23 MAY 2018

Height Commentary

Katie Bays
(202) 629-0021
kbays@heightllc.com

The IMO 2020 Low Sulfur Standard

"Chaos and Confusion" as IMO 2020 Bunker Fuel Deadline Looms

THE TAKEAWAY

Marine fuel, at roughly 4 million bbl/d, is a small share of the global fuel market, yet it may play a temporarily outsized role in energy markets as the shipping industry braces for the International Maritime Organization's (IMO) 2020 low sulfur fuel standard. The standard requires bunker fuels to contain 0.5% sulfur or less by January 1, 2020, down from 3.5% today (though actual bunker fuel sulfur content is lower, around 2.7%). Refiners are on the hook to manufacture the new compliant fuels, or at least manufacture enough existing compliant fuels to meet demand. Due to significant uncertainty about product specifications and the feasibility of reducing sulfur content in fuels to the required level, we believe most shippers will replace heavy fuel oil (HFO) bunker products with middle distillates, like Marine Gasoil (MGO)—pulling between 1-2 mmbbl/d of incremental distillate demand into the bunker fuel market. Residual products will struggle to find a home, most likely oil-dependent power demand, and they will need a steep discount to be competitive with competitor fuels like coal. The market—along with many shippers—is just beginning to brace for the changes, which the International Chamber of Shipping (ICS) warns will cause "chaos and confusion" when the standards take effect in 18 months.

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Background

On May 21, 2018, ICS Chairman Esben Poulsson rang the alarm bells over the implementation of the 0.5% sulfur cap, questioning whether enough compliant fuels will be available globally by 2020 and if there's enough time to develop global standards that ensure bunker safety and compatibility. Oil majors like BP (**BP**), Exxon (**XOM**), and Shell (**RDS.A**) have confirmed compliant fuels in development will be available for sale before 2020, but details on pricing and timing are sparse. Meanwhile, the International Organization for Standardization (ISO) is working with the IMO and other stakeholders to create safety guidelines for fuel usage that are expected to be available before 2020. While companies and regulators are working to alleviate industry fears, the magnitude and proximity of the 2020 rule's impact have already caused "chaos and confusion" within the international shipping community.

We expect the IMO will address most of the ICS's concerns in July when its Sub-Committee on Pollution Prevention and Response (PPR) meets to develop detailed guidance on implementation. According to IMO Secretary-General Kitack Lim, the meeting will outline relevant timelines, potential impacts on fuel and machinery systems, verification and enforcement issues, reporting formats for fuel availability, and safety standards for blending fuels. After the PPR exhausts potential problems and proposes solutions, we expect the Marine Environment Protection Committee (MEPC) will adopt new rules in October to change industry practices before 2020. For example, the MEPC plans to adopt a proposal that prohibits the carriage of non-compliant fuel for combustion or propulsion purposes except for ships fitted with sulfur scrubbers.

Scrubber Uptake

As mentioned previously, shipowners can opt to continue burning HSFO if they retrofit their ships with scrubbers that remove sulfur from exhaust fumes. CE Delft, who conducted the 2020 feasibility study for the IMO, projects that 3,800 ships will be installed with scrubbers by 2020. We anticipate less than 1,900 vessels—or 2 percent of total ships—will go this route given financial constraints, congested dry-docking space, and limited production capacity.

There are currently around 95,000 contracted and merchant vessels on the water, of which only 300 have scrubbers installed. Over two-thirds of these scrubbers—roughly 210 to 240—were installed in 2017, with scrubber sales totally $300 million in sales—up from just a few million in 2016. 2017 was a record year for scrubber manufactures like Wartsila Oyj and Yara Marine Technology, with Wartsila installing 70-80 scrubbers (roughly 1/3 of global installations) and Yara receiving 400 inquiries. While it's clear interest is growing for scrubber technology, the upfront capital costs ($1-7 million) coupled with the time-consuming (up to a year) engineering plans required for retrofitting will turn away the majority of shipowners, including shipping giants Maersk and Pacific Basin.

LNG Uptake

Shipowners can also convert their vessels to run on liquefied natural gas (LNG), or, more realistically, replace old ships with new ones that run on LNG. CE Delft estimates a total of 170 ships will be powered by LNG by 2020. We anticipate LNG uptake will be in the same range as the CE Delft estimates given the short time horizon before implementation. However, we expect LNG-powered ships will play a major role in shipping in the coming decades.

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Figure 1 - CE Delft LNG Shipping Estimates

	2012	2020 base	2020 high	2020 low
LNG carriers	8	9.76	10.85	9.70
LNG as a fuel market (global fleet)	0	3.22	3.66	3.00
Total	8	13.0	14.5	12.7
Percentage of total energy demand	3.6%	5.4%	5.3%	6%

Source: CE Delft Study, 2016

Both government and industry are working to promote cleaner-burning LNG-powered ships. South Korea recently passed measures to promote LNG-powered ships, including a 10% subsidy to replace old vessels with LNG-powered versions and reducing port facility fees for ships that run on LNG. Meanwhile, Companies like Volkswagon and Carnival (**CCL**) are converting their fleets to run on LNG. In anticipation of this transition, major ports across the globe have started LNG bunkering operations. There are already 20 LNG bunkers globally—primarily in Northern Europe—with 27 more expected to come online in the coming years.

Figure 2 - LNG Bunker Locations

Source: S&P Global, WPCI

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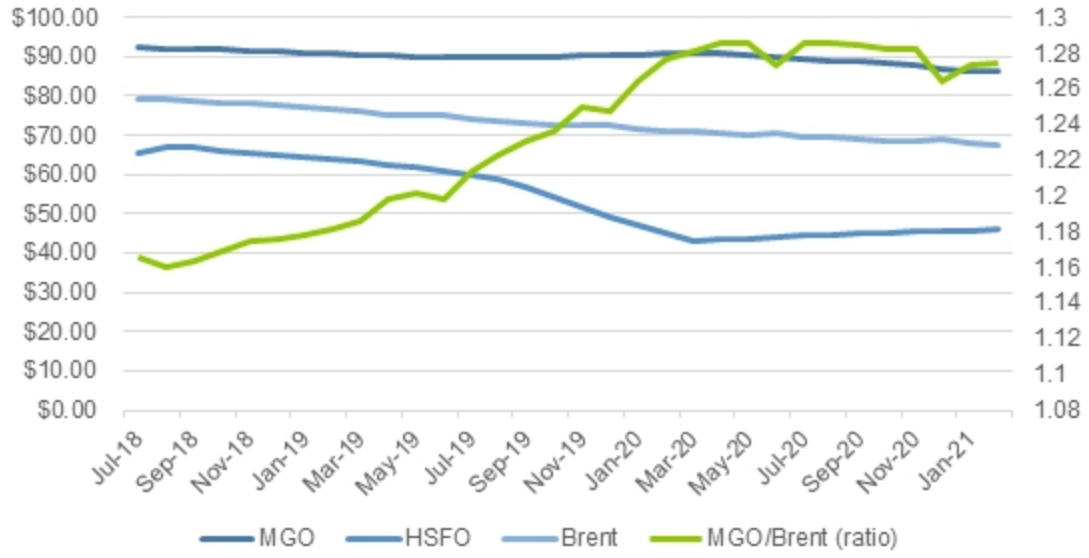
MGO - Main Compliance Pathway

Scrubber retrofits and LNG are likely to be infrequently used compliance strategies for ships under the new shipping emission standard. Limited visibility into fuel price differentials and availability of alternative fuels suggest that shippers have a low degree of confidence in alternative strategies that allow them to avoid costly compliant fuels. Rather, most shippers are likely to opt for compliant fuels, whatever the costs. Then, the question becomes, what compliant fuels will be available. Concerns over the specifications of new low sulfur fuel oil products mean ship owners will turn to what they know - Marine Gasoil - rather than gamble on products with limited availability.

Demand for middle distillates, of which MGO is comprised, is likely to rise meaningfully during the second half of 2019 as ships prepare for the low sulfur fuel standard. Already, futures have begun to price in some of this shift (Figure 3) with HSFO futures dropping precipitously, while MGO futures are relatively flat through 2021 (and Brent crude prices drop over $5/bbl over the same time period). Additionally, MGO futures compared with Brent show an interesting picture – the relative value of MGO over Brent climbs meaningfully through the fourth quarter of 2019, and MGO sustains its premium through 2020.

Figure 3 - Comparison of Fuel Price Futures ($/bbl) and MGO/Brent Ratio



Source: Height analysis

The market is likely only just beginning to appreciate the premium for MGO and middle distillates. Forecasts, such as the IEA's, suggest that demand for distillates could rise as much as 2 million bbl/d by 2020, replacing residuals in the bunker fuel mix. IEA projects that the increase in diesel and distillate demand could be 8-9%, while the loss of bunker fuel demand reflects a 30% decline in demand for residual products.

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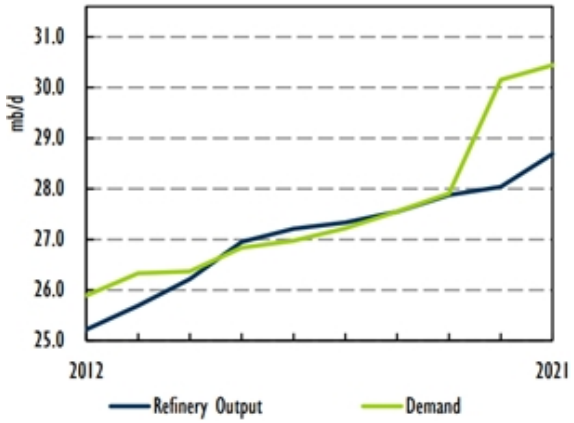
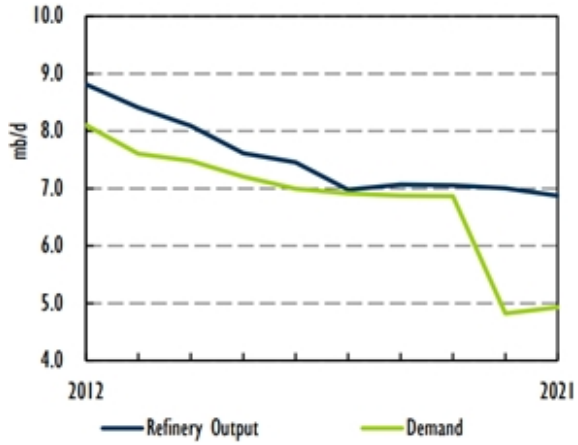
Figure 4 - Diesel Supply/Demand Balance



Source: IEA

Figure 5 - Residual Supply/Demand Balance



Source: IEA

Residuals will have to search out other pockets of demand, including displacing coal in low-quality thermal electric power stations. Residual products can be burned both in traditional steam-electric power generators and in gas-fired power generation, although the latter can take some finesse. Some price-sensitive gas generators that currently burn diesel could turn to residual fuels as an option, but their environmental characteristics are very different. Instead, we believe that incremental barrels of residual may need to compete with coal – a vastly cheaper product – in markets in North Africa and South America, suggesting that residual products will see even greater price pressure.

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COMPANIES MENTIONED IN THIS REPORT

BP Shs Sponsored American Deposit Receipt Repr 6 Shs (BP), Exxon Mobil Corp (XOM), Royal Dutch Shell Shs -A- Sponsored American Deposit Receipt Repr 2 Sh (RDS/A), Carnival Corporation (CCL), Cheniere Energy Inc (LNG)

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I, Katie Bays, certify with respect to each security or issuer covered in this research report that (i) the views expressed in this research report accurately reflect my personal views about those subject securities or issuers and (ii) no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by me in this research report.

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