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COUNTDOWN TO 2020: GLOBAL IMPLICATIONS OF NEW MARINE FUEL EMISSION STANDARDS

BY ANTOINE HALFF AND TIM BOERSMA | MAY 2018

International Maritime Organization (IMO) regulations are not typically at the forefront of oil-market concerns, but recent worries about new IMO rules on shipping emissions have moved from the periphery of the oil market to its very center. The new regulations drastically cut the permissible amount of sulfur oxide emissions from ships worldwide from 3.5 percent to 0.5 percent. Less than two years before the regulations come into effect, the chances of full compliance look slim. While many stakeholders have made plans to meet the new standards, in aggregate these measures look inadequate. Given still relatively modest adoption of exhaust gas cleaning systems ("scrubbers") and LNG bunkering, market participants worry that more shippers will have to switch from high-sulfur residual fuel oil to low-sulfur distillate bunkers than the global refining system can accommodate. Price effects from the expected swings in product demand are already being felt in swaps and futures markets.

On February 19, 2018, the Center on Global Energy Policy, in collaboration with Axelrod Energy Projects, held the third of what has become a series of annual workshops on the changing marine-fuel environment. Last August, CGEP published a report that built in part on findings from the first two meetings and outlined key uncertainties related to IMO standards.[1] In particular, the report highlighted how noncompliance seemed baked into the new rule, given the realization that, in this case, first movers likely did not have an advantage over their competitors. But it also pointed out mitigating factors that had been underappreciated by some of the more alarming forecasts, such as the large scope of efficiency gains in the shipping industry and slowing growth in distillate fuel demand in other sectors. The following text constitutes a summary that aims to capture some of the takeaways from the latest discussion, without attributing them to individual participants. We thank all participants for their active engagement in the lively debate.

AFTER YEARS OF SEEMING INACTION, THE MARKET IS MOVING

The global sulfur cap will take effect as planned. Defying widespread expectations of a delay, the IMO in late 2016, and again in 2017, repeatedly maintained the 2020 date for the implementation of its new standards. Whether or not this helped spur stakeholders into action, there have been growing signs of industry preparation in recent months. Still, measures and investments announced to date appear insufficient to ensure full industry compliance with the new standards by January 2020.

Since the previous CGEP-Axelrod Energy Projects roundtable on global marine-fuel markets held in February 2017, several prominent industry players have gone out of their way to signal how they planned to come into compliance with the IMO rules. Privately held CMA CGM, a leading container carrier, announced in November 2017 a landmark deal for nine giant LNG ships of 22,000 twenty-foot equivalent units (TEU) each, to be delivered in 2020.[2] Shortly thereafter, it followed up with a 10-year, 300,000 tons/year LNG supply deal with Total Marine Fuels Global Solutions. CMA CGM explained that it and Total agreed in February 2017 to "examine the most environmentally responsible propulsion solutions to meet the International Maritime Organization's 2020 implementation date for new sulfur regulations."[3] Earlier, Shell signed its own LNG supply deals, including one with Russian shipping company Sovcomflot for four LNG-powered Aframax crude oil tankers, the first of their kind, and another with Carnival for two new-build LNG-powered cruise ships due to start sailing in northwest Europe and the Mediterranean in 2019, also the first of their kind.[4]

As is the case in energy transition pathways in other parts of the global energy economy, different solutions work for different actors. For DFDS, a Danish container carrier that is also the world's largest ferry operator, scrubbers are the answer. The company opted early on to invest in these devices. After testing the "world's first large scrubber" on one of its freight ships starting in 2009, it decided to invest up to €100 million to retrofit its fleet. DFDS said it reckoned scrubbing emissions from heavy-fuel oil (HFO) was better overall for the environment than switching to low-sulfur marine gas oil (MGO), given the high energy cost of making MGO compared to MHFO.[5] As to Maersk, the world's largest container carrier, it announced that it favored a switch to 0.5 percent fuel over investment in scrubbers.[6]

Meanwhile, refiners have begun to announce their own plans to boost their distillate production capacity in expectation of higher demand. In an interview, Gunvor founder Torbjorn Tornqvist said in October the company was "making preparations" for the new IMO standards but declined to specify what they entailed. In January, Reuters reported that the Netherlands had given the company provisional approval to add a fuel upgrading unit at its Rotterdam refinery, a move that would be consistent with the goal of maximizing low-sulfur fuel yields at the expense of high-sulfur fuel oil.[7] US refiner Marathon Petroleum Corporation told investors that it was "well-positioned to benefit from IMO in 2020" thanks to its "planned investments to upgrade residual fuel oil to higher valued distillates," including the 2020 expansion of its Garyville, Louisiana, coking unit and other projects.[8] Other refiners, however, while they do also see distillate demand increasing, believe that the impact of the IMO 2020

standards may not last for more than a few years, and thus that the rules do not present an investment case for making long-term capital commitments. In fact, in at least some cases, management believes that in preparing for the regulatory change, avoiding fuel oil production remains a greater priority than maximizing diesel supply, given the potentially 2-million-barrel excess production of high-sulfur fuel oil.

Different ways of complying with the new rules reflect diverging sets of incentives among shipping market participants. The majors might fear reputational risk in the event of noncompliance and therefore feel that they cannot afford to be behind the curve—hence their investments in LNG engines and scrubbers. Others might feel confident that they can relatively easily switch to low-sulfur fuels and deal with possible additional regulatory hurdles later. Different business models for different subsets of the shipping industry entail different types of liability in case of noncompliance, with container carriers particularly exposed to class-action suits from customers.

In aggregate, despite anecdotal evidence that some steps are being taken toward compliance with the new rules, considerable uncertainty remains, particularly for the early days of the new emission regime. The LNG-powered or scrubber-equipped fleets are still too small to really make a real dent in the volumes of lower-sulfur fuel required by the new standards. Known refinery expansion projects remain insufficient to fully accommodate the implied swings in product demand without substantial levels of noncompliance and/or drops in distillate fuel demand from other sectors. It doesn't help that despite greater clarity on the timeline for implementation, considerable uncertainty on the rules' enforcement remains.

REGULATORY UNCERTAINTY CONTINUES BUT IS EVOLVING

The lack of enforcement mechanisms has long been identified as a major hurdle to the implementation of the new standards. Ensuring compliance on the high seas, one of the world's last remaining ungoverned frontiers, is inherently challenging. This issue featured prominently in earlier CGEP-Axelrod Energy Projects workshops on marine fuels. As Maersk reiterated on its website in September, while many shipping lines support the IMO's bid to nearly eliminate sulfur from the industry's fuel, "they are also worried that without proper enforcement the rule will create more losers than winners."[9] The IMO and its member states have been receptive to these concerns and continue to work on fine-tuning pending regulations. Thus, in February 2018, the IMO subcommittee on pollution prevention and response (PPR) agreed to move forward on a ban to carry noncompliant high-sulfur fuel oil.[10] Under this ban, ships are no longer allowed to carry fuel oil containing more than 0.5 percent sulfur (note that within designated Emissions Control Areas, or ECAs, this percentage is 0.1 percent). To help facilitate implementation of the IMO standards, the subcommittee agreed to draft amendments to the MARPOL Convention on the prevention of pollution from ships. Ships fitted with an approved "equivalent arrangement" to meet the sulfur limit, e.g., scrubbers, are exempt from this ban to carry high-sulfur fuel oil. Ships may also carry the fuel if it is cargo, for instance, for delivery to power-generation companies. The proposed amendments are further refined in the coming months and anticipated to be adopted in the fall of 2018. Other elements of the regulation, e.g., further definition of the specification of

sulfur content, or testing and verification procedure of in-use fuel oil samples, are expected to be adopted later this year.

The IMO is satisfied with a compliance rate of 90 percent when it comes to usage of fuels with 0.1 percent sulfur content in ECAs, where port states have played an important role in this regard. Compliance with the 0.5 percent sulfur content requirements starting in 2020 is a different matter altogether, however, because most of these fuels are consumed on the high seas, where enforcement, given the lack of jurisdiction, is notionally left in the hands of flag states. Verifying whether these flag states are enforcing the sulfur standards will be complicated, to say the least, and the shipping sector continues to signal this to the IMO. From its perspective, the IMO is not an enforcement agency, and the only way to enforce regulations is to translate international provisions into national law and then decide at that level of governance how to deal with noncompliance.

An inherent risk to this approach is that different member states may set different fines or other measures to discourage noncompliance, which in turn can affect the competitiveness of companies by bringing the playing field out of balance. Free-rider behavior in this system seems almost inevitable, and as participants in the discussion indicated, even in modest numbers noncompliance might bring swings to the market for certain types of fuel oil.

FINANCIAL FIRMS AS ENFORCEMENT AGENTS

Interestingly, as there continues to be confusion about macro oversight and compliance, part of the answers might come from other levels of governance. Port states have played an important role in meeting increasingly stringent air quality standards in major port cities (the North European ECA, for example, was set up in 2008, capping sulfur emissions from ships to 1.5 percent, further reducing it to 1 percent in July 2010 and 0.1 percent in January 2015), often encouraged by local constituents. More recently, major insurance companies have signaled that companies that do not comply with the regulations starting 2020 are at risk of having their ships be considered "unseaworthy."[11] These companies argue that there is no lack of options to consider for shippers to comply with the IMO standards (insurance broker Marsh, for example, goes through the list of low-sulfur fuels, scrubbers, or LNG). It is evident that these options each present their own set of challenges, e.g., some shippers have indicated that availability of low-sulfur fuels may be a problem, open-loop scrubbers take pollution out of the air but by discharging the effluent leave it in the water instead, or supporting infrastructure for natural gas use might not exist in many port cities. Nonetheless, the insurance community is signaling that there can be no exemptions or delays in meeting the IMO standards starting 2020. Workshop participants noted that banks may also make the availability of financing conditional on shippers' compliance with the IMO standards. This is not unlike the role of the financial sector in the area of economic sanctions, where banks have become zealous enforcers since Paribas's $8.9 billion settlement in 2015 of claims that it had violated US sanctions against Sudan, Cuba, and Iran.

LONG-TERM UNCERTAINTIES

Longer-term uncertainties about shipping emissions rules are further compounding the effect of short-term ones. The pending IMO standards to reduce sulfur emissions are not the only air-quality measure facing the shipping industry. Since 2000, the ECAs have been subjected to increasingly stringent standards for NOx emissions, leading to Tier III standards adopted in 2016.[12] For CO2 and greenhouse gas (GHG) emissions more in general, the IMO is developing an initial GHG strategy. The aim of this is to come up with plausible long-term pathways to decarbonize the shipping sector by the end of the century and meet the GHG goals as agreed to under the Paris Agreement. This ambitious initiative raises questions about investments that shippers are considering today and for which they will need a window of several decades to get a return on investment. When should more stringent CO2 regulations be anticipated? What standards will be set, and what do those mean for fuel choices and related investments that companies make today? These questions cannot be answered at this point but add to the regulatory uncertainty clouding the shipping sector and further complicate stakeholders' plans to comply with existing regulations.

IS PEAK OIL DEMAND COMING TO THE MARINE SECTOR?

While discussions of "peak oil demand" have generally focused on the road transport sector and electric vehicles, there is a possibility that the call for cleaner burning could accelerate a move away from oil in the marine sector too. As noted, LNG bunkers are making inroads. Discussion of battery ships is also beginning to pick up. Some companies are very optimistic about the possibility of natural gas in the form of LNG gaining significant market share in the shipping sector. Today, only 0.5 million tons out of a market of over 250 million tons is consumed in the shipping sector. There is reasonable optimism that this market share will grow in the coming years for shipping on shorter transport routes, provided that regular refueling is facilitated. This in turn has received a policy push, e.g., in the North and Baltic Seas, where the European Commission through its TEN-T instrument is co-financing infrastructure build-out to support a switch to LNG, to improve local air quality in port cities.[13] The European Maritime Safety Agency in February 2018 issued a guidance document aimed at backing the use of LNG as a ship fuel.[14] A possible divergence of oil and gas prices in the coming years might make natural gas a more attractive feedstock for some shippers. For longer-distance shipping, there are likely infrastructural limitations to switching to LNG. Moreover, considering anticipated CO2 emissions standards for the sector, LNG too poses real limitations that shippers may want to take into consideration, if the sector is to decarbonize in the coming decades.[15] Anecdotal evidence suggests that in anticipation of stringent CO2 emissions standards in the medium and long term, some investors in bunkering infrastructure are expecting biomethane to replace natural gas in due time.[16]

CONCLUSION

While the IMO has consistently insisted on the fact that the 2020 regulations will not be postponed, expectations seem to be growing that the initial market response to the new rules could prove relatively short-lived. With less than two years to go before the global cap comes into effect, a certain amount of oil-market turmoil and a fair dose of noncompliance increasingly seem a given at the beginning of the new emissions regime: earlier IMO assessments of fuel availability notwithstanding, capacity constraints seem even in a best-case scenario bound to cap the number of scrubber-equipped and LNG-powered ships, limit the buildup of LNG bunkering infrastructure, and curb the availability of low-sulfur bunker fuels. Without going so far as to postpone the rules, the IMO is de facto recognizing this stark reality by making allowances on a case by case basis for the fact that some ships may not always find low-sulfur fuel available. However bumpy the market's initial response may turn out to be, however, it is likely to adjust over time: market confidence in very-low-sulfur bunker fuels (VLSFO) will likely build over time and concerns raised by this new class of fuel-oil blends, currently being developed by bunker suppliers, abate. Once the fleet of LNG-powered ships reaches a critical mass, LNG bunkering adoption rates, assuming the fuel remains cost-competitive, could reach a tipping point. CMA CGM's well-publicized bet on LNG has apparently already been stimulating broader market interest. Meanwhile, the global fleet is not standing still: scrapping rates and vessel retirements will affect profit margins and the economics of the various options available to shippers.

Nor is the shipping market operating in a vacuum. The availability and cost of low-sulfur bunker fuels will largely depend on the pace of global diesel demand growth, which has become a matter of growing uncertainty. With a mounting backlash against diesel use for passenger vehicles in Europe and a combination of new technologies, economic factors, and environmental policies threatening future demand growth for the fuel, the distillate market may turn out to be looser in 2020 than is generally expected. Residual fuel oil rejected by shippers may meanwhile wind up in the power generation sector, notably in the Middle East.

Taking all these factors into consideration, the policy challenge of reducing marine emissions seems daunting. Much is at stake, however. How the shipping industry ends up responding to the new rules could affect oil and energy markets at large in a big way. It will certainly carry lessons for policymakers, as well as industry stakeholders and market participants. Watch this space.

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