MARPOL 2020: IMO's new fuel rules promise choppy waters for the shipping industry

The International Maritime Organization (IMO) is putting its so-called MARPOL regulation for the mandatory use of low-sulphur bunker into force as of 1 January 2020, presenting hefty technical, operating and financial challenges for the shipping industry and marine fuel suppliers.

Scope Ratings has taken a closer look at possible financial implications for ship operators and owners who have less than 14 months to comply with the new rules aimed at cleaning up noxious exhaust emissions from sea-going vessels.

While the IMO's decision to stick to its ambitious timeframe shows its commitment to improving the environmental impact of shipping, it also creates near-term risks for many players in the shipping industry, not least for credit quality. The MARPOL 2020 regulation will further increase the gap in competitiveness between industry-leading shippers and smaller players. Compliance will be easiest for those in the industry with the most bargaining power with customers and fuel suppliers and/or easy access to additional financing. Smaller companies could face significant extra operating costs and financial uncertainty if the IMO puts the regulation into effect as currently planned.

International trade and the relevance of MARPOL 2020

The IMO's plans require shippers to reduce air pollution by limiting the sulphur content of the fuels used from 1 January 2020. To appreciate the regulatory scale of the move, it is worth remembering that more than 80% of all goods traded globally are transported by sea. This involves a global merchant fleet in excess of 80,000 vessels today.

By one measure, the shipping industry can regard itself as having a relatively small environmental footprint. All ships combined produce only c. 2%[1] of the global CO2 emissions. This represents a favorable ratio of emissions for every kilometer a ton of cargo that is transported by sea compared with road and air, given the huge capacity of cargo ships, the largest of which today can carry more than 18,000 containers each.

Nevertheless, besides the CO2 emissions, a particular environmental concern has been the high amount of sulphur oxide pollutants emitted by ships which run on less refined fuel than cars and aircraft. The gap is huge: The largest 15 ships on the planet (running on current high-sulphur bunker fuel) emit more sulphur oxides than all cars on the planet combined. The IMO aims to limit the sulphur content of any fuel used in all ships in global waters from 2020, except if specific exhaust-cleaning devices ("scrubbers") are installed.

MARPOL 2020 will have far-reaching implications for a sector on whose health the global economy is critically dependent.

What will change?

Figure 1: Sulphur Cap Regulations

SOx Caps	2017	2018	2019	2020	2021
ECA*	Only fuel with <0.1% sulphur allowed				
General Seas	<3.5% sulphur fuel			<0.5% sulphur fuel	

*Emission Control Areas: Coasts of U.S., Canada, the Caribbean Sea, the North Sea and the Baltic Sea
Source: IMO, Scope Ratings

[1] Tracking Clean Energy Progress 2017 – OECD/IEA

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Low sulphur fuel used only in coastal areas today

Ships today meet the relatively tough emissions rules for sailing in coastal waters in some advanced economies, known as Emission Control Areas near major ports, by switching from cheaper high sulphur fuels to more expensive ultra-low sulphur fuels. They contain less than 0.1% of sulphur which is similar to the content in diesel fuels used in cars. As ECAs cover only limited coastal areas, these tougher emission standards apply to a tiny percentage of shipping routes. This will change dramatically when the IMO's stricter 0.5% cap, compared with the current 3.5% limit, for ships plying the open seas starts in 2020.

IMO – the International Maritime Organization – is a specialized agency of the United Nations, acting as the global standard-setting authority for the safety, security and environmental performance of international shipping. Its main role is to create a regulatory framework for the shipping industry that is fair and effective, universally adopted and universally implemented.

Source: www.imo.org

Possible Solutions to Comply

Ship operators have several technical solutions for complying with the MARPOL rules. As Figure 2 shows, they have their respective advantages and disadvantages.

Figure 2:

Technical Solution	Advantages	Disadvantages
Low sulphur fuel oil / Marine gas oil	• No upfront investment necessary	• Higher cost of fuel • Uncertain supply situation
	• Ability to continue using cheap high sulphur fuels	• High initial investments necessary • Doubtful environmental improvement
LNG	• Best from an environmental perspective	• High initial investments necessary • Uncertain LNG supply throughout global ports

However, all three technically viable solutions bear specific problems.

1) Lack of low-sulphur fuel supply

Scope Ratings research has found that the vast majority of global shipping operators that commented on their MARPOL strategy so far intend to tackle the regulatory change by switching to low-sulphur fuels instead of equipping their fleets with costly scrubbers or choosing LNG. This implies a surge in demand for compliant low sulphur (<0.5%) fuels

Lack of refining capacity indicates future supply shortage for low sulphur fuels

after 2020. The crucial question here is – regardless of pricing – how much of it can actually be supplied?

The IMO argued in a 2016 research study on the availability of compliant low sulphur fuels that "the refinery sector has the capability to supply sufficient quantities of marine fuels with a sulphur content of 0.50% m/m or less and with a sulphur content of 0.10% m/m or less to meet demand for these products, while also meeting demand for non-marine fuels."[2]

However, several oil industry experts predict that there is a substantial lack of global refining capacity required to produce the necessary volumes of low sulphur fuels.

Big oil producers have sent different messages to the markets. While Exxon has announced that it plans to offer MARPOL compliant low sulphur fuel oil at ports in Northern Europe, the Mediterranean and Singapore, other big oil names are still rather vague on how they plan to tackle the looming supply gap in compliant fuels in time.

Large players are more likely to secure sufficient supply

Operators of very large container ships, such as Maersk, MSC, Hapag-Lloyd or CMA CGM are likely to be able to strike deals with large oil producers to ensure timely and sufficient supply with low-sulphur fuel oil given their scale and importance to fuel suppliers. Some companies like OOCL, Maersk, Hapag-Lloyd, CMA CGM and MSC have already indicated that they will pass on higher fuel costs to their clients.

Should fuel shortages emerge, it is smaller players that look the most vulnerable, facing the uncomfortable choice of halting operations of some vessels or risk running them on non-compliant fuels.

This leads to another interesting question regarding MARPOL: What happens if operators just decide to run on non-compliant fuel?

2) Monitoring the industry: The IMO enforcement challenge

The IMO has set out how compliance with the new regulation will be monitored. Ships taking on fuel oil for use on board will have to obtain a bunker delivery note, which states the sulphur content of the fuel oil supplied. Samples may be taken for verification. Moreover, all ships must be issued with an International Air Pollution Prevention (IAPP) Certificate by their Flag State. This certificate includes a section stating that the ship uses compliant fuel oil with a <0.5% sulphur content.

IMO is already anticipating clean fuel supply shortages

Ports and coastal states can use existing methods to verify that the ship is compliant. They could also use surveillance, for example, by assessing smoke plumes or other techniques to identify potential violations. However, it remains highly unclear how broadly and efficiently those measures can be applied.

Uncertainty about effective enforcement and penalties

IMO has recently developed the FONAR (fuel oil non-availability report) for vessels to submit to their flag states and relevant port states. While the introduction of this report format shows that the IMO is clearly aware of the looming availability problems regarding low sulphur fuels, the scale of FONAR filings may test the administrative capacity of local authorities. A clear judgement about which of these filings – potentially thousands per day globally – are justified may prove difficult with consequences for how the regulation can be monitored and sanctions imposed on those ships in breach of MARPOL.

In addition, it is not clear whether penalties will be sufficient to deter non-compliance. For now, they vary wildly in different jurisdictions, running between low 4-digit to low 5-digit dollar fines in most countries. As such, the cost of a breach of the sulphur cap may be less than the profit of a few hours of operation on cheaper high-sulphur fuel. Any

[2] IMO – Assessment of fuel oil availability – July 2016

Price gap between low and high sulphur fuel will widen

significant widening in price spreads between different fuels after MARPOL 2020 comes into force would exacerbate the problem. Today the price of low sulphur marine gas oil (MGO) is somewhere between 220 and 280 USD per ton higher than for regular high sulphur bunker, already representing a c. 50% price premium today. This gap is most likely to widen further as of January 2020, as the vast majority of ships will not be fitted with exhaust cleaning systems (scrubbers) that would allow them to use the cheaper high sulphur fuel.

3) Questions remain over scrubber retrofitting capacity and effectiveness

On-board treatment of emissions as an alternative to switching to cleaner fuel presents its own problems too. Market leaders in scrubber systems have stated that it might be possible to retrofit up to 2000 vessels with scrubbers up to the implementation date on 1 January 2020. This is a drop in the ocean compared with a global commercial shipping fleet comprising more than 80.000 vessels.

Supply constraints for scrubber retrofitting

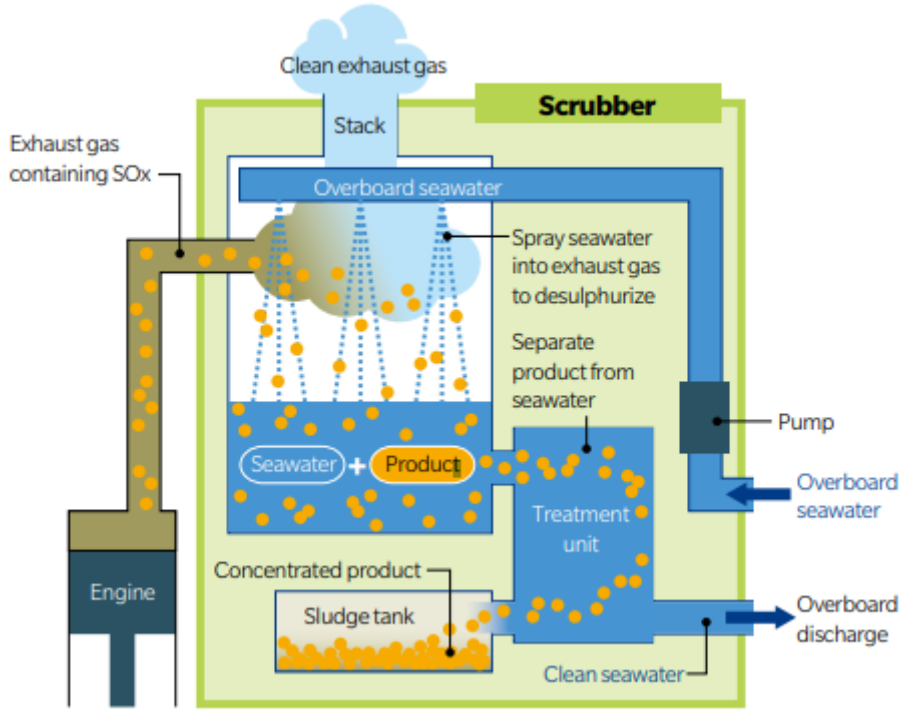
Scrubbers are also expensive to install. The cost of c. USD 5-6m per vessel on average may prove an obstacle for many ship operators, in particular smaller players with limited access to financing.

Time-consuming and costly retrofitting process

Equipping a vessel with a scrubber system also requires time, not only for docking the ship for the installation of the equipment, but the preparatory work too: Each ship requires a bespoke technical fix as scrubbers are not one-size-fits-all pieces of equipment. The time from management's decision to retrofit a vessel with a scrubber system to its operation after the system has been installed may be up to a year, not helped by today's shortage in fitting capacity. Any idle time resulting from this retrofit also increases the total cost of the installation for the ship operators.

Moreover, some also argue that the positive environmental benefit is limited because part of the sulphur that is removed from the exhaust gas via sea water injection may end up in the ocean in the form of overboard waste water. This is a particular concern with open scrubber systems. Closed scrubber systems that isolate the sulphur from the sea water in a special treatment unit offer a significantly better waste water quality but are more expensive to buy and to operate. *Please see figure 3 below for a simplified display of a (closed) scrubber system.*

Figure 3: Scrubber Systems



Source: NYK-Line Annual Report 2017

(Open) scrubber systems may just shift air pollution to water pollution

Open systems ultimately just shift the sulphur problem by creating less air pollution at the cost of more water pollution. Another risk is that the technology might only ever be a stopgap and may even be seen as a 'loophole' solution that will eventually be closed, further putting the economics of their use into doubt.

4) The clean-fuel alternative is LNG, but costs, availability are challenges

LNG likely to be only a niche solution for selected new built vessels

Ships can run on liquified natural gas which is a cleaner-burning fuel than diesel. However, as with the scrubber solution, there is widespread consensus among industry experts that the limited capacity to retrofit a large portion of the global merchant fleet, the costs of doing so, and the absence of LNG distribution infrastructure serving the world's ports all limit the likely role LNG can play.

IMO is showing regulatory steadfastness, but there are dangers in being bold

In Scope's view, the IMO's decision to stick to its ambitious time plan for the implementation shows commitment to improving the environmental impact of shipping, but also bears risks for many players in the shipping industry.

If a postponement and/or phase-in of the regulation sought by many industry players and experts isn't incorporated within the current MARPOL 2020 regulation, the sector may fin itself in a state of widespread and de facto non-compliance.

IMO may face headwinds regarding acceptance

The credibility and international acceptance of the IMO itself as well as the MARPOL rules is perhaps more at issue than it was a few years ago, through no fault necessarily of the organisation itself given the global context has changed. The 2016 election of Donald Trump as a unilateralist US president has given extra force to those who have lost faith in international organisations and agreements, from trade accords to other multilateral accords like the Paris Climate Agreement.

As that same time, the IMO is more in line with growing pressure from some governments, many investors and non-governmental organisations for the private sector to pay more attention to environmental, governance and social factors in the way in which it conducts business.

Conclusion

New regulation may further widen gap between industry leaders and smaller players

With regards to credit quality in the shipping sector, the MARPOL 2020 regulation is very likely to further increase the gap in competitiveness between industry leading shippers and smaller players. Compliance with the regulation will be easier for those with bargaining power with customers and fuel suppliers and/or easy access to additional financing. Smaller shipping companies may face significant extra operating costs as well as frequent fuel supply shortages at ports and thus financial uncertainty if the IMO implements the regulation as currently planned.

One should also keep in mind that the shipping industry is essentially a *price-taking* industry, due to the homogeneity of their offered services. In combination with volatile freight rates, this reduces financial headroom for additional investment in its asset base when compared with other industries which have greater pricing power but also face tougher environmental regulations (e.g. premium car-makers).

Ocean transport will become more expensive for customers

Ordinary consumers may also feel the pinch if it turns out that customers of the shipping industry end up bearing the brunt of higher shipping costs considering that technical solutions to comply with MARPOL 2020, as well as the potential implications of non-compliance, will lead to higher operating costs for the ship owners.

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