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IMO 2020 Regulation and the Potential Effects to the Refining and Shipping Markets

By Cuneyt KAZOKOGLU¹, contribution by Dr. Tadas JAKŠTAS²

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Regulatory changes in the sulphur content of marine fuels

International Maritime Organization's regulation on sulphur content in marine fuels – so called IMO 2020 - will be effective from January 1st, 2020. IMO 2020 is yet the biggest challenge that oil refining and shipping markets will be facing since the start of 20th century. The publicity of IMO 2020 has increased for the last one year as the deadline approaches.

In general, the marine industry is following the road transportation industry with a relatively large lag. The sulphur content in marine fuels has been limited to maximum 3.5% in weight since 2012, with 0.5% being the limit in some areas (NW Europe, Baltic Sea, North America incl. US Caribbean) since 2015. Current planned regulation aims to decrease this limit to 0.5% globally starting from January 1st, 2020. This compares with 0.001% sulphur content in road transport fuels used in the US and Europe.

The environmental regulations in major power producers like Japan or the European Union have also almost eliminated HSFO from power generation; hence, leaving shipping industry as the major demand market for HSFO globally. Globally, just 4% of total oil demand is coming from power generation that shows the impact of environment regulations. In the meantime, global marine bunker fuel demand is above 5 mmb/d, of which 3.5 mmb/d is high sulphur fuel oil (HSFO) and the remaining 1.6 mmb/d is marine gasoil. With the onset of new sulphur limit from January 1st, 2020 the high sulphur fuel oil will become “non-compliant”, theoretically

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¹ Mr. KAZOKOGLU is a Research Fellow at Bilkent University Energy Policy Research Center. He is mainly working on global crude oil and products demand and state/official regulations on energy markets with their direct effect to oil and products demand.

² Dr. JAKŠTAS works as a Subject Matter Expert in Research and Lessons Learned Division at NATO ENSEC COE.

leaving marine gasoil as the only compliant fuel. Therefore, demand for marine gasoil will surge, while demand for high sulphur fuel oil will drop. For the oil market, this creates a surplus of high sulphur fuel oil to get rid of while simultaneously a shortage of low sulphur marine gasoil.

Implications for the downstream market

In order to comply with the IMO 2020 limitations, the responsibility will be divided in between refining industry and shipping industry, both of which have their own characteristic solutions to offer. Refineries will increase the production of compliant fuels (marine gasoil and LSFOs) while simultaneously reducing the high sulphur fuel oil output. In addition, they will create new marine fuels that comply with the 0.5% sulphur cap, the so-called “low-sulphur fuel oils” including the VLSFO (very-low Sulphur fuel oil) and the ULSFO (ultra-low sulphur fuel oil). All these measures require intensive investment to increase desulphurization capacity in the refineries, while utilization rates of existing capacities will be maximized. However, the technical limitations in removing sulphur from HSFO in refining process will also increase the demand for sweet crude oil, crude oil with low sulphur content. Increasing US crude oil supply is a timely development in the market that could meet some portion of this demand. Meanwhile, demand for high Sulphur crude oils is likely to decrease. Although some of the refinery operators have already been aware of the development and have made their preparations for the IMO 2020 regulation, there are still some refineries that seem to be waiting until the last minute.

Furthermore, due to the latest upstream disruptions coming from Venezuela and Iran, in line with the increasing US crude oil supply, the average sulphur content for the global oil basket has been decreasing. This can be counted as a positive development for the need of LSFO on the verge of IMO 2020. In addition to these upstream developments, world’s biggest fuel oil producer and exporter country, Russia’s plans to decrease total fuel oil output has been in line with the general trend to lower the HSFO production.

From the shipping industry perspective, currently, there are two options. They will have to either consume compliant low sulphur fuels with a sulphur content of below 0.5% (such as Very/Ultra LSFO or low sulphur marine gasoil) or install an exhaust gas cleaning system, which is called as scrubber. An average investment required to install a scrubber in a vessel varies from \$2 million to \$5 million depending on the size of the vessel. The scrubber system could roughly be described as installing a filter in the vessel’s exhaust system that captures and stores the sulphur generated during the vessel’s fuel combustion.

The majority of the IMO 2020 requirement is expected to be met by shift to low sulphur fuels, predominantly marine gasoil. This will lead to a hike in their prices, while the price of HSFO is likely to collapse. Scrubber solution would give shipping operators the opportunity to consume cheap HSFO after IMO 2020 takes place; however, they need to make the feasibility of this investment against the cost of using LSFO or marine gasoil after January 1st, 2020.

As of December 2018, the number of vessels that already has a scrubber installed or has one ordered to install until January 2020 is around 2,000-2,100. Total number of vessels globally is around 90,000 and the share of vessels with scrubber might seem low. However, it is important to know that the fuel consumption per vessels is directly proportional to the vessel size and, due to this fact, 80% of the marine fuels is consumed by only 20% of the vessels globally. Nearly all the vessels that will have a scrubber in January 2020 are among this top 20% and between 10-15% of these high fuel consuming vessels will be able to use HSFO after January 2020. This is expected to offer a demand for HSFO after January 2020 which should soften the effects of IMO 2020 for the refiners.

Right now, the main limitation for scrubber installation is finding an empty slot in a shipyard which is already in a limited number globally. Although installing operation of a scrubber takes roughly around 15 days, due to the limitations of empty slots in the shipyards, any vessel that does not have any booking for a scrubber installment at the moment will not have one installed by January 2020. That says only the current 2,000-2,100 vessels and those which are fitted with a scrubber until December 2019 will be able to consume HSFO starting from January 1st, 2020.

It is also important to understand that installing a scrubber to larger vessels is commercially much more feasible compared with smaller vessels. This suggests that most of the high fuel consuming vessels will likely have a scrubber installed until around 2023-2024. This will lift the HSFO demand for the shipping industry back after 2023. This shows that the refining and shipping industries will have a two to three-year period after January 2020 that they will need to provide a solution for the limitations to consume HSFO and supply LSFO or marine gasoil to meet the increasing demand.

The low sulphur marine gasoil shortage after January 2020 will result in an upward pressure on marine gasoil prices for January 2020 onwards. This is also estimated to have negative effects on road diesel and heating oil prices as marine gasoil and conventional gasoil/diesel are produced in the same portion of the barrel. This sudden change in the demand will also likely have direct impact on the price differentials between low sulphur and high sulphur crude oil baskets, too, suggesting that the price spread between Brent blend and Dubai blend to increase up to \$6-\$7 per barrel in 2020.

IMO 2020 will force downstream and shipping industry to have a major change in their general operations. This will also likely to increase total cost of freight globally as the shipping operators will need to cover their expenses coming either from scrubber installations or the consumption of more expensive marine fuels.

When taking the sulphur limitations in transportation fuels into account, the IMO 2020 limitation is still far from providing expected lower impact on environment damage given by fuel consumption. Eventually, marine industry may be forced to lower the sulphur content further to levels as low as transportation fuels currently. We might be facing another major change in the marine fuels in the coming decade.

Military considerations around IMO2020 regulation

The IMO2020 fuel specification changes could create a set of challenges from the military perspective. As mentioned above, IMO will result in a shift from high to low sulphur fuels, increasing demand for marine gasoil substantially by an estimated 1.5 mmb/d. This surging demand is expected to result in a price hike for marine gasoil, but also for road diesel and heating oil prices as marine gasoil and conventional gasoil/diesel are produced in the same portion of the barrel. The military is one of the largest users of diesel, especially as a fuel in tanks and trucks because diesel fuel is less flammable and less likely to stall than gasoline-fueled engines. Furthermore, most of NATO's naval fleet uses already compliant distillate marine fuel, i.e. marine gasoil. Therefore, it is unlikely that as a result of IMO regulation NATO militaries will struggle to secure supplies of distillate fuel oil to such a level that it could have national security risks, however price hikes might have an effect on military.

Moreover, the upcoming regulation limiting the global sulfur content in marine fuels to 0.5% could have a considerable impact on the aviation industry. The higher demand for lower sulphur fuels could exacerbate the strain of limited capacity and increase the prices of oil aviation fuels, including civilian Jet A-1 fuel (Terazono, Hume, 2017). Military aviation fuel

(e.g. NATO F-35) is based on civilian Jet A-1 with addition of corrosion inhibitor and anti-icing additives. As a result, higher Jet A-1 fuel prices could have an impact on military forces in NATO countries in terms of higher aviation fuel-related costs.

For further information on this note, please contact:

Dr. Tadas JAKŠTAS – Subject Matter Expert, Analyst, NATO Energy Security Centre of Excellence – tadas.jakstas@enseccoe.org

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