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IMO 2020 – Dilemmas, Choices & Economics for the ship owners

Capital Link, London, September 25th, 2018

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IMO 2020 – Ship owners dilemmas, choices and economics

Industry expert thoughts…

Lloyd's List
Maritime intelligence | informa

IEA warns of 'disruption' due to 2020 low-sulphur shipping rule

The 2020 sulphur cap is forcing owners to decide between low-sulphur fuels, scrubbers and LNG propulsion. As the first seems to dominate interest, the International Energy Agency is adding to the chorus of voices warning of a rocky transition amid oil refinery unpreparedness

Lloyd's List
Maritime intelligence | informa

Sulphur cap could drive up global bunker fuel costs by $60bn a year

Consultancy Wood Mackenzie also expects a shift in bunkering locations based on compliant fuels availability, with Singapore potentially losing some business to China

Bloomberg

Researcher Who Saw Stressed 2020 Oil Market Is More Worried Now

- EnSys president led key 2016 research into ship-sulfur rule
- Since then oil demand has surged, heightening industry risks

IMO 2020 – Ship owners dilemmas, choices and economics

Alternatives for most ship owners to meet the IMO 2020 Sulphur Cap

- **Install a scrubber and continue to run on HFO bunker fuel.**
  - Most vessels can retrofit but it takes space.
  - Require strong cash position to prepare/retrofit a full fleet.
  - Uncertainty and concerns about the system types and quality.
  - Short payback period basis the 2020 forward prices – appear to be the cheapest way out.

- **Run on compliant fuels such as MGO/MDO or LSFO.**
  - Can be used by most engines but more lubes required to avoid operational issues. Blends generally have higher viscosity than Gasoil.
  - Lack of standardization of LSFO's/Blends an issue as qualities cannot/ should not be mixed.
  - Availability and price…?? The fuel forward market has not supported refinery investment decisions and refinery lead time is usually 4-5 years.

- **LNG/Dual fuel and LPG propulsion.**
  - High investment cost!
  - Availability still limited and prices more linked to marine fuels prices than the gas market.
  - Premature currently, but likely to see increased adoption in the 2020's, driven by high compliant fuels prices in the early 2020's and IMO's GHG target towards 2050.

- **Phase out/ alternative use of the vessel.**
  - Old, fuel thirsty vessels will lose out…
  - Some will be scrapped, some will experience lower utilization while some may hope for an alternative use/life…floating storage of a HFO surplus in the early 2020's could be one option.

In the end, the above mentioned is down to the following;

- Is the compliance of the IMO 2020 Sulphur cap a responsibility for the ship owners or the refinery industry?
- Who should pay for this?

IMO 2020 – Ship owners dilemmas, choices and economics

What have the ship owners been saying?

- **We met with tanker owners 93 times in 2017…**
  - Here are some of the thoughts shared with us;
    - *"IMO 2020 will be postponed like the BWTS implementation, since it will be impossible to implement".*
    - *"This is a responsibility for the refinery industry, not the ship owners".*
    - *"Scrubbers are too expensive, especially given the weak market and cash flow currently".*
    - *"The BWT systems have not worked properly and it will be the same with scrubbers".*
    - *"Scrubbers already fitted show signs of being worn out already after 5-8 years".*
    - *"What do we do about the sludge? Ports are for sure coming up with waste disposal fees".*
    - *"Closed loop systems impossible on deep-sea vessels".*
    - *"Open loop systems are already talked about as becoming banned".*
    - *"Hybrid systems are too expensive".*
    - *"Scrubber prices are coming off and the technology is still not fully proven so I will wait".*
    - *"The vast majority of the fleet will not have a scrubber so we will be United in pushing a fuel cost increase on to the charterer".*
    - *"It will be impossible to find HFO when few wants it".*

- **We have also met with tanker owners 64 times year-to-date…**
  - The majority had the same thoughts still early in the year, but several have become more positive to the thought of investing in a scrubber….probably after seeing the action several charterers have taken…..and after hearing the final confirmation from the IMO this spring….

- **Even though the sentiment has changed the past months, the vast majority of the tanker fleet will depend on compliant fuels.**
  - Those opting for scrubbers initially did so on newbuildings, due to the lower installation cost, but retrofits have gained interest lately. Many underestimate the time required for a retrofit, we believe.

IMO 2020 – Ship owners dilemmas, choices and economics

What have the charterers been saying, directly or indirectly?

- **Several significant Oil & Gas majors and Traders have been in the market to secure scrubber fitted vessels for Time-Charter or ordered newbuildings on their own book the past 15-18 months.**
  - Some in open tenders, others in direct approach to the owners.
  - The list of names that either have been officially or rumoured in the market for scrubber fitted vessels include BP, Koch, Trafigura, Total, Shell, S-Oil, Vitol, Cargill, SK Energy, some of which are major suppliers of Gasoil today…

- **Their reason for securing scrubber fitted vessels may be based on;**
  - They, as industry insiders/ fuel suppliers or traders, know that compliant fuels availability will be limited and fuel prices high…

    …And/or…
  - They fear that a united front from the owners will attempt to push a fuel price increase on to the charterers.

Trafigura joins rival traders in selecting scrubbers

Vast tanker orderbook will be fitted with scrubbers, Trafigura has confirmed.

March 27th, 2018 14:13 GMT
by **Andy Pierce**
Published in **TANKERS**

TradeWinds
The Global Shipping News Source

Trafigura has joined the stable of commodity traders opting for scrubbers on new ships to meet new emissions legislation.

Trafigura joins peers including Cargill and Vitol in throwing its weight behind the technology, which has posed as many questions as answers for many shipowners.

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What are the numbers saying, basis the 2020 forward prices as of Sep 21, 2018? – VLCC example

- **We have in the below run the numbers using two existing vessels built by the same yard…**
  - …simulated achieving the same WS on the same route (basis 2018 details for Ras Tanura–Ulsan).
  - The two to the left show the vessels basis 2020 forward prices for HFO and the use of a scrubber.
  - The two to the right show the same vessels but using MGO instead of a HFO/scrubber combo.

2020 HFO with Scrubber basis Cal 2020 HFO price Europe per Sep 21, 2018

Eco Korean, 2017 blt VLCC

Ras Tanura - Ulsan		
WS	50	
Bunker price,Cal 2020 HFO	319,4	USD/mt
Cargo/t	270 000	
Flat rate	16,00	
Variable	0,00	
Port cost, load	75 000	USD
Port cost, discharge	75 000	USD
Commission	3,75 %	
Fuel consumption, laden	52,0	Mt/Day
Fuel consumption, ballast	31,7	Mt/Day
Distance, laden	6 255	Nm
Distance, ballast	6 255	Nm
Sea margin	5,0 %	
Speed, laden	13,5	Knots
Speed, ballast	13,0	Knots
Sailing time, laden	20,3	Days
Sailing time, ballast	21,1	Days
RV	45,3	Days
Fuel penalty	3 %	
Brent/Bunker Fuel ratio	4,4	
Brent price, Cal 2020	72,72	USD/bll
Idle	4,0	Days
Not pumping	2,0	Days
Pumping	200	
TCE	**28 600**	**USD/Day**

Tons bunker for RV	1 773	Tons
Bunker fuel cost	12 495	USD/Day
Steaming days	255	Days
Voyages per year	5,6	
Scrubber investment, NB	**2,6**	**USD Mill**
Scrubber investment, Retrofit	**5,0**	**USD Mill**
Scrubber payback, NB	**0,8**	**Years**
Scrubber payback, Retrofit	**1,5**	**Years**

Non-Eco Korean, 2010 blt VLCC

Ras Tanura - Ulsan		
WS	50	
Bunker price,Cal 2020 HFO	319,4	USD/mt
Cargo/t	270 000	
Flat rate	16,00	
Variable	0,00	
Port cost, load	75 000	USD
Port cost, discharge	75 000	USD
Commission	3,75 %	
Fuel consumption, laden	77,0	Mt/Day
Fuel consumption, ballast	59,0	Mt/Day
Distance, laden	6 255	Nm
Distance, ballast	6 255	Nm
Sea margin	5,0 %	
Speed, laden	13,5	Knots
Speed, ballast	13,0	Knots
Sailing time, laden	20,3	Days
Sailing time, ballast	21,1	Days
RV	45,3	Days
Fuel penalty	3 %	
Brent/Bunker Fuel ratio	4,4	
Brent price, Cal 2020	72,72	USD/bll
Idle	4,0	Days
Not pumping	2,0	Days
Pumping	200	
TCE	**20 750**	**USD/Day**

Tons bunker for RV	2 887	Tons
Bunker fuel cost	20 345	USD/Day
Steaming days	255	Days
Voyages per year	5,6	
Scrubber investment, Retrofit	**5,0**	**USD Mill**
Scrubber payback, Retrofit	**0,9**	**Years**

2020 MGO basis Cal 2020 MGO price Europe per Sep 21, 2018

Eco Korean, 2017 blt VLCC

Ras Tanura - Ulsan		
WS	50	
Bunker price,Cal 2020 MGO	661,3	USD/mt
Cargo/t	270 000	
Flat rate	16,00	
Variable	0,00	
Port cost, load	75 000	USD
Port cost, discharge	75 000	USD
Commission	3,75 %	
Fuel consumption, laden	52,0	Mt/Day
Fuel consumption, ballast	31,7	Mt/Day
Distance, laden	6 255	Nm
Distance, ballast	6 255	Nm
Sea margin	5,0 %	
Speed, laden	13,5	Knots
Speed, ballast	13,0	Knots
Sailing time, laden	20,3	Days
Sailing time, ballast	21,1	Days
RV	45,3	Days
Fuel penalty	-3 %	
MGO/HFO spread	2,1	
MGO/Brent spread	9,1	
Idle	4,0	Days
Not pumping	2,0	Days
Pumping	200	
TCE	**15 160**	**USD/Day**

Tons bunker for RV	1 670	Tons
Bunker fuel cost	24 364	USD/Day

Non-Eco Korean, 2010 blt VLCC

Ras Tanura - Ulsan		
WS	50	
Bunker price,Cal 2020 MGO	661,3	USD/mt
Cargo/t	270 000	
Flat rate	16,00	
Variable	0,00	
Port cost, load	75 000	USD
Port cost, discharge	75 000	USD
Commission	3,75 %	
Fuel consumption, laden	77,0	Mt/Day
Fuel consumption, ballast	59,0	Mt/Day
Distance, laden	6 255	Nm
Distance, ballast	6 255	Nm
Sea margin	5,0 %	
Speed, laden	13,5	Knots
Speed, ballast	13,0	Knots
Sailing time, laden	20,3	Days
Sailing time, ballast	21,1	Days
RV	45,3	Days
Fuel penalty	-3 %	
MGO/HFO spread	2,1	
MGO/Brent spread	9,1	
Idle	4,0	Days
Not pumping	2,0	Days
Pumping	200	
TCE	**-140**	**USD/Day**

Tons bunker for RV	2 719	Tons
Bunker fuel cost	39 670	USD/Day

Sources: Fearnleys

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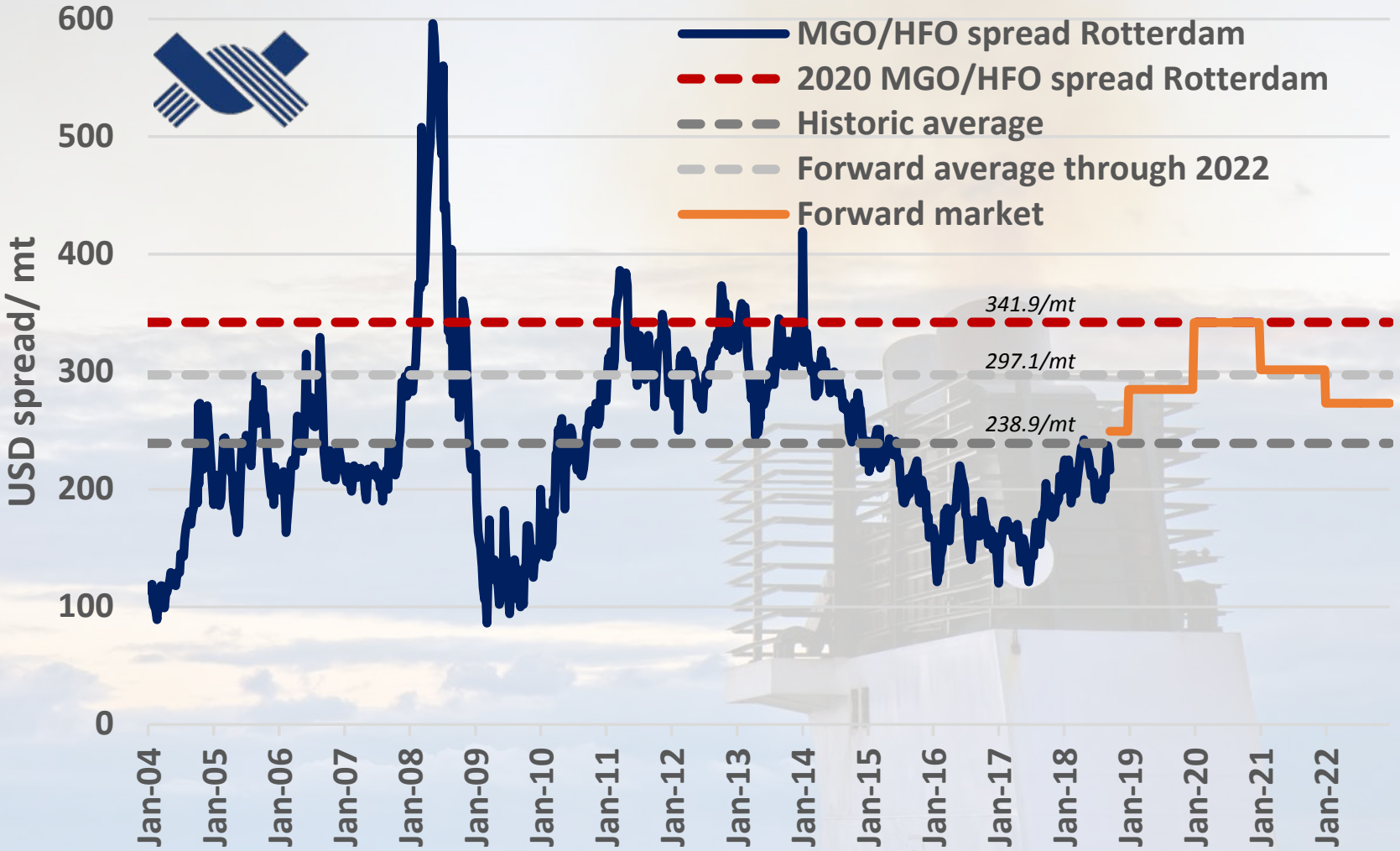
What is the fuel price spread suggesting?



Sources: Fearnleys

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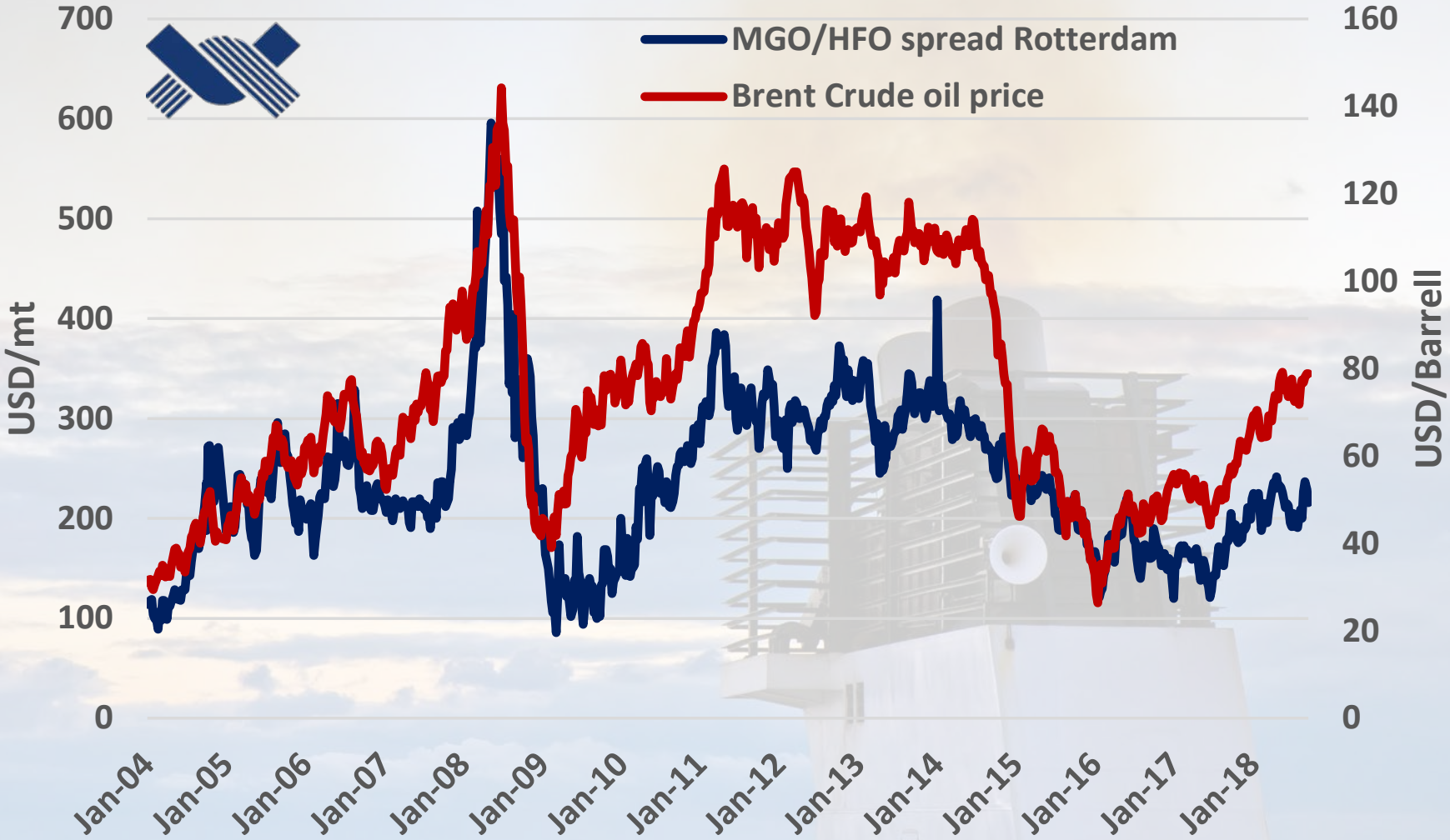
What about crude oil prices, the basis for fuel prices?



Sources: Fearnleys

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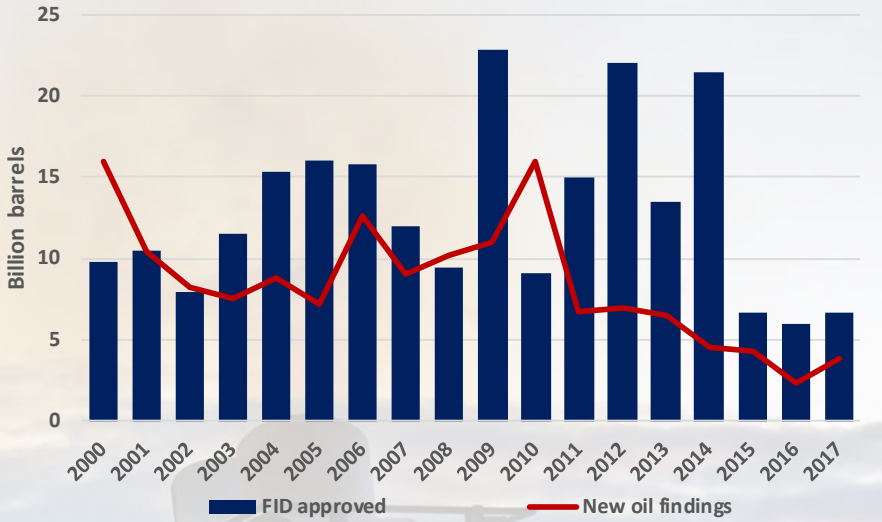
What about crude oil prices, the basis for fuel prices?

- **A lack of Final Investment Decisions the past 4 years is likely to cause few conventional production start-ups from 2020.**
  - Much of the strong oil demand growth therefore depending on being covered by U.S. shale oil, as a reversal in production by OPEC and its capacity is likely to be fully absorbed by end-2019 at the latest.
  - The comparison of new production needed versus the new production expected added in the illustration below suggest that oil prices are likely to rally above $100/bll no later than 2020.
  - This should add to the compliant fuels refinery capacity as a worry.

Barrels found & FID'd, by year



Time	2018	2019	2020	2021
Depletion	3.0 mbpd	6.0 mbpd	9.0 mbpd	12.0 mbpd
Consumption growth	1.5 mbpd	2.7 mbpd	4.0 mbpd	5,2 mbpd
New production needed	4.5 mbpd	8.7 mbpd	13.0 mbpd	17.2 mbpd
Conventional start-ups	2.9 mbpd	5.5 mbpd	6.4 mbpd	7.2 mbpd
IEA forecast for shale oil	1.3 mbpd	2.2 mbpd	2.5 mbpd	2.7 mbpd
New production provided	4.2 mbpd	7.7 mbpd	8.9 mbpd	9.9 mbpd
Gap to be filled by drilling tech, stocks, spare capacity	0.3 mbpd	1.0 mbpd	4.1 mbpd	7.3 mbpd

All scenario numbers are accumulated

OPEC spare capacity is currently ~2.1 mbpd

Non-OPEC to provide net 4.65 mbpd, OPEC NGL providing net 320 kbpd

OECD commercial inventory glut to 5-year avg can cover ~200 kbpd for 1 year…

Sources: IEA, Fearnleys

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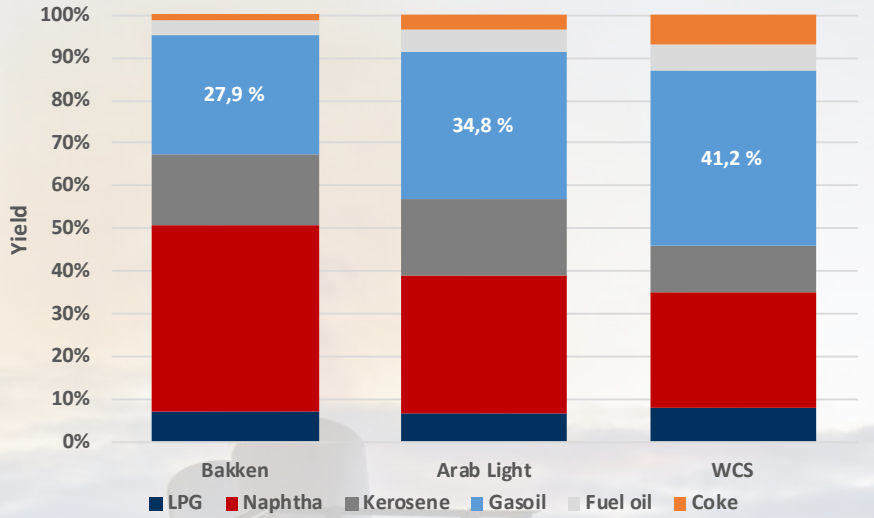
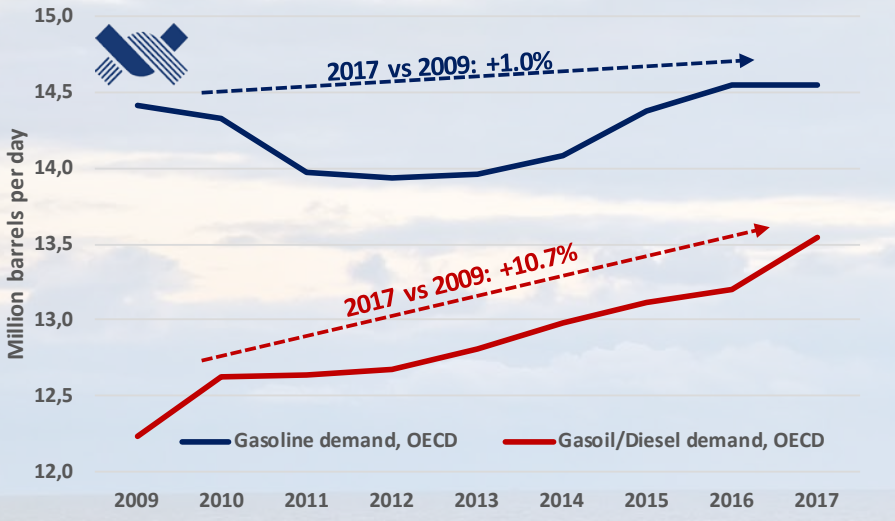
What about crude oil prices, the basis for fuel prices?

- **Shale oil is not the solution to everything…**
  - The refinery industry depend on heavier crudes for blending of the very light shale oil but heavy grade volumes are not growing.
  - Shale oil and condensates from U.S. shale are initially rich on gasoline and naphtha, but it is diesel that is in demand – which will be reinforced by shipping's change of fuel from 2020.
  - An alternative for the refineries is to use non-optimized crude (more LTO), but they would then need to give up output and depend on strong margins.

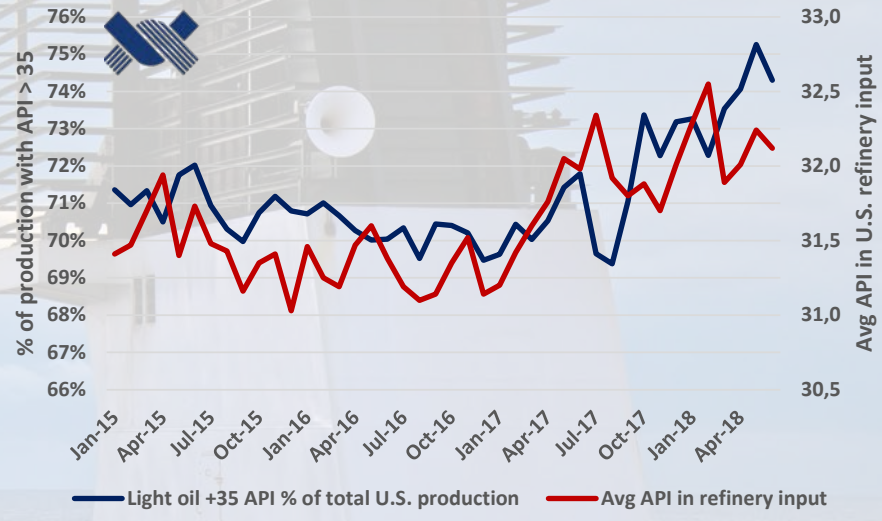
U.S. LTO grades got low distillate yield



OECD gasoline vs diesel demand since 2009



More LTO being used



Sources: IEA, EIA

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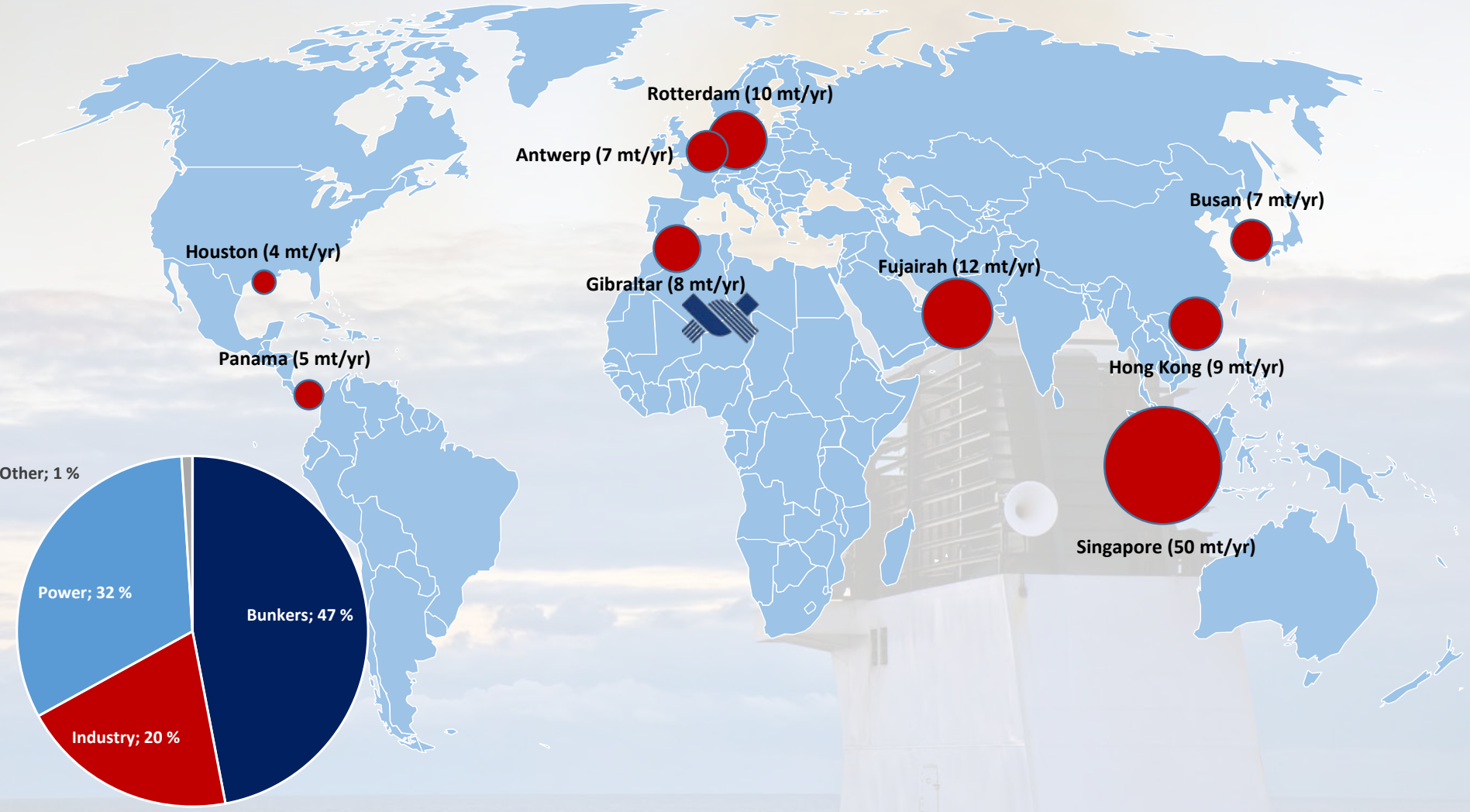
Availability (map showing bunker fuel sales in million tonnes per year for main bunker ports. Pie chart showing world fuel oil demand)



Sources: IHS, World Fuel Services, Argus

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Implementation & Compliance/ Enforcement

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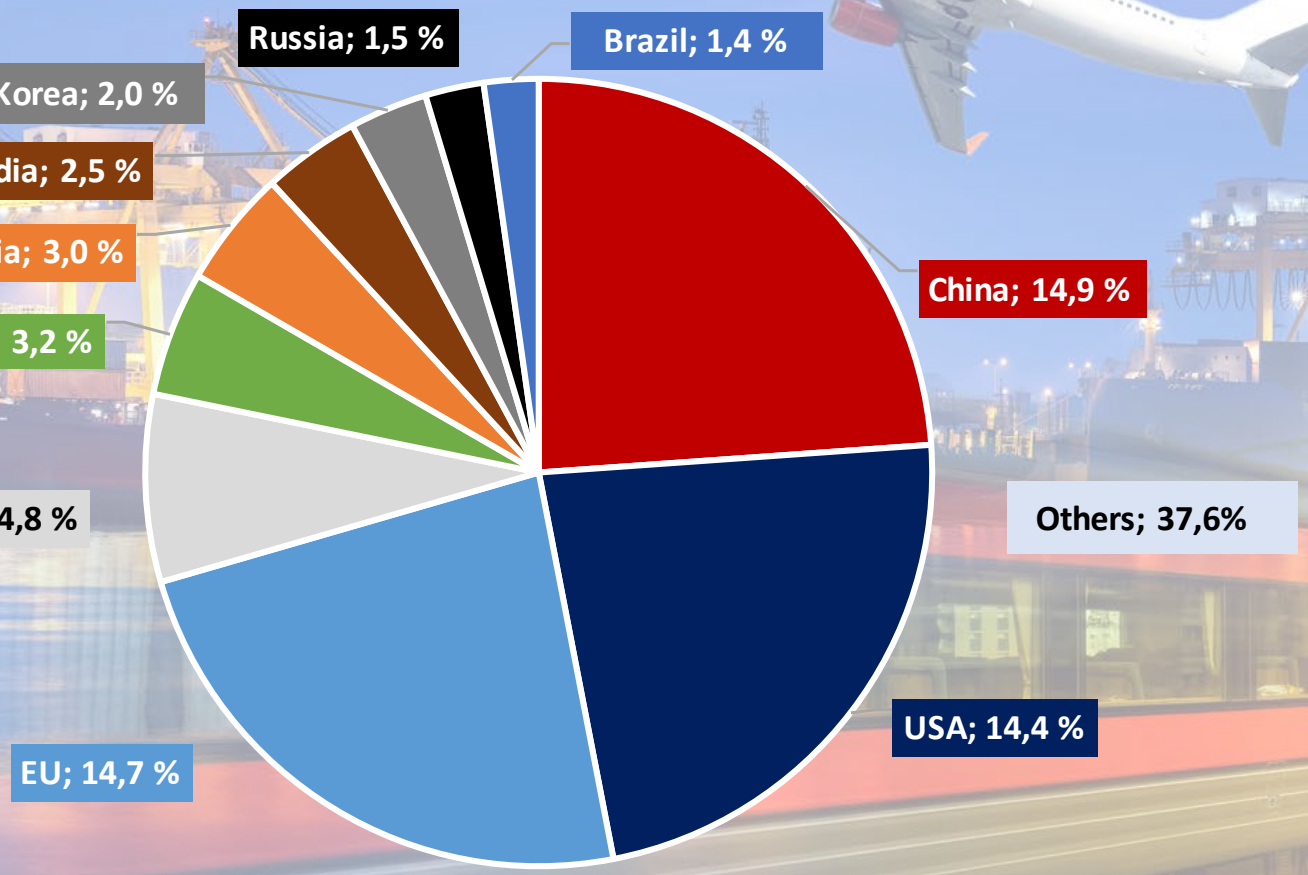
Compliance – Top 10 in world trade of goods account for 62.4% of the trade



Sources: Eurostat

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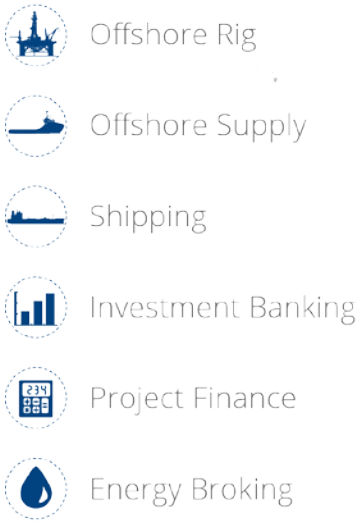
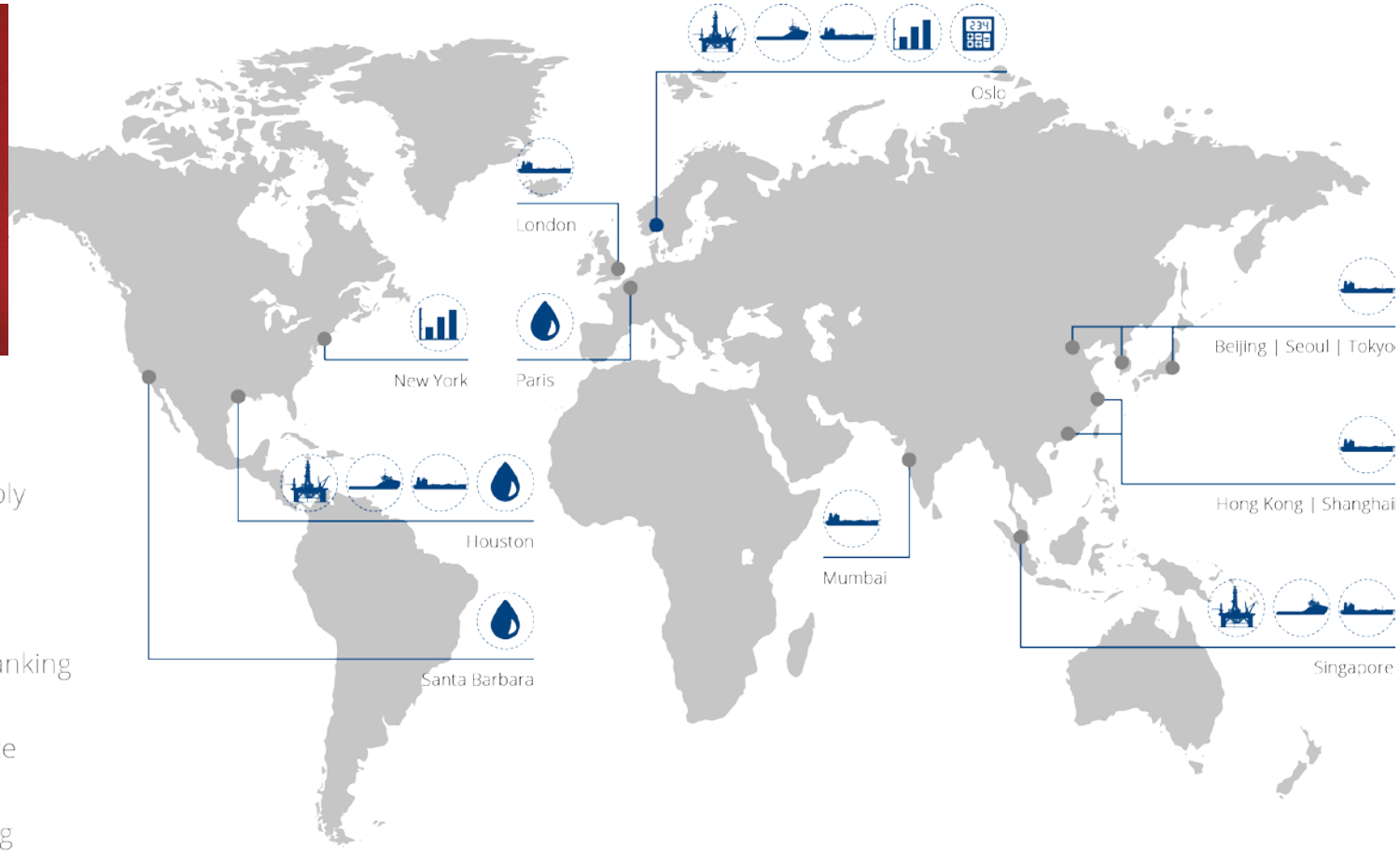
Conclusion

- The IMO 2020 Sulphur Cap largely seem to rely on the refinery industry. Ship owners have overall done little to prepare until recently, and many neither see it as their responsibility.
- Lead time given the refineries too short, investment requirements big without forward market support. Right amount of the preferred crude oil qualities may not be available.
- Charterers in the oil market meanwhile securing compliant vessels…
- A scrubber may have long-term benefit, but it is the short payback versus a likely 3-5 years fuel market imbalance that really makes it attractive. There is a reputational effect here too, we believe.
- LNG/Dual fuel and LPG are premature solutions, but adoption should speed up towards the mid 2020's, driven by high compliant fuels prices in the early 2020's and further tightening of emission regulations towards 2050.
- The majority of the owners will depend on a united push of fuel cost increases on to the charterers…may work when the market balance is right, but only then…
- Compliance expected to be driven by port states and charterers, not flag states. Non-compliance will occur, but the majority of world trade will be compliant.
- If you invest in a scrubber – pick a supplier with actual experience/ tested systems….and preferably a financial status that can handle your law suit, should your system not work properly…

Thank you for your attention!





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