



# Getting ready for IMO 2020



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# 1. IMO 2020 Background

On January 1, 2020 the IMO mandate for 0.5% global sulphur cap for marine fuels will come into effect. This is a significant change impacting the global bunker fuel markets where 3.5% sulphur fuel is predominantly used currently. This mandate is part of the ongoing IMO efforts to reduce air pollution and improve health and environmental benefits especially for communities residing near ports.



**15** of the biggest ships emit more SO<sub>2</sub> and NO<sub>x</sub> than all the world's cars combined

**1mm cars** emit as much particulate as **1 cruise ship produces in 1 day**



Sulfur is highly damaging for our health and for the ecosystem.



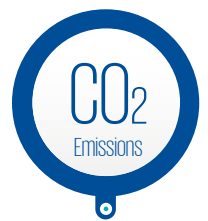
Diminishing  
your ecological  
footprint



January 2020  
< 0.5%



North Sea &  
Baltic Sea  
2021 = Neca

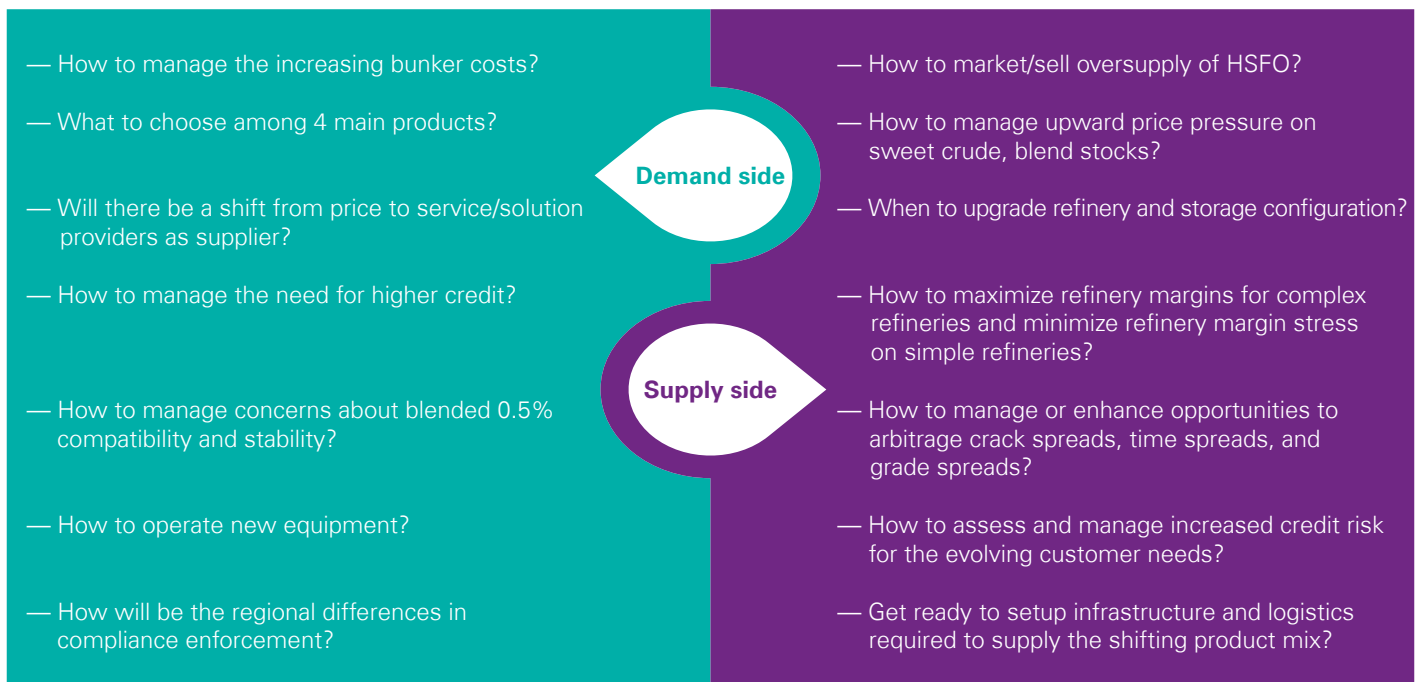


January 2050  
< 0.5%  
Reduction

 **NEW EMISSION RULES 2020**  
**SAVING 40,000 LIVES**

## 2. IMO 2020 impact on supply side

The new sulphur specification will have a disruptive effect across the supply chain presenting threats and opportunities for the supply side and the demand side of the market. There will be market participants who will benefit from this change and others who will struggle. It is critical and equally important for supplier and shipping companies to understand the business factors that will impact their business operations and develop a strategic response. Companies should develop a plan to manage the impact and implement tactics to minimize revenue impact, reduce costs and manage risks. The plan should place equal emphasis on potential economic and capital impacts, market risk management, operations and regulatory compliance.



**The supply side includes oil majors, independent refiners, fuel resellers and traders. Each will be impacted slightly different from the IMO 2020 impact. The key implications for the supply side will include:**

**a. How to market/sell oversupply of HSFO**

The demand for High Sulphur Fuel Oil (HSFO) is expected to decline, resulting a significant amount of surplus. The refineries' reaction for the market surplus will be strongly affected by the structure of the refinery. Complex refineries may attempt to fully utilize HSFO with their existing capacity or even expand their current system to be able to crack fuel oil. Considering the insufficient processing capability of a simple refinery, it is not possible for them to optimize HSFO surplus. The simple refineries can consider other possible ways to overcome this problem including selling HSFO to ship fitted with Exhaust Gas Cleaning Systems (EGCS), commonly known as scrubbers, identifying storage and identifying new customers to absorb the excess HSFO. Large ports would continue to store high sulphur fuel oil (HSFO) but smaller ones may not.

The market will likely be unable to run and store excess fuel oil, predicted surplus of 2.6 mm bbl/d in 2020, followed by another 2.2 mm bbl/d surplus in 2021. The surplus will need to be balanced either on the refinery supply side or on the demand side outside of the shipping market. The HSFO will be absorbed by ships with installed scrubbers, alternative customers/markets such as power plants as a substitute for gas or coal or manage via additional storage capacity. A small percentage of demand for HSFO will also come from ships who are taking the risk on non-compliance. Refinery upgrade projects to reconfigure the refineries to reduce the overall production of HSFO are complex projects and should be part of the longer term strategic response.

**b. How to manage upward price pressure on sweet crude, blend stocks**

In order to comply with the regulatory change, ship-owners demand for fuel oil with low sulphur content will increase. As a result of the shift to higher sulphur fuel oil, demands for sour crude which has a higher sulphur content will decrease and sweet crude which has a lower sulphur content will increase. Demand of distillates is expected to increase about 1.5 million bpd which results in refineries' to run additional of 2.2 million bpd crude.

Given the demand increase for lower sulphur products refineries will have to make choices on their crude slate based on the refinery complexity, crude prices and their customer demand. Following the supply-demand balance, sweet-sour price spread between is anticipated to grow. New regulation will increase the demand and create upward price pressure of crudes with low sulphur content such as Brent, West Texas Intermediate. A report states that increase in the global crude demand could result in upto \$5 increase sweet crude prices.

### c. When to upgrade refinery and storage configuration

The reality is that IMO 2020's expected launch is almost one year ahead of now and many refiners still remain unprepared. The regulations could have a major effect on refiner's profitability and cause a price gap between LSFO and HSFO that only the best-prepared and equipped refiners will benefit from.

Refinery complexity is commonly measured using the Nelson Complexity Index (NCI). This index was originally developed in 1960 as a single metric to quantify the sophistication of different refineries. The NCI scale is 1-20 where low numbers represent simple refineries and produce a lower quality of fuel and high numbers represent expensive refineries that produce high quality fuels. IMO 2020 will benefit complex refineries that are able to process and produce higher quality fuels. Refineries can use this index to assess their current capabilities/complexity on the NCI, their strategic plan in the local/regional market after IMO 2020 and make capital investment decisions for implementing advanced processing capabilities to increase their ability to product higher quality fuels and will increase their rating on the NCI scale. The following table provides a high level list of complexity factors for refining units.

1998 reports	Unit	Older reports
1,0	Distillation capacity	1,0
1,5	Asphalt	1,5
2,0	Vacuum distillation	2,0
2,75	Thermal processes	5,0
3,0	Catalytic hydrotreating	3,0
5,0	Catalytic reforming	5,0
6,0	Catalytic cracking	6,0
6,0	Catalytic hydrocracking	6,0
10,0	Alkylation / Polymerization	10,0
10,0	Oxygenates	10,0
15,0	Aromatics / Isomerisation	15,0
60,0	Lubes	60,0

In order to upgrade the refinery complexity, a refiner would need to invest in a low to medium CAPEX solution. Especially for the small refiners, there are many steps for strengthening their refinery utilization. One solution could be to install the technology (deep-flash tech) that allows to rise the quality of vacuum gas oil. Another solution could be to renew the equipment (up-to-date catalysts and reactor internals) in order to increase the conversion capacity. Including low-cost opportunity crudes in the refinery diet can also be considered as another option without requiring CAPEX. In terms of storage configuration, with more types of fuels, more suppliers, and fuel compatibility issues, the market predicts to see an increase in the need of storage and the sizes of storage. Many refiners can take the opportunity, emergent from IMO, only if they could implement mentioned solutions over the next year so that they could easily secure their market position and retain their competitive advantage. Currently, refineries are reluctant to make major investments.





#### d. How to maximize refinery margins for complex refineries and minimize refinery margin stress on simple refineries?

Globally refineries fall into different categories based on their operational ability to convert residual materials with a boiling point above 6500 F into lighter products such as gasoline, jet fuel, and diesel. Refineries can be classified into 3 categories based their operational ability and impact of IMO 2020 will be different on them.

	<b>Topping</b>	<b>Cracking</b>	<b>Full conversion</b>
Ability of the refinery	Process high sulphur fuel oil.	Can convert 350-570°C crude oil into light products, primarily via FCC or hydrocracking processes.	Can convert 350-570°C material and over 570°C+ materials into light products via coking, visbreaking or hydrocracking.  Produce small amount of residual-type material with a flexible production cycle.
Production cycle	Not flexible	Relatively flexible	Very flexible
Impact of IMO 2020	Negative impact	Negative impact	Positive impact
Way to mitigate risks	<ul style="list-style-type: none"> <li>— Very high risk for continued operation</li> <li>— Will need to find new outlets for the volume of high sulphur residual production</li> </ul>	High risk for continued operation with more options to mitigate risk <ul style="list-style-type: none"> <li>— Changing crude slate to sweet crude processing</li> <li>— Converting FCC units to residual cracking mode</li> <li>— Increasing vacuum distillation unit cut-points</li> <li>— Optimizing the use of non-residual refinery streams utilized to make compliant fuel</li> <li>— Selling high sulphur residual material to nearby refineries as feedstock</li> <li>— Alliances with ship-owners to contract for HSFO supply from the refiner in return for the refiner providing the capital for vessel scrubbing facilities installation</li> <li>— Producing asphalt</li> <li>— Establishing the refinery as a fuel supplier of 0.5% marine fuel</li> <li>— For companies that operate multiple refineries, some with some full conversion, changing crude slates and optimizing the HS residuals among refineries within the system as feedstock for full conversion</li> <li>— Continue to produce and sell HSFO recognizing that market demand and prices will be lower</li> </ul>	No major risk for the full conversion type
Profit impact	<ul style="list-style-type: none"> <li>— Difficulty in maintaining current profitability levels</li> </ul>	<ul style="list-style-type: none"> <li>— Refiners are set to gain incremental profits equivalent to 4-9% of their mkt cap on average</li> <li>— Stock level upside become more material for complex refineries such as PBF energy (43%), S-Oil (24%), Saras (27%), etc.</li> <li>— Expected regional difference market cap weighted average impact,               <ul style="list-style-type: none"> <li>— USA – 13%</li> <li>— AsiaPacific – 10%</li> <li>— Europesam – 7%</li> </ul> </li> </ul>	



Profitability of refineries also depends on the region. Asia and Middle East refineries are classified as complex refineries with hydrocracking and residue desulfurization units that enable maximizing LSFO and distillates production. These refineries are expected to be resilient to the disruption. US Gulf coast will also benefit from IMO 2020 as these refineries have coker units and have access to crude with low sulphur.

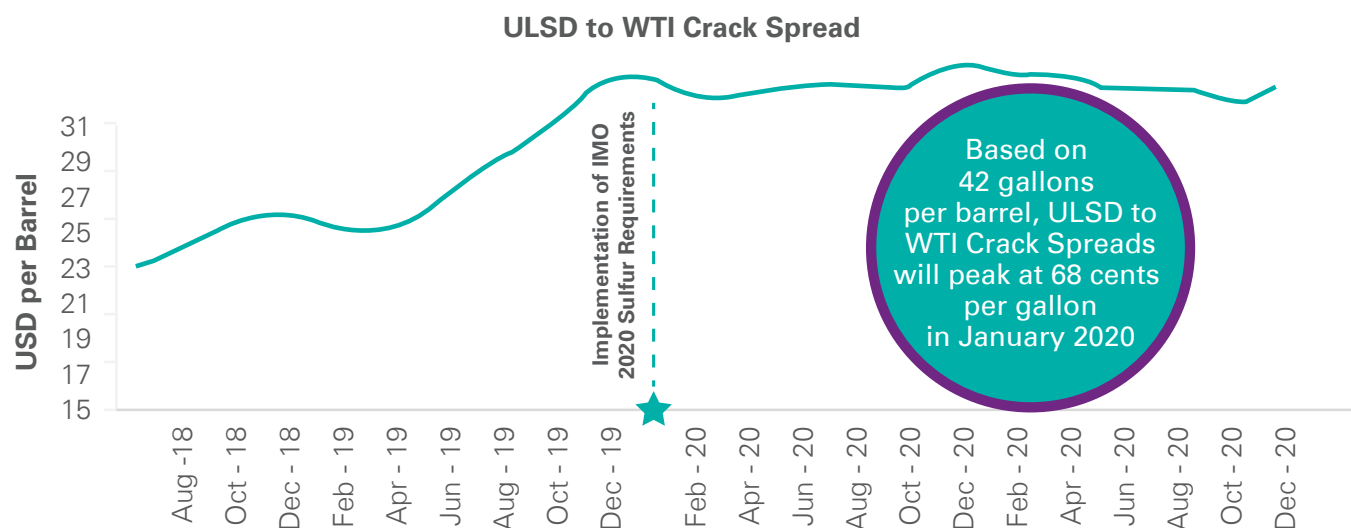
Refineries in Russia, US East Cost and Northwest Europe will struggle to sustain their profitability levels as they have simpler refineries that produce mostly produce HSFO and have low distillate yields.

Sulphur content of the crude also varies by region and is critical for profitability. West Africa and US have low sulphur crude and middle east and Canada have high sulphur crude. Price spread between low-sulphur sweet crudes and high-sulphur sour crudes will widen towards IMO 2020 compliance, indicating a direct impact on profitability.

#### e. How to manage or enhance opportunities to arbitrage crack spreads, time spreads, and grade spreads

New arbitrage opportunities will exist for crack spreads, time spreads and grade spreads. Crack spread is the price difference between the crude oil and the outputs of the refining process including gasoline, fuel oil and etc. In other words, it is the profit margin of a refinery which generates revenue from cracking the crude oil into its products. Refineries can use crack spread as a tool to protect themselves from the price changes which is mainly affected by supply-demand relationship in the oil market. When the diesel or other cracked products are demanded more than expected, their prices increase and therefore crack spread widens. In the case of oversupply, narrowing in crack spread is observed. As the new sulphur limitation is expected to have influence on the supply-demand dynamics of the market, it will create crack spread arbitrage opportunities. The traders can also arbitrage grade spreads.

The product spreads opportunities will include spreads on different grades of crude oil or different grades of fuel oil. After the new sulphur cap, Brent-Dubai (BD) spread which consists of two crude oils; Brent, sweet light crude oil and Dubai, medium sour crude oil, is predicted to increase. This widening will occur since demand for Brent crude oil that contains less sulphur will go up and demand for Dubai crude with higher sulphur content will go down. Similarly arbitrage opportunities will exist between VLSFO (very low sulphur fuel oil) and HSFO. Price difference between two types of oil is estimated to be around \$250-\$400 per tonne in 2020. Traders in the market can also arbitrage time spread which derives from the differential in expected prices of oil/ products across time.





#### **f. How to assess and manage increased credit risk for the evolving customer needs**

IMO 2020 is expected to change the product demand profile of the customers. There is uncertainty on prices of fuel oil and gasoil, shifting product needs and requirements to use a higher quality, higher price fuel. The overall trend (in varying degrees) points to higher credit needs by the shipping industry and customer receivables will likely grow about 20-40%. As a supplier, this means there will be higher credit risk as the customer needs shift to higher priced products. Suppliers should evaluate credit lines in place for the customers and model if these will be sufficient in 2020. The model should include the customer product demand profile and price forecasts. The credit risk management response may include increasing customer credit lines, reducing payment terms, diversifying customer base or other credit management solutions.




#### **g. Get ready to setup infrastructure and logistics required to supply the shifting product mix**

After the new regulation, there will be different types of oil, including HSFO, VLSFO, MGO and LNG. With the increase in number of products, additional space to store these fuels will be needed. Since these fuels should not be mixed with each other, refineries will have to find a way to increase their storage area or they can do reconfiguration of the available space. There are different companies which help their clients in order to find the right storage option. Together with the storage concern, there are issues related to the logistics side. Since different types of oils are introduced, new barges which are used to transport the oil to the ships could be needed for not disrupting the ships' schedule. New storage or barges could add additional costs and should be considered as the regulation date is approaching.





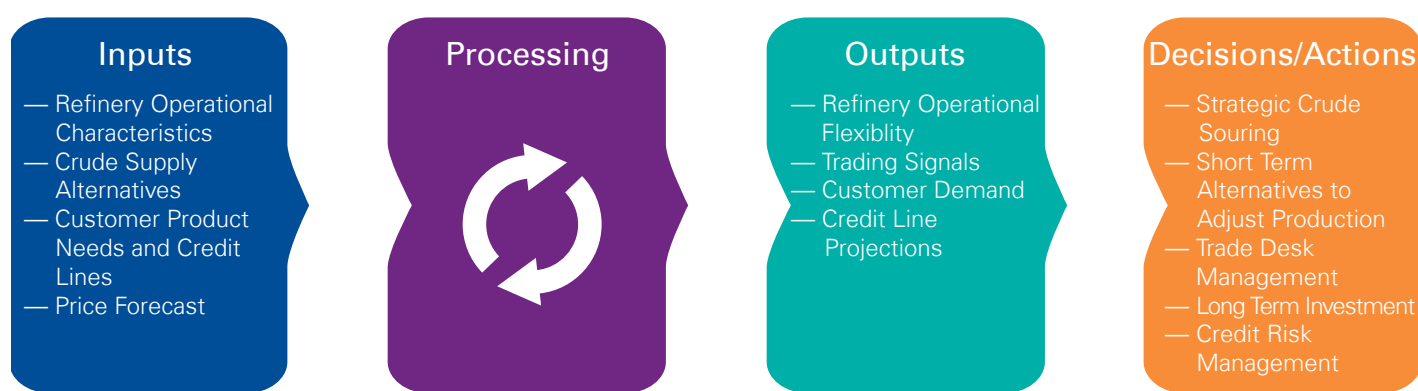
### 3. Possible options for supply associated with risks and benefits

	VLSFO	Scrubbers	LNG
<b>Details</b> 	A type of fuel oil with sulphur level between 0.1 – 0.5%	Reduction in the emissions of sulphur to the atmosphere by more than 80%	Pressurised natural gas (predominantly CH <sub>4</sub> ) into liquid at the temperature of 260°F (-160°C) at the atmospheric pressure
<b>Benefits</b> 	<ul style="list-style-type: none"> <li>— Increasing margins due to price difference between HSFO and VLSFO</li> </ul>	<ul style="list-style-type: none"> <li>— Less expensive and faster to put in place than a major refining upgrade</li> <li>— Economical solution with short time payback</li> </ul>	<ul style="list-style-type: none"> <li>— Growing market for further revenue increase</li> <li>— Suitable to remain compliant with the regulations</li> </ul>
<b>Risks</b> 	<ul style="list-style-type: none"> <li>— Stability or incompatibility issues in the production process</li> </ul>	<ul style="list-style-type: none"> <li>— New equipment to the market</li> <li>— As of now, scrubber supply side is limited and thus market share above 15% by 2020 is not expected.</li> <li>— When the cost difference between HFO and MGO (Low Sulphur Distillate product) is low, scrubbers are less profitable</li> </ul>	<ul style="list-style-type: none"> <li>— There is still room for further improvement in technology</li> <li>— Lack of infrastructure and availability in marine industry (ports)</li> </ul>



## 4. How KPMG can help you if you are a refiner/supplier?

The dynamic and evolving market response will require suppliers to develop a strategy and manage the execution to leverage opportunities and reduce risks. A model that captures the internal and external variables to evaluate the market and position the supply side strategic response and key decisions is depicted below.



### Questions to consider:

- Where do we start?
- How much displaced HSFO will we have?
- What is the strategy to sell/market displaced HSFO?
- What should be our target product mix for 2020 and how do we get there?
- How do we optimize/change our crude slates?
- How will our current refining, storage and configuration be impacted?
- What is our strategy to plan refinery investments and upgrades for short term and long term?
- How much appetite do we have to leverage arbitrage opportunities?
- What is our customer profile of fuel oil users? How will that change?
- How will customer credit lines be impacted? Do we change credit lines or update payment terms for customers?

### How can KPMG help

- IMO 2020 Readiness Assessment
- Demand model review by focusing on customer profiles and product mix
- Customer credit risk assessment and mitigation plans
- Review of current and target product mix
- Recommendations related to operational flexibility and infrastructure capability
- Review of refinery upgrade and infrastructure plans
- Model scenario for competitive positioning
- Recommendations for strategic investment and to optimize product supply and increase market share

## 5. IMO 2020 impact on demand side





The demand side includes ship owners/operators. Each will be impacted slightly different from the IMO 2020 impact. The key implications for the demand side will include:

### **a. How to manage the increasing bunker costs**

IMO regulatory change will affect all parties in the value chain, yet either in positive or negative direction. Among these shareholders, shipping companies will be in the negatively impacted group due to increased costs. There are different estimations regarding how much IMO will cost to the ship-owners. According the Goldman Sachs report, additional \$40bn cost will be introduced in the shipping industry and therefore to the customers. Shipping company MSC expects that new regulatory change will bring additional \$2 billion cost to the company annually. Maersk, one of the biggest shipping companies, states that with IMO's new sulphur cap policy, costs could go up to \$2 billion. These costs come in the form of CAPEX or OPEX, based on the selected alternative, installing scrubber, switching to VLSFO and etc. Whether it is CAPEX or OPEX oriented, all options will incur additional costs to the ship-owners, yet some of them could be preferred more in order to handle the costs better. For this purpose, shipping companies are expected to move towards VLSFO rather than LNG or scrubber since it does not require large capital investment and therefore price increase could be easily reflected on the customer side.

Due to the shift in the fuels, supply-demand balance of HSFO and VLSFO will change and as a result, price difference between two types of oil will grow. This price change could be passed to customers relatively easy because it originates from the operational expenditure. To give an example for the price change, before the IMO 2020, a ship carrying sugar around 50,000 mt from Brazil to China uses the regular fuel oil. Once new cap policy is initiated, the ship owner will have to find a substitute for the standard oil. If the owner chooses to change the HSFO with VLSFO, an extra cost of \$225,000 could occur just in one trip based on the current price difference between two types of fuel oil. As 2020 is approaching, price spread could enlarge and therefore additional cost could increase as well. With higher fuel bills, shipping companies will have to decide whether to decrease their profit or keep their profit level the same by reflecting risen cost to the consumers' prices. Among these available options, Maersk indicates that they will pass increased costs to customers and plan to adjust the prices before the start of the new procedure. Other shipping companies will have to assess their expenditure and decide how to manage the costs before the change in January 2020.

## b. What to choose among 4 main products?

	VLSFO	MGO	Scrubbers	LNG
<b>Explanation</b> 	0.1% S – 0.5% S Very Low Sulphur fuel Oil	0.1% S – 0.5% S, Marine Gasoil	New/Retrofit	Reduced SO <sub>x</sub> , NO <sub>x</sub> and PM emissions Liquefied natural gas
<b>Benefits</b> 	<ul style="list-style-type: none"> <li>— Minimize operational difficulty</li> <li>— Does not require large investments</li> <li>— Seen as a short-term option for compliance with sulphur emission regulations</li> </ul>	<ul style="list-style-type: none"> <li>— Convenient</li> <li>— Widely available across the world</li> <li>— Almost zero upfront investment</li> <li>— Operational experience in the sector</li> </ul>	<ul style="list-style-type: none"> <li>— Relatively cheaper</li> <li>— Shorter payback period</li> <li>— Seen as a medium-term option</li> <li>— Attractiveness is very high in the market</li> <li>— The number of scrubber ships is expected to increase by the factor of 5 in 3 years</li> <li>— The cost of installing a scrubber is higher for retrofit systems than for the new systems</li> </ul>	<ul style="list-style-type: none"> <li>— Proven technology for large container vessels, cruise ships and bulk carriers</li> <li>— Readily available, clean</li> <li>— Cost advantage to Marine Gasoil</li> <li>— Viable option in the medium and long term</li> </ul>
<b>Risks</b> 	<ul style="list-style-type: none"> <li>— Uncertainties about 0.5% compatibility and stability</li> <li>— Possible quality and availability problems</li> </ul>	<ul style="list-style-type: none"> <li>— More costly for shipping companies (higher bunker bills)</li> <li>— Lubricity issues</li> <li>— In the case of full compliance, \$1 increase per barrel is expected in the freight rates</li> </ul>	<ul style="list-style-type: none"> <li>— Limited operating experience</li> <li>— Risk of future regulations on carbon emissions and ocean acidification</li> <li>— Compliance concerns for open-loop scrubbers</li> <li>— Reduced space in the ships</li> </ul>	<ul style="list-style-type: none"> <li>— Inappropriate for most ships</li> <li>— Infrastructure for storing and refuelling LNG</li> <li>— Requires longer-term planning (after 2025)</li> <li>— LNG tanks occupy huge space in the vessels</li> </ul>
<b>Expectation</b> 	<ul style="list-style-type: none"> <li>— VLSFO demand is expected to increase from 0 to 1.4 million bp/d in 2020</li> </ul>	<ul style="list-style-type: none"> <li>— MGO demand will have a rise about 1.2 million bpd starting from 756 kb/d</li> </ul>	<ul style="list-style-type: none"> <li>— Number of scrubbers is expected to reach 2,100 until 2020</li> <li>— Another estimation for number of scrubbers by 2020 is 1,200</li> </ul>	

### **c. Will there be a shift from price to service/solution provider as supplier?**

The bunker market is a highly competitive low margin business. IMO 2020 will cause a demand shift to suppliers who are able to meet the multiple needs of the ship owner/supplier and provide a comprehensive services/solution. The service/solution components will include:

- Availability of HSFO that is compatible with scrubbers installed in vessels. The scrubber characteristics may require minor differences in quality of HSFO for compatibility
- Ability to offer trials for VLSFO
- Operational infrastructure of barges and storage capabilities required to enable multiple grades of fuel to vessel
- Offer enhanced credit lines to meet need for higher priced VLSFO
- Ability to provide fuel at multiple ports

### **d. How to manage the need for higher credit?**

With the amendments made in IMO 2020, tough financial times is yet to come for shipping industry. In order to remain compliant with the IMO 2020, either more expensive fuel is to be used or new infrastructure is to be installed hence bringing the issue of bunker fuel bills into focus for the industry.

Since the great recession happened in 2008, the ship-owners and the operators have gone through many hardships such as heavy losses, revaluation of their assets on the balance sheet as well as numerous bankruptcies even for companies that were regarded as 'too big to fail' such as the Korean liner company Hanjin Shipping in 2017.

There is no doubt that 2020 is to be a tough period with having many pitfalls for the ship owners and operators. Bunker fuel is expected to be the most predominant cost in the marine industry, therefore, the cost are set to increase substantially. Some experts foresee the price spread between HSFO and VLSFO, up to \$400 which corresponds to extra cost to industry of \$80 billion per annum. In this case, this additional cost for the shipping industry will be crucial.

2020 is expected to be a massive overhaul for the shipping industry, not only in terms of installing new infrastructure into the ships, but also managing the risk of taking on credit risk since the large part of the bunker sales are made on credit. This could present a period of heightened risk of eligibility for ship owners to obtain credit from either suppliers or banks. In the aftermath of the amendments in IMO 2020, the credit line for fuel procurement will need to be expanded. Largest ship-owners may continue to their business with increasing their credit volume and able to obtain large credit line due to the power of their financial statements and sizes. However, the riskier tier of small ship owners and operators may not be eligible to increase credit volume from the suppliers and the banks. As an alternative plan rather than continuing to use high volume credit, some ship operators are making their business plans for the medium-term to pass the bunkers costs to their ultimate customers. Due to higher prices of fuel, the small sized ship owners may lose their market share and competitive abilities due to the difficulty of accessing to credit.

### **e. How to manage concerns about blended 0.5% compatibility and stability?**

Switching to fuel-oils which contain less sulphur is another option for the ship-operators. In order to provide this alternative to their customers some oil producers started to develop blended oils and they offer assistance during the testing period. Since there is no standard procedure to obtain low-sulphur-fuel-oils, output of the process may not be stable or there could be some incompatibility problems with other fuels. These problems may cause issues inside the engine system of a ship, even result in the engine failure. In addition to the compatibility and stability problems, small ports might not be able to supply fuel oil with low sulphur since the product will be brand-new. All of these issues will continue in the first years of regulation until a standardized product is obtained and delivered to the ports.



#### **f. How to operate new equipment?**

The new environment will require that ship owners operate scrubbers and operate vessels with the new grade of fuel oil/gas oil/LNG and be able to manage operational issues that may arise because of the changes will be made in order to remain compliant with IMO 2020. There is a number of challenges that ship-owners need to contemplate before retrofitting either scrubber or LNG. Structural compatibility and the age of the vessels will play important role in continuing the commercial operations. Not all vessels' structural design is compatible with the installation due to the lack of space and infrastructure. Even though a place for scrubbers can be found, there will not be a one-sized scrubber for the all vessels as a solution. However, this problem can be fixed with newer vessels. They are more like to be designed to have an enough space for scrubbers. Another alternative solution is to set up LNG tanks. However, this unique particular solution is still at its early stage to implement on vessels because they take up much more space than scrubbers and storages for other type of fuels and leave with less space for cargo on vessels. Therefore, utilisation rate of vessels would go down due to lack of space and infrastructure.

#### **g. How will be the regional differences in compliance enforcement?**

The significant price differential between IMO 2020 compliant VLSFO and HSFO will tempt marine vessels owners and operators to cheat and use HSFO on vessels not equipped with on-board scrubbers if they see a low risk of penalties. As a specialized agency of the United Nations, IMO itself does not have authority to enforce the 20/20 rule. IMO has assigned Pollution Prevention and Response (PPR) sub-committee take the lead role in defining the IMO 2020 enforcement. The final details are still being worked out and considerations include:



- Flag States (the jurisdictions under which vessel is registered or licensed) have authority to enforce the rule
- Expand authority of Port States (an inspection regime for countries to foreign-registered ships and take action against ships that not in compliance with authority) to help enforce the rule
- Loss of insurance coverage
- Enlist receivers of goods to help enforce compliance
- Prohibit transportation of HSFO if vessel is not equipped with scrubber

Regional differences will emerge how compliance is enforced and managed. As an example, one region is considering the use of drones to 'sniff' vessel emissions to manage compliance. Despite the regional differences, an overall 80% compliance is estimated in the first year by the consultancy.

A related issue is non-availability of compliant marine fuel reported via FONAR (fuel oil non-availability report). A FONAR must be submitted when non-compliant fuel is utilized on a vessel in the Emission Control Area (ECA) zone off the coast of United States. The penalty for this non-compliance is minimal if Coast Guard investigation confirms non-availability of fuel. The industry is expecting the PPR sub-committee will create and implement a process similar to FONAR applicable to open ocean fuels.

## 6. Getting Ready – How KPMG can help you if you are a ship owner/operator?

### Questions to consider:

- 
- What are our fleet characteristics/fuel oil usage?
  - Do we invest in scrubbers or switch to VLSFO?
  - What is the desired timing of our tank cleaning?
  - What is our vessel routing and how we plan fuel availability to avoid business disruption?
  - Do we enter into term contracts to guarantee supply or buy spot?
  - What testing do we conduct for VLSFO?
  - How do we pass additional fuel costs to our customers?
  - What insurance coverage do we update?
  - What additional processes do we need to ensure compliance?
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### How can KPMG help

- IMO 2020 Readiness Assessment
- Option evaluation (scrubbers, switch to VLSFO, etc.) by evaluating your fleet and operations
- Size your credit need, evaluate the risk and provide mitigation actions
- Identify vessel routing by considering fuel availability and business continuity
- Roadmap for compliance

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