IMPACT OF IMO 2020 ON THE PORT OF FUJAIRAH

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1,000
The number of scrubbers on vessels anticipated worldwide by 2020 – that is out of a global vessel market of 55,000 so not a large penetration rate. By 2025, this number is set to increase to 5,000.

70%
Predicted growth of LNG through to 2020, although on a volume basis this is only 40,000 barrels of the overall mix.

John Stewart: The Wood Mackenzie view is that come 2020, we don't see the world being fully compliant with IMO 2020 regulations. We will see 80% compliance on the 0.5% sulfur emissions. Places like South America, parts of Southeast Asia and the Middle East to a certain extent, will have limitations to comply due to infrastructure on the supply side.

There are three tangible options to comply with the new specification. Either install scrubbing technology on vessels to take the exhaust gas emissions down to 0.5%; switch to a lower sulfur fuel or distillate marine gas oil; or switch to liquified natural gas (LNG), which still has large growth potential. A fourth and final option of course is to do nothing, and in parts of the world, that might actually happen despite the reputational damage that might follow.

We think there will be around 1,000 scrubbers on vessels worldwide by 2020 – that is out of a global vessel market of 55,000, so not a large penetration rate. Those 1,000 scrubbers will represent about 5% of global marine fuel demand. Come 2025, we are likely to see this number at 5,000 vessels and that's just based on the type of vessels that are going to be installing scrubbers with economic paybacks – those who have long distances to cover and will be burning lots of fuel.

There are resistance factors to installing scrubbers, such as whether there will be time to get all the scrubbers installed by January 2020. What happens if you have a receipt that says you bought a scrubber but it's not installed yet? Do you get leniency on the fuel that you burned because you have a scrubber coming six months down the road? There is a lot of uncertainty and how that enforcement transpires.

Participant: *You mentioned this region has not got the necessary infrastructure, so if we have an overhang of high sulfur supply there's going to be a market clearing price.*

John Stewart: The refining system has certain limitations on its flexibility and how much it can shift one way or another. It can't go overnight from 30% gasoline to 30% diesel. As high sulfur fuel oil (HSFO) pricing starts to fall, the scrubber penetration rate picks up through to 2025. The incentive has to be there to make that fuel from the supply

side so the crack spreads have to be there to support the refiner shifting. There are many factors on the economics of refineries in the region. HSFO can either go into the power sector if it gets cheap enough or you can look for outlets in other refining systems to take it into their upgrading units. Globally, we think there is enough upgrading capacity to take those barrels. The best thing refiners can do is look at their internal streams and how to blend the fuels to make other specifications. If that option has been exhausted and a refiner has produced as much compliant fuel as possible from lower value streams, then look for an outlet to export those barrels somewhere else that has the upgrading capacity, such as in North America and China.

On LNG, the potential growth rate is very high. We see 70% growth through to 2020 but on a volume basis that will only be 40,000 barrels of the overall mix. That is very low so we don't see it having a material impact in our base case. Certainly, with the right investment there is definitely scope for more growth in LNG.

We see full compliance coming in 2025. Most of the switch will be made from an initial shift in the refining system to produce distillate to the levels that it can. And then beyond that, it will really be the scrubber penetration rate and how much HSFO it picks up through to 2025.

Participant: *When you invest in a scrubber, it's based on certain assumptions of price and how much low sulfur fuel oil (LSFO) will be available. So how is a shipping company going to look at this with regards to the size of vessels? If the size of the ship is bigger, the economics are easily justifiable.*

"One thing that the IMO has mentioned is that vessels found to be non-compliant will be declared unseaworthy and the moment this happens, the insurance coverage for the vessel becomes null and void."

John Stewart: Yes – a scrubber makes more sense for larger vessels burning greater amounts of fuel. Some of the smaller product size tankers for comparison actually did quite well on an LNG basis versus installing scrubbers. A lot of it depends on the route you are taking, the size of the ship and then what your payback time will be, fuel availability, and who is financing the project. For example, as a refiner of HSFO, you could talk to a shipping company and say we'll give you the fuel oil and help fund some of the scrubber CapEx if you come to us every time you go into Fujairah. Ideally, port authorities, storage companies and refiners need to talk more as a group, instead of working independently, about what the options may be and how to solve these questions collaboratively. There's opportunity there, which I don't think has been fully realized and we're quickly running out of time.

Participant: *Is there an issue with the availability of scrubbers? Ships are trading everywhere and shipowners want to make sure they have supply and shipyards also need time for installation. I think that's an issue for LNG as well. Those dynamics need to be factored in.*

John Stewart: It's a great question. I think the numbers that I referred to – a thousand scrubbers by 2020 and five thousand in 2025 – are probably optimistic. Those numbers were compiled at the end of May and I can see them being pulled down in our next update.

Participant: *If the scrubbers aren't available, how does that impact the whole market for HSFO?*

John Stewart: This region still relies on Singapore netback for the pricing of fuels, so they are going to need to know how the HSFO market is doing regionally and also what's happening on the distiller side. There's not really the liquidity on the fuel oil side in the region compared to perhaps some of the other ports. There is liquidity here on the distillate portion of the barrel though, and I think we've got two million barrels per day of additional refining capacity coming

over the next five years. So, there will be additional availability of lower sulfur distillate volumes. This is an opportunity for Fujairah to get a little bit more of a foothold in the global market and establish itself by having a benchmark.

Participant: *From a jurisdiction or port authorities' point of view, what will happen with those who are not going to be compliant?*

John Stewart: There has been no real transparency on that. Who enforces compliance? Does it fall with individual states or each port authority? Does it go back to the original supplier? Can you chase a refiner because they sold HSFO to a ship or does that get lost in the whole trading cycle? How much is the fine? The framework to implement fines is very difficult to understand; I don't see how that will play out.

Participant: *We all know there is going to be an increase in price for the compliant fuel that's going to be in use. So irrespective of who bears the cost, the final price of the commodity in itself is going to have a huge impact, especially for developing countries who may not be ready to absorb this additional cost.*

John Stewart: If it's an international shipping organization, then maybe they have the ability to absorb that cost. But some countries don't so then how does the discussion transpire on that basis?

Participant: *One thing that IMO has mentioned is that vessels found to be non-compliant will be declared unseaworthy and the moment this happens, the insurance coverage for the vessel becomes null and void. How is that going to be a factor in terms of ensuring compliance?*

"Come 2020, we don't see the world being fully compliant with IMO 2020 regulations."

John Stewart: You will lose money on a daily basis if your ship can't move from A to B due to insurance coverage, but again it goes back to the fact that the framework is just not there yet on who is responsible.

Participant: *What will the impact be on supply in the Fujairah market?*

John Stewart: We have looked into the Fujairah market on the supply side and we don't see there being sufficient very low sulfur fuel oil (VLSFO) availability. The question then becomes do you start to pull out barrels from other middle distillate grades to comply with the 0.5% legislation? Areas where 0.1% sulfur limits are already in place will do OK as will other parts of the world that have more sophisticated refining infrastructure.

Participant: *Fujairah is a big bunker supplier so when you say the region will struggle to have the compliant supply, what does that mean for bunker supply companies? Does it mean that their customers might be bunkering somewhere else or do they have to do something else, like import the required supply?*

John Stewart: Yes – they may need to do that in order not to lose customers. Also, if you are a refining company that has shipping, you probably want to supply your own ships when you can with compliant fuel. Certainly, the risk of loss of market share is there with those more compliant regions like Amsterdam, Northwest Europe, Singapore and even places like China, which has quite a sophisticated refining system.

Participant: *The supply after 2020 will all depend on what kind of spread there is between high sulfur and low sulfur. If it's high, then the ship owners and the suppliers will have to find different ways to take advantage of that spread. But it's very hard to define right now. Will the spread be $50 per ton or $200? Do you think blending would be an option for Fujairah to overcome the shortfall in refining capacity, given the massive infrastructure and the flexibility available to blend?*

John Stewart: I've yet to see a consistent LSFO spec that everyone can or has to comply to. Picking up a variable sulfur fuel oil in Singapore might not be the same as the one you pick up in China or Fujairah, and compatibility might be an issue if you start to blend those. As the second largest bunkering hub in the world, there are existing players and infrastructure in Fujairah and that is a platform for growth. The blending site is a good opportunity. But again, it goes back to the point of transparent communication between suppliers, consumers and storage companies. I don't think we are where we need to be at on that basis. ■

**Edited transcript*