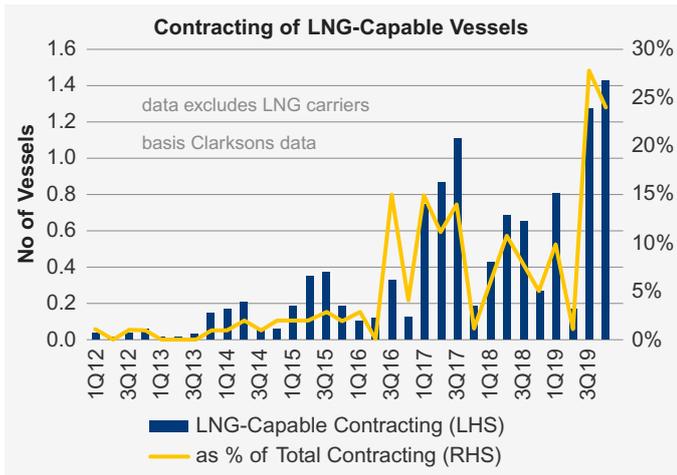
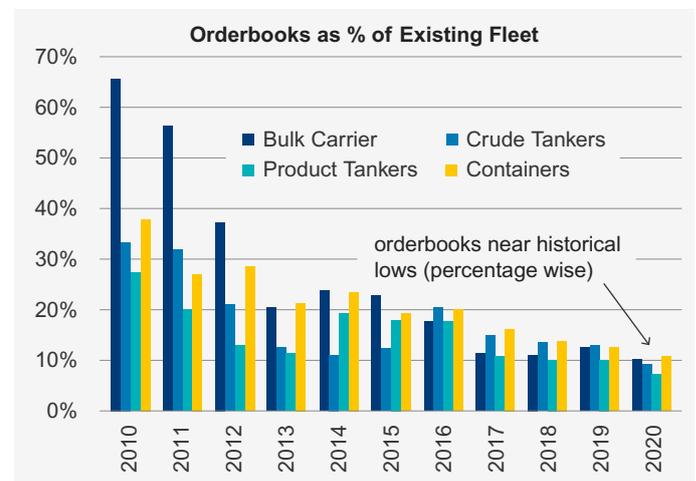
3. LNG BUNKERING SUPPLY INFRASTRUCTURE DEVELOPMENTS

There are currently 96 LNG bunkering facilities in operation, most of which are serving existing ECAs in Northwest Europe. An additional 112 LNG bunkering facilities have either been decided but not completed yet or are under discussion. Notably, the majority of existing infrastructure involves truck loading operations, which are mainly suitable for small fishing ports and marinas. However, upcoming projects evolve primarily around barge to ship and tanker to ship operations. This indicates that growing demand for the fuel has triggered investments on larger scale LNG bunkering facilities.

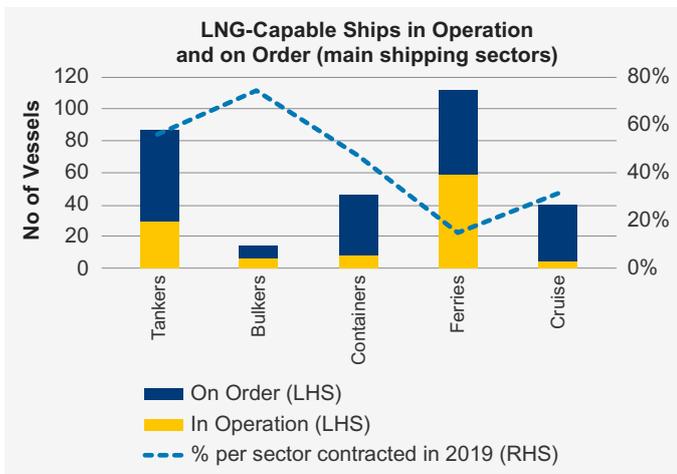


4. SHIPOWNERS' PERSPECTIVE

Against a backdrop of rationalisation of fleet expansion capital and rising uncertainty over trade, environmental regulation and technology, shipowners have been shying away from the newbuilding front, preferring to make smaller and shorter-term investments in the secondhand market instead. Highlighting this trend, newbuilding contracting in 2019 fell to its lowest level of the decade. Minimal contracting has caused orderbooks to fall significantly.

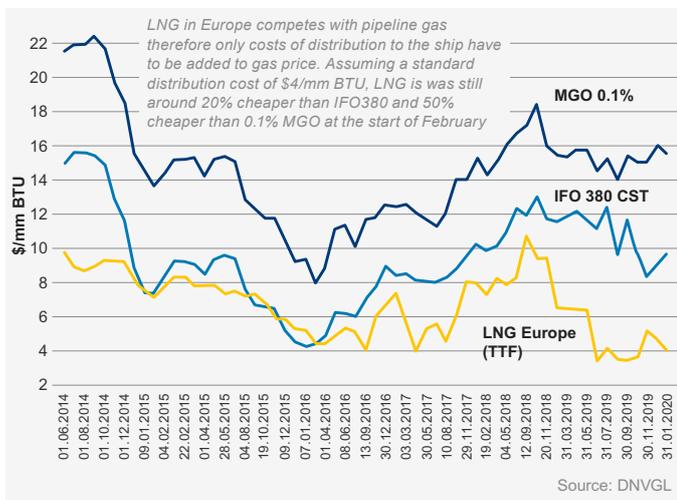


Until recently, it was mostly cruise ships and ferries that were being fitted with LNG capable engines. However, in 2019, the proportion of LNG capable orders accounted for by tankers and boxships reached 34% and 19% respectively, while cruise ships accounted for just 12%. LNG uptake on bulk carriers has been much slower, however, there are signs of acceleration in this sector as well, with nearly 80% of the LNG-capable bulk carrier orderbook having been contracted in 2019.



Overall, the DWT of the existing LNG-capable fleet amounts to around 2.81M tonnes, which compares to an orderbook of circa 11.94M tonnes, a stark 325% difference. It should be emphasized that these numbers include only the confirmed orders. There are numerous owners that have announced intentions of ordering LNG-fuelled vessels but have yet to sign firm contracts. A reputable example of this is a letter of intent formed between Capital Maritime and Hyundai Heavy Industries in September 2019 for up to 14 dual-fuelled LNG newbuildings, worth more than \$1.5B.

Shipowners are simply not sure of what vessel to build today which will comply with the regulations of the future. However, the sharp contrast between low overall orderbook volumes and the robust pace of contracting of LNG-capable vessels is a clear sign that owners are increasingly considering LNG as a viable solution to cope with this uncertainty. Charterers are also keen to secure LNG-fuelled tonnage. Broking sources report that a premium of around \$15,000-20,000/day is currently awarded for an LNG fuelled 15,000 TEU containership versus a scrubber fitted vessel of similar specifications, allowing for a swift recoupment of the investment. This is compounded by a higher cost-efficiency of LNG compared to oil-based fuels.



Furthermore, the use of scrubbers has many inherent disadvantages such as operational complexity (potential damage to main engine) and waste management issues (several ports have issued scrubber discharge bans). Most importantly, scrubbers and low sulphur fuels reduce sulphur dioxide emissions but have little effect on emissions of CO₂, nitrogen and particulates, which makes them vulnerable to future IMO directives. By contrast, LNG not only reduces sulphur oxides to negligible amounts, but also cuts nitrogen oxides by 85%, CO₂ emissions by 17-20% and emits only traces of particulate matter.

5. WIDE WINDOW OF OPPORTUNITY FOR LNG BUNKERING

The IMO has set the target to reduce CO₂ emissions by 40% by 2030 and 70% by 2050, while lowering total greenhouse gas emissions by 50% by 2050 (compared to 2008 levels). There are already measures for energy efficiency standards for ship design and operation (EEDI) in place, which will be tightened every 5 years towards what will eventually be a 30% reduction in CO₂ emissions by comparable ship class by 2025. If this 30% EEDI-

induced reduction is added on top of the 17-20% reduction by switching to LNG, this means that the IMO 2030 target is reached and surpassed, securing a minimum window of opportunity of 10 years for LNG bunkering. However, LNG is also increasingly perceived as the transitional fuel to a net-zero carbon future. According to DNV GL, ongoing and upcoming developments in liquified biomethane (LBM) and liquified synthetic methane (LSM) – either on their own or blended with LNG – provides users a pathway to 2050 and beyond. These gasses have identical molecular composition with fossil-fuelled derived LNG, meaning LNG-fuelled ships and bunkering infrastructure will not be stranded from a switch to complete decarbonization. A study conducted in October 2019 by A.P. Moller-Maersk and Lloyds Register also indicated biomethane as one of the best positioned fuels for research and development into net zero fuels for shipping. MAN Energy and German shipping company Wessels Marine already successfully deployed the 1,036 TEU containership Wes Amelie in early 2020, the first vessel capable of operating 100% on synthetic natural gas.

6. GOVERNMENT INITIATIVES

There is a slew of government initiatives promoting LNG as a bunker fuel. Two notable examples are: i) South Korea announcing it will place orders for 140 LNG-fuelled ships from 2020 to 2025 and ii) Europe's "Clean Power for Transport" directive requiring member states to ensure that "an appropriate number" of LNG refuelling points are placed at maritime ports by 2025.

7. CONCLUSION AND KEY TAKEAWAYS

Ship owners increasingly select LNG-fuelled ships to cope with regulatory uncertainty. LNG has many operational and environmental advantages to oil-based fuels and is more cost-effective. The LNG-fuelled fleet is set to more than double throughout 2020, aided by infrastructure developments and government initiatives which facilitate bunkering on larger vessels. LNG's environmental performance allows it to surpass the IMO 2030 targets. But numerous big companies are choosing it as a bridging solution towards longer-term decarbonization.

Contact us for further information

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