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The New Fuel Oil Pricing Landscape

for StocExpo 2021



JBC ENERGY



in



Eugene Lindell
JBC Energy

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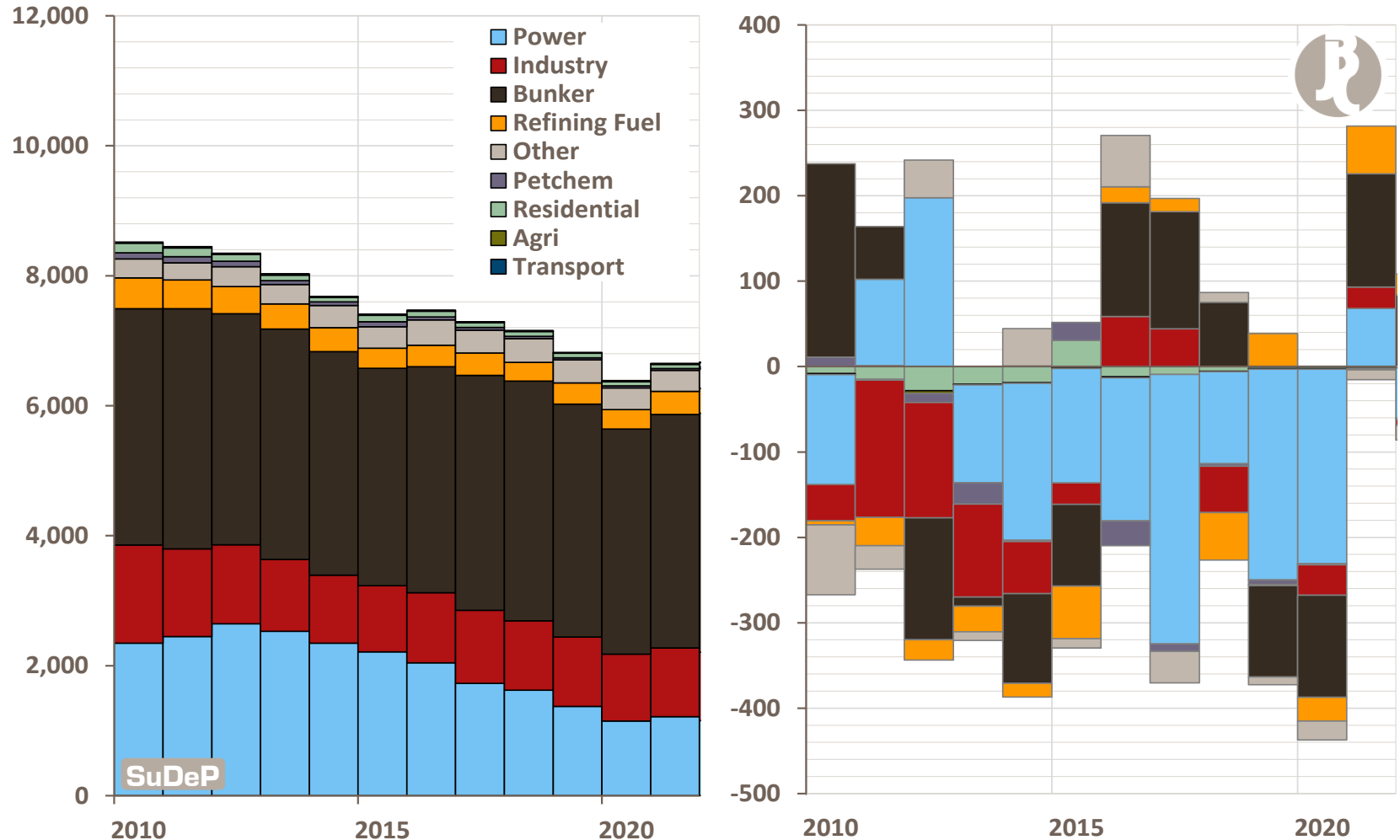
Agenda



- How did Covid-19 impact the market for fuel oil?
 - How did refineries react?
 - What was the impact on HSFO and VLSFO?
- Outlook for 2021 (and beyond)
 - Impact of refinery closures
 - Whither fuel oil spreads?
- Conclusions

Fuel Oil in Transition

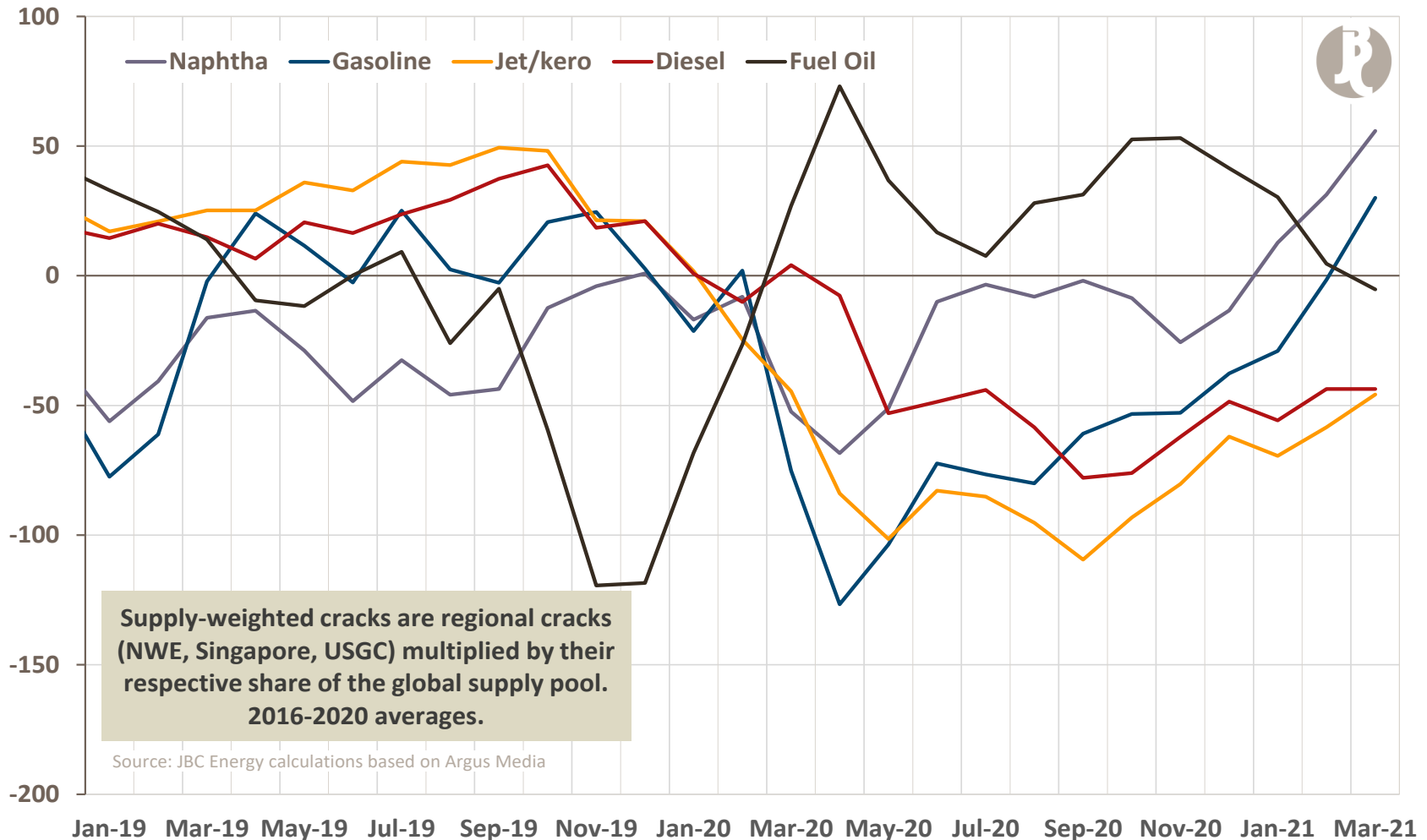
WORLD: FO Demand by Sector and Y-o-y Growth ['000 b/d]



There are really only two sectors that matter to fuel oil namely: bunker and the wider powergen sector (for FO we can add industry, other, and refining fuel into the powergen sector as FO in these sectors will be used for calorific value). Powergen is in structural decline.

Fuel Oil in Transition

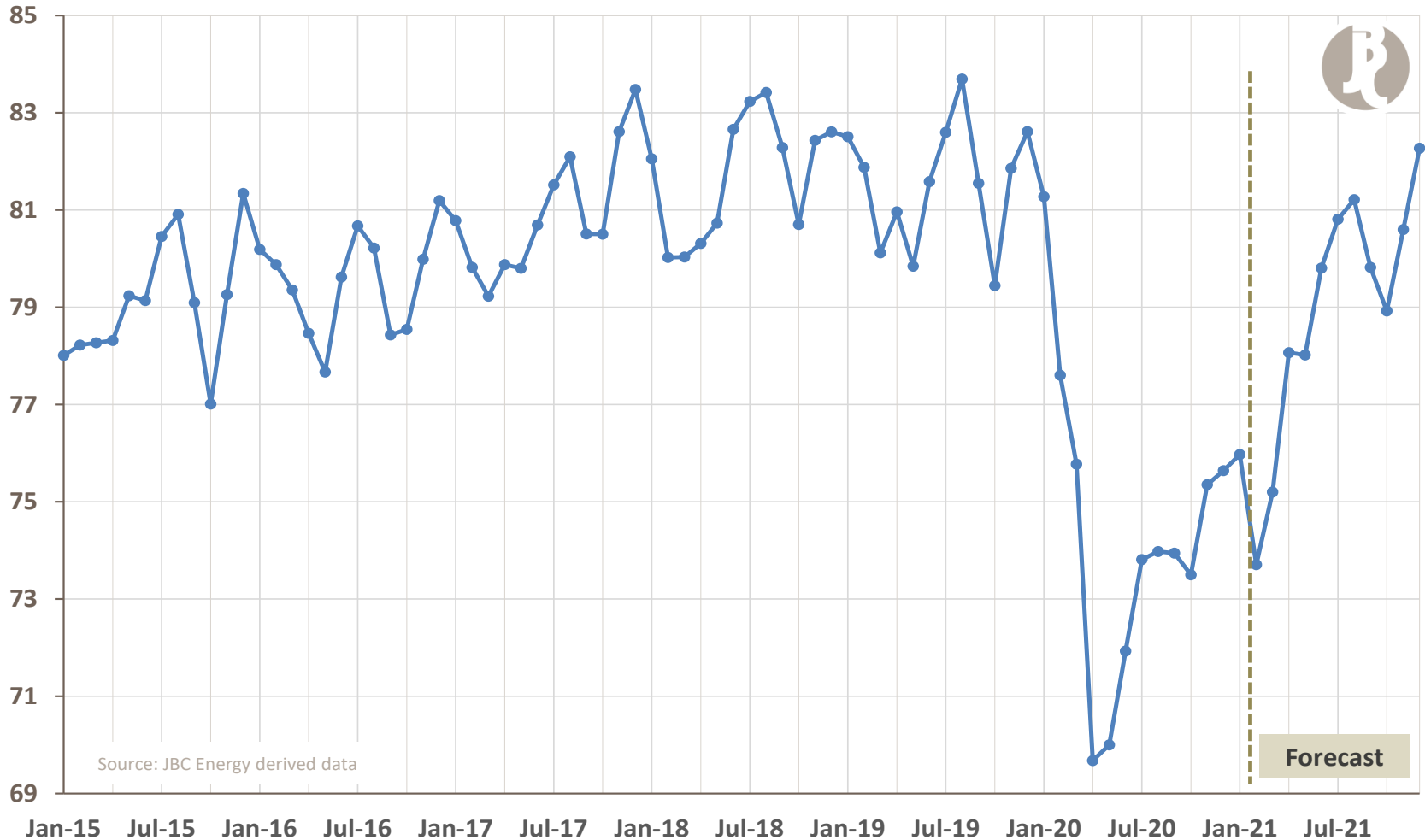
World: Supply Weighted Product Cracks vs 5-Year Average [\$/tonne]



After enjoying a tremendously successful 2020, can we expect HSFO to return to the week Q4-2019 levels?

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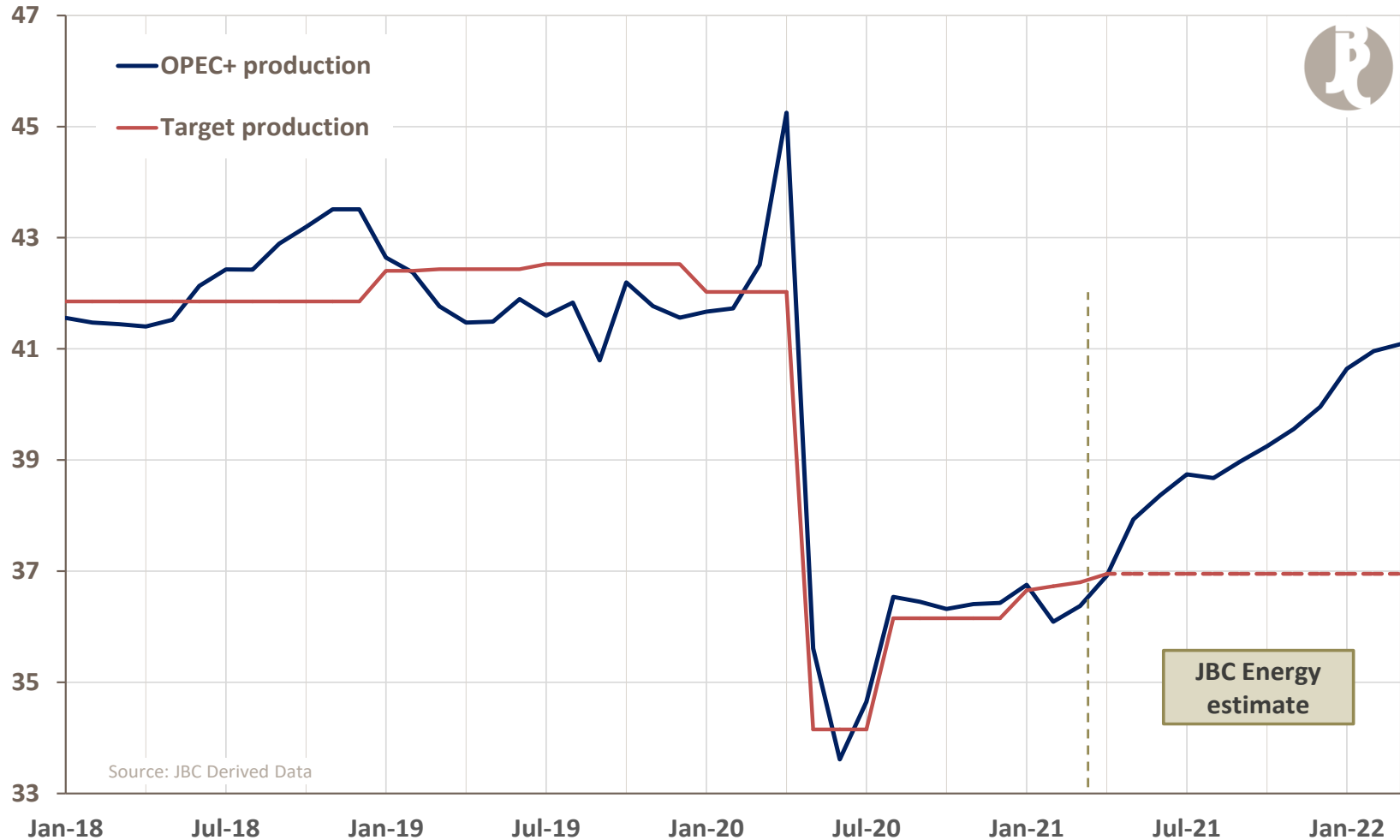
Global Crude Intake [million b/d]



Fuel oil's strength came from massively tighter supplies on the back of massive refinery run cuts due to ailing demand for transportation fuels on account of the Covid-related lockdowns.

Fuel Oil in Transition

OPEC+ Crude Supply & Targets [million b/d]



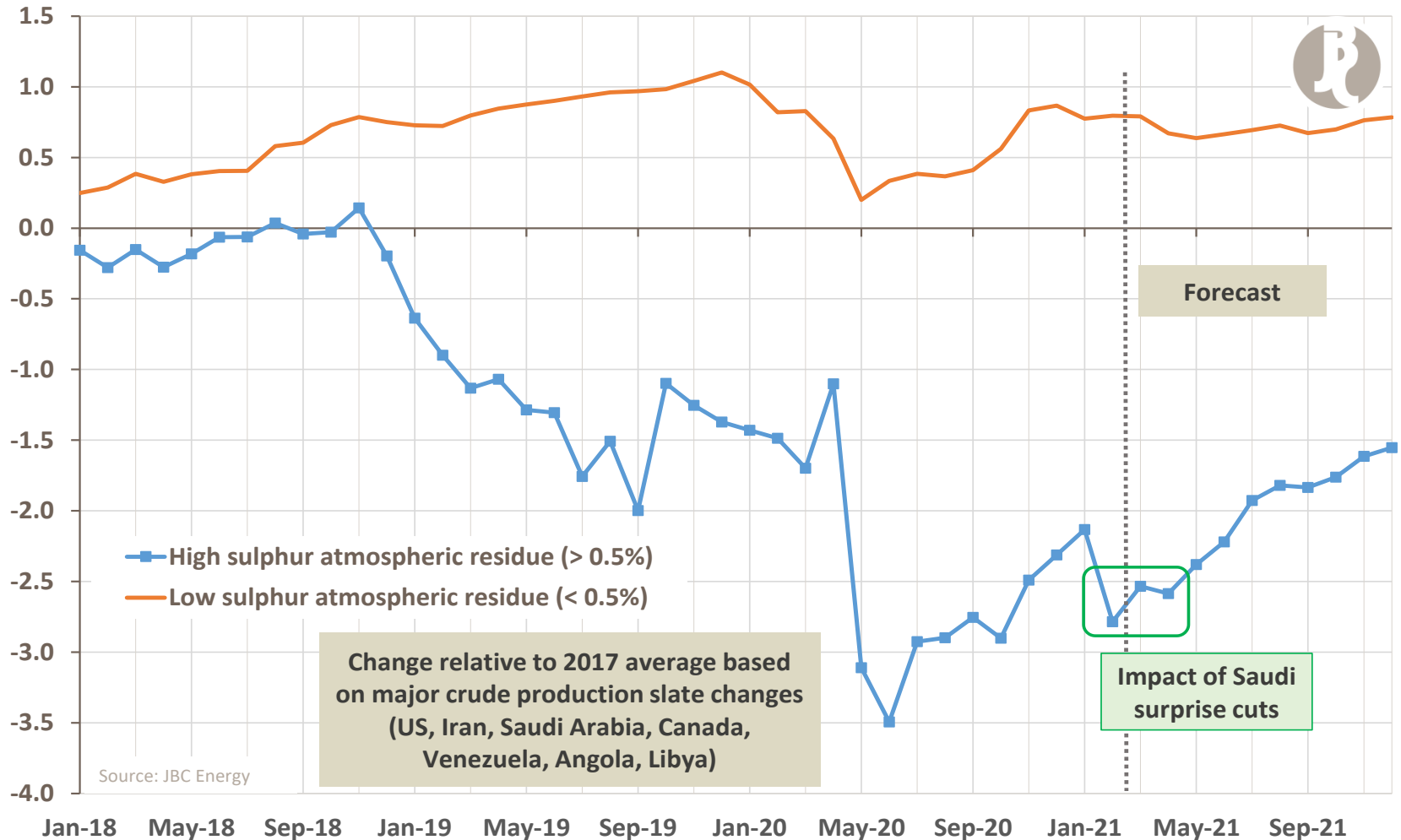
Source: JBC Derived Data

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estimate

The loss of fuel oil supplies from refiners were compounded by a lack of fuel oil rich crude on the market. In fact, even now OPEC+ is still keeping an estimated 4-5 million b/d of crude off the market. We do expect the majority of these barrels to return over the course of the year.

Fuel Oil in Transition

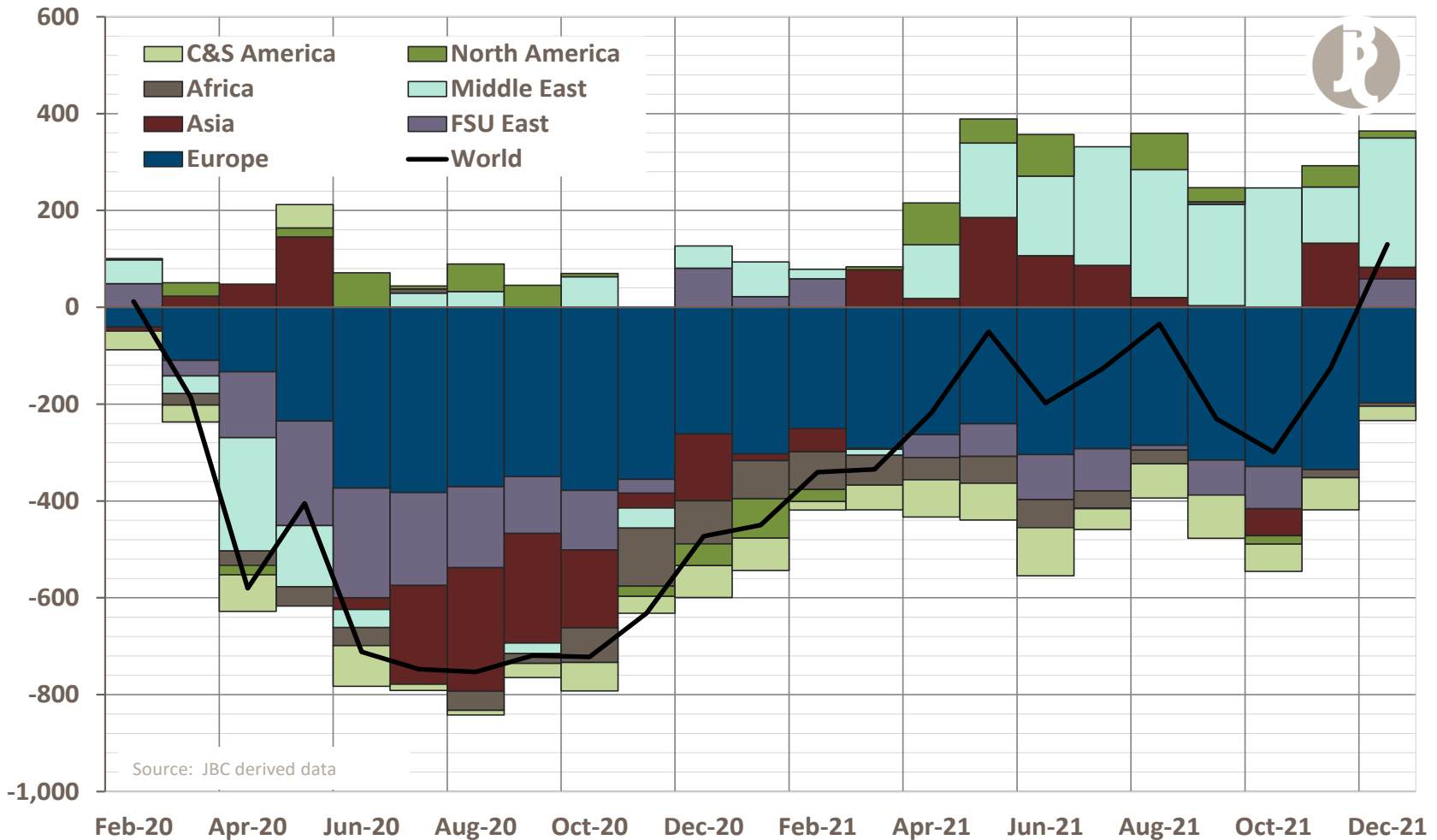
Change in Global Atmospheric Residue Supply by Sulphur [million b/d]



The loss of OPEC+ barrels came at a time when a lot of residue rich crude was already offline, notably in Iran and Venezuela. At present we do not expect much of this crude to come back this year, though stories of higher Iranian & VZ exports have been reported. Unfortunately, these are very difficult to prove.

Fuel Oil in Transition

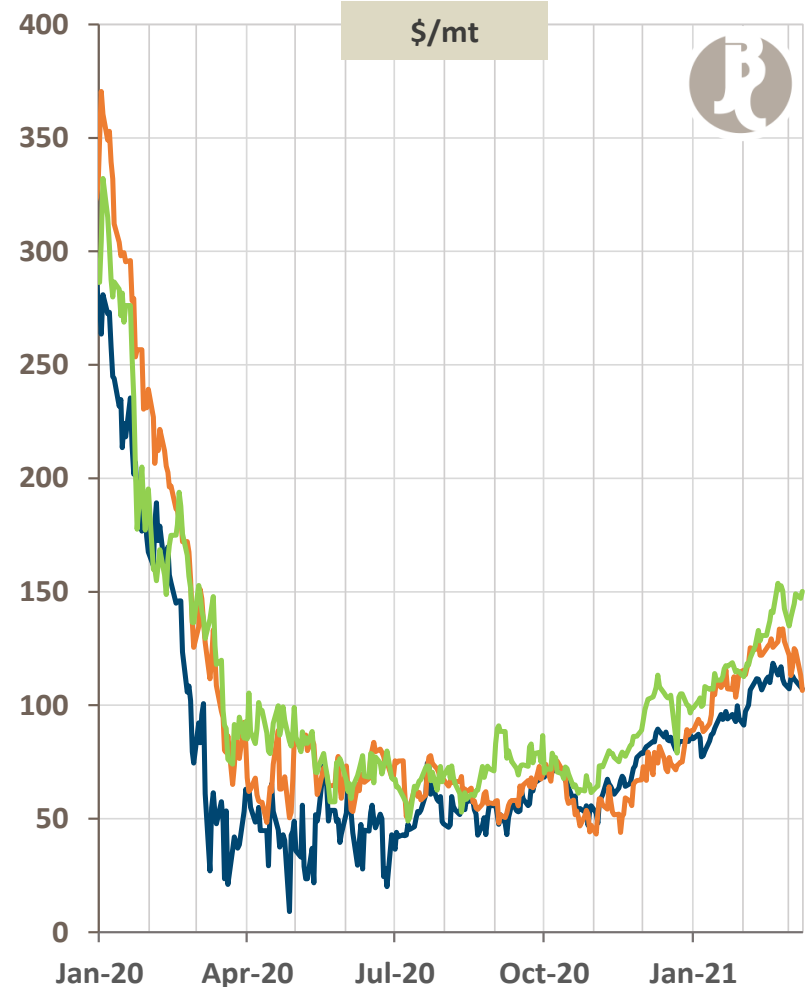
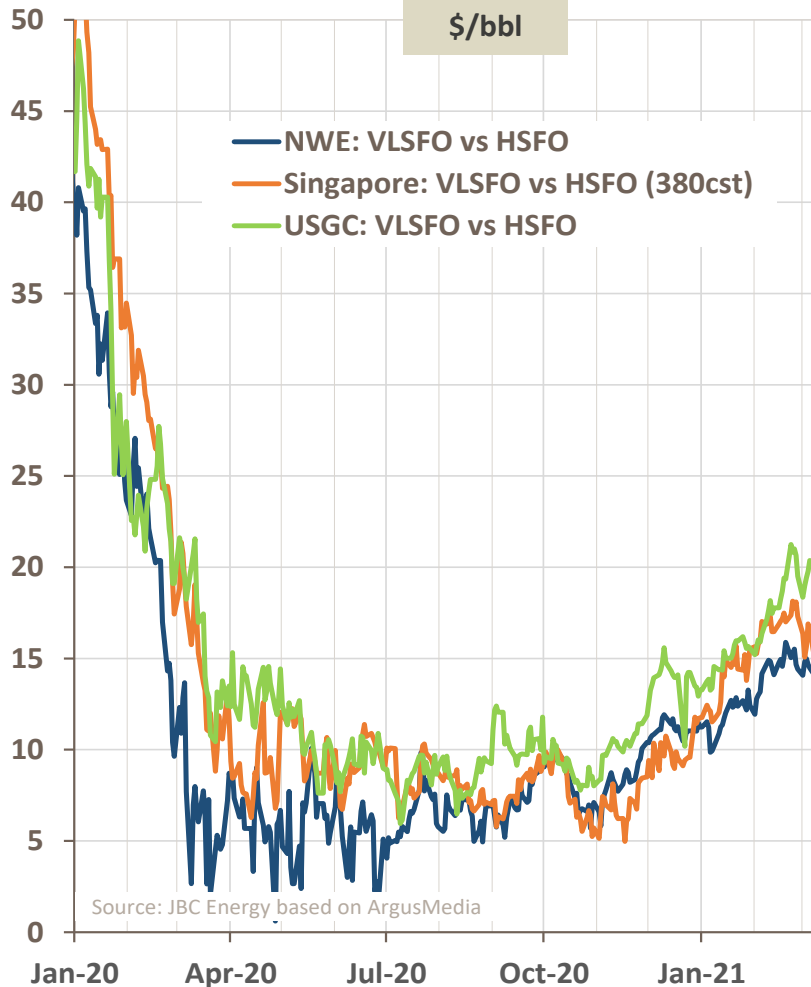
Cumulative Change vs Jan-20: Fuel Oil Supply ['000 b/d]



Altogether, we saw a peak loss of an additional 800,000 b/d of fuel oil supply, equivalent to over 10%, relative to our January-2020 estimate. However, we do see supplies gradually returning as crude intake increases and more residue-rich crude is ramped up again.

Fuel Oil in Transition

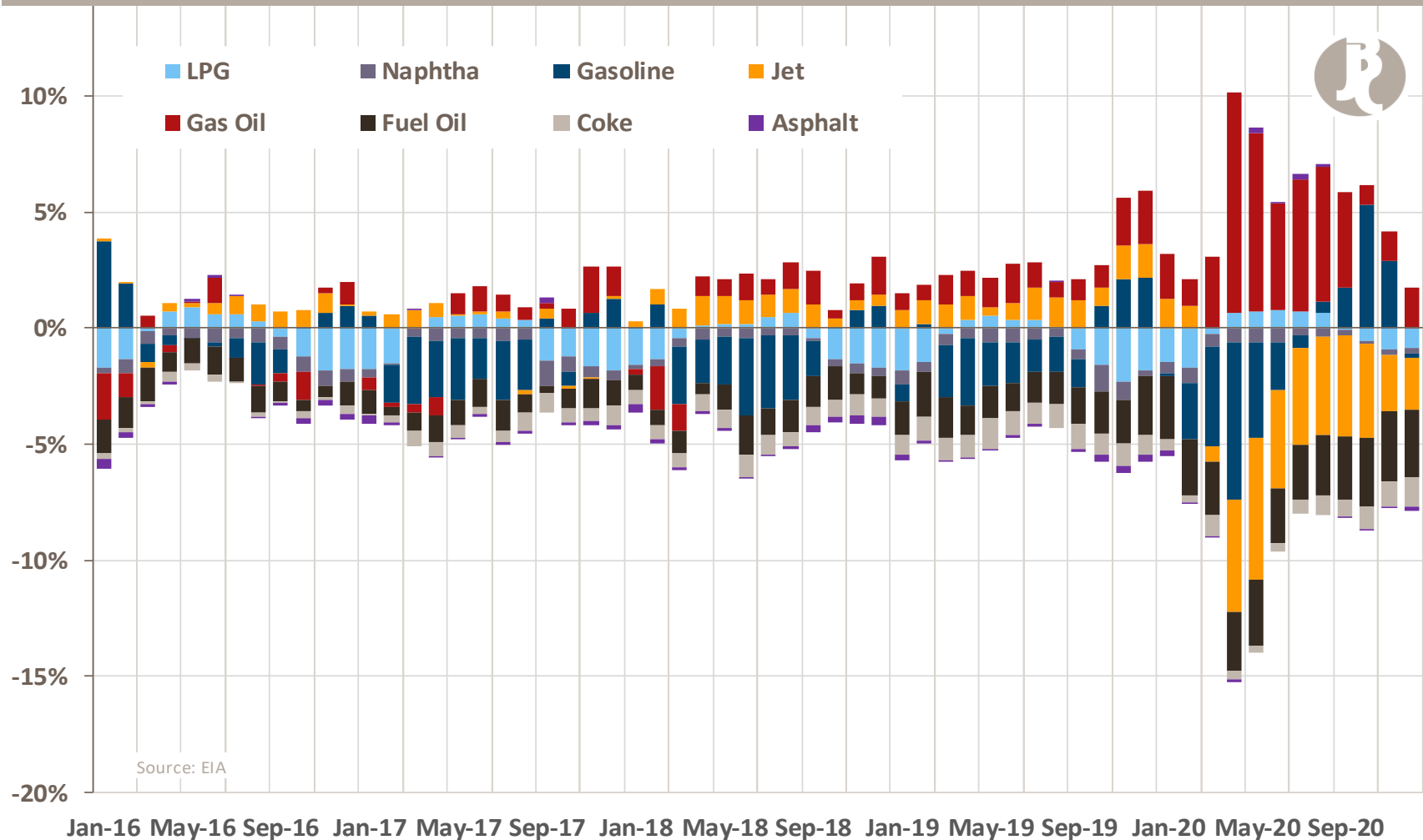
Scrubber Economics: VLSFO vs HSFO by Region [\$/bbl; \$/mt]



The uncanny strength of HSFO helped narrow the clean/dirty fuel spread (aka the “Hi-5 spread”) during the key implementation phase of IMO 2020 – a period that was widely expected to yield a very wide spread. Needless to say, this came as quite a disappointment to shippers that had invested into scrubbers timely.

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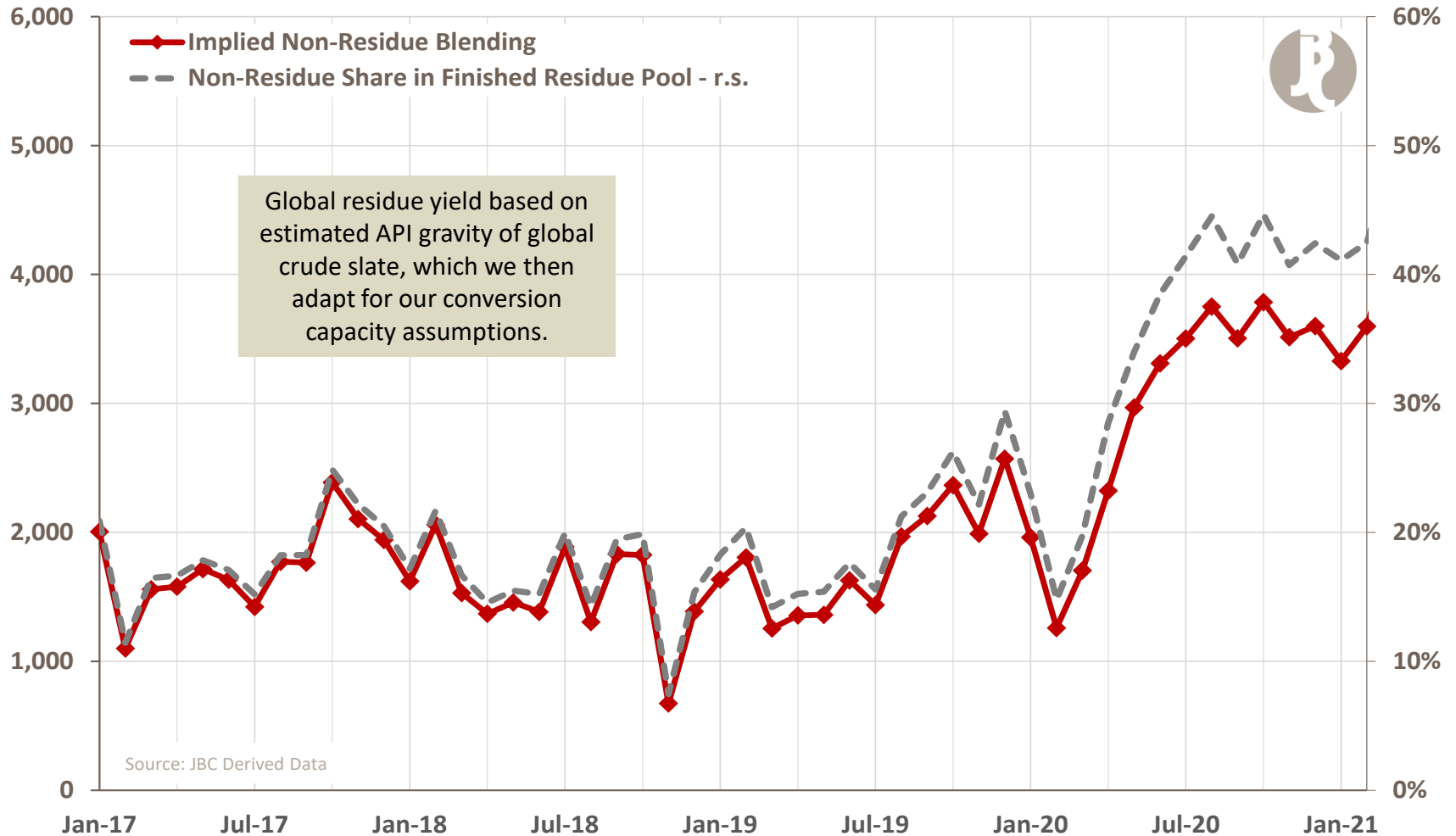
PADD-3: Cumulative Crude Yield Changes vs 2010-2014 Average [%]



But pressure for the Hi-5 spread came from the VLSFO side as well. The name of the game in 2020 for refiners was how to get rid of unwanted to jet. Much of this was blended into the gasoil/diesel pool (but also into naphtha), which in turn pushed diesel cracks lower. This in turn boosted the availability of gasoil components for VLSFO blenders and hence VLSFO supply.

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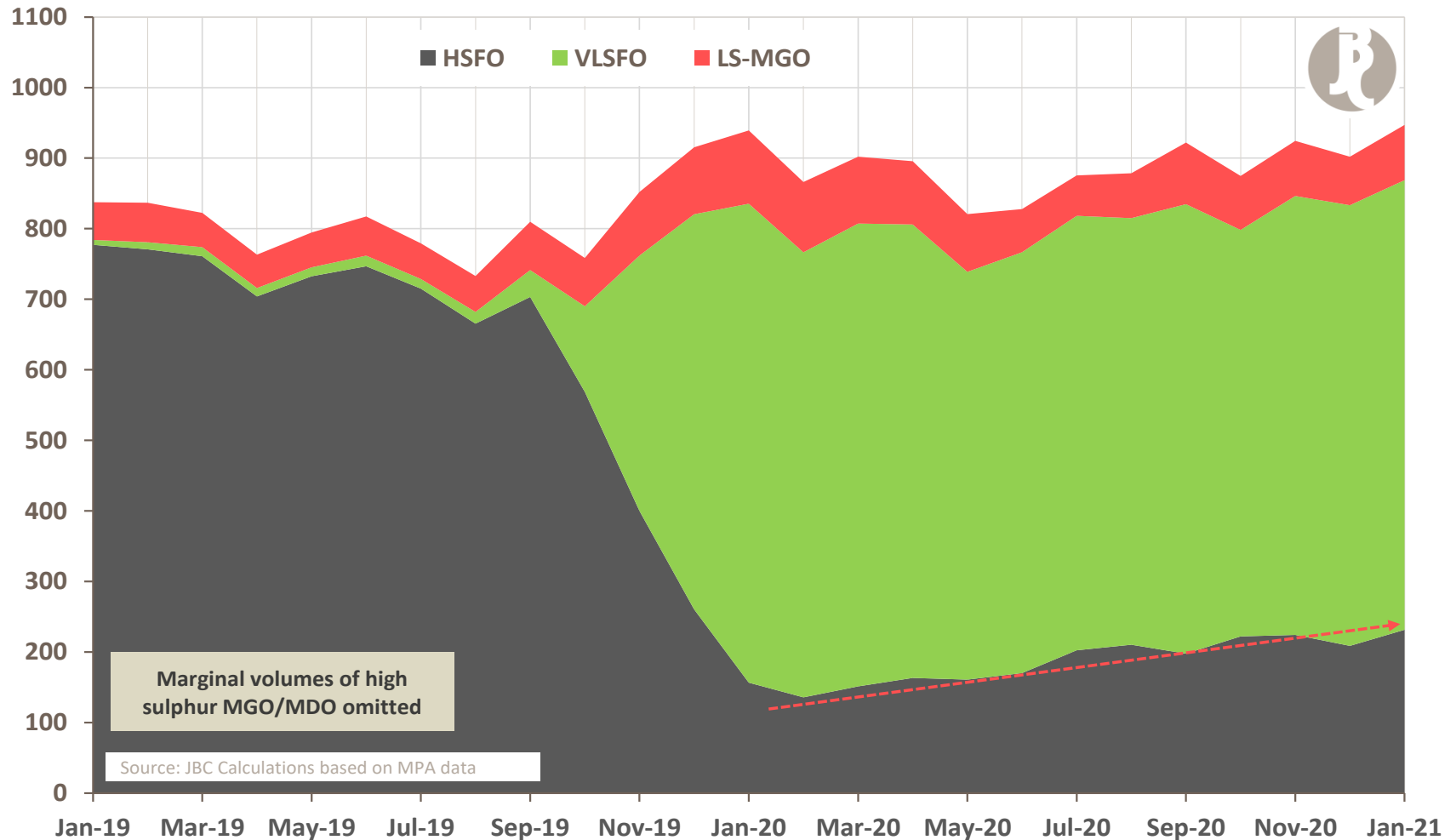
Implied Non-Residue Blending into Fuel Oil/Asphalt Pool ['000 b/d; %]



The volume of non-residue components in the global FO pool has increased significantly, by over 1.5 million b/d. Much of the increase happened well after IMO-2020 suggesting that VLSFO produced now contains a lot more middle distillate components than in H1-2020.

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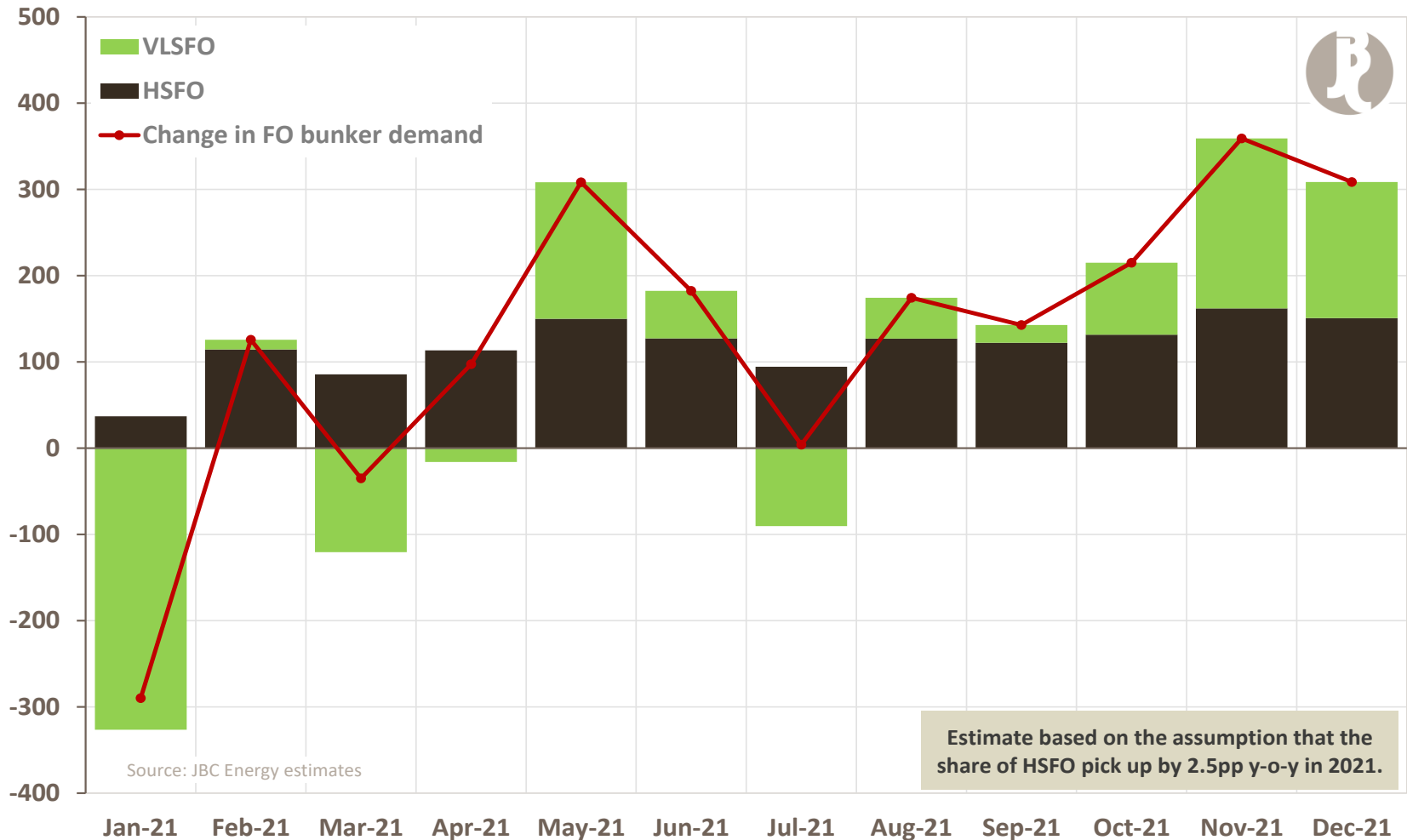
Singapore Bunker Sales by Fuel Type ['000 b/d]



Global bunker demand did not fall as much as other sectors. Singapore is a great example as bunker demand actually grew in 2020. Also the uptick in vessels with scrubbers attached is boosting HSFO demand to the detriment of VLSFO.

Fuel Oil in Transition

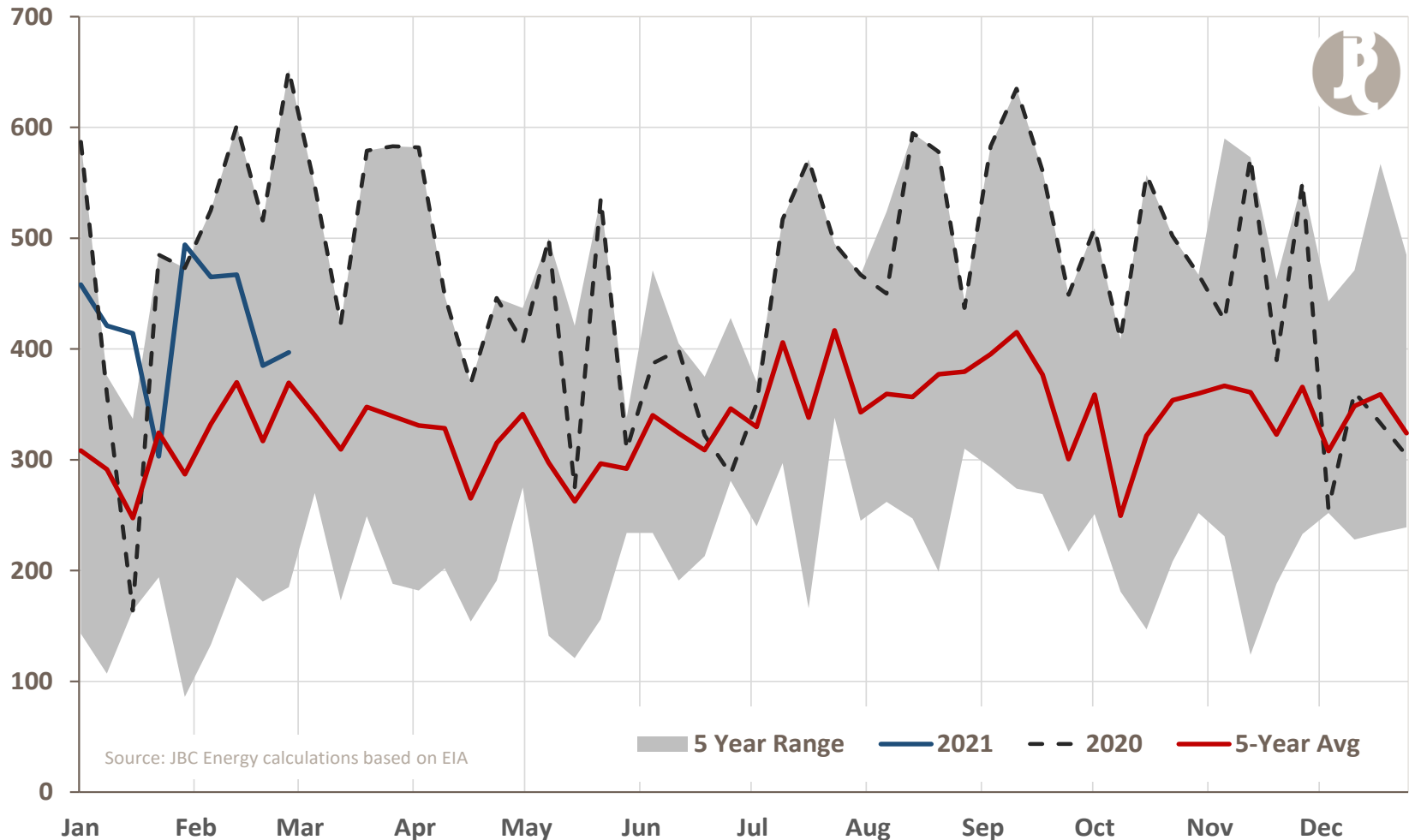
Y-o-Y Change in Global Fuel Oil Demand from Bunkering by Sulphur Content ['000 b/d]



Moreover, new ships with scrubber installed are being added to the global fleet every month. HSFO therefore will continue to reclaim some market share from VLSFO and MGO.

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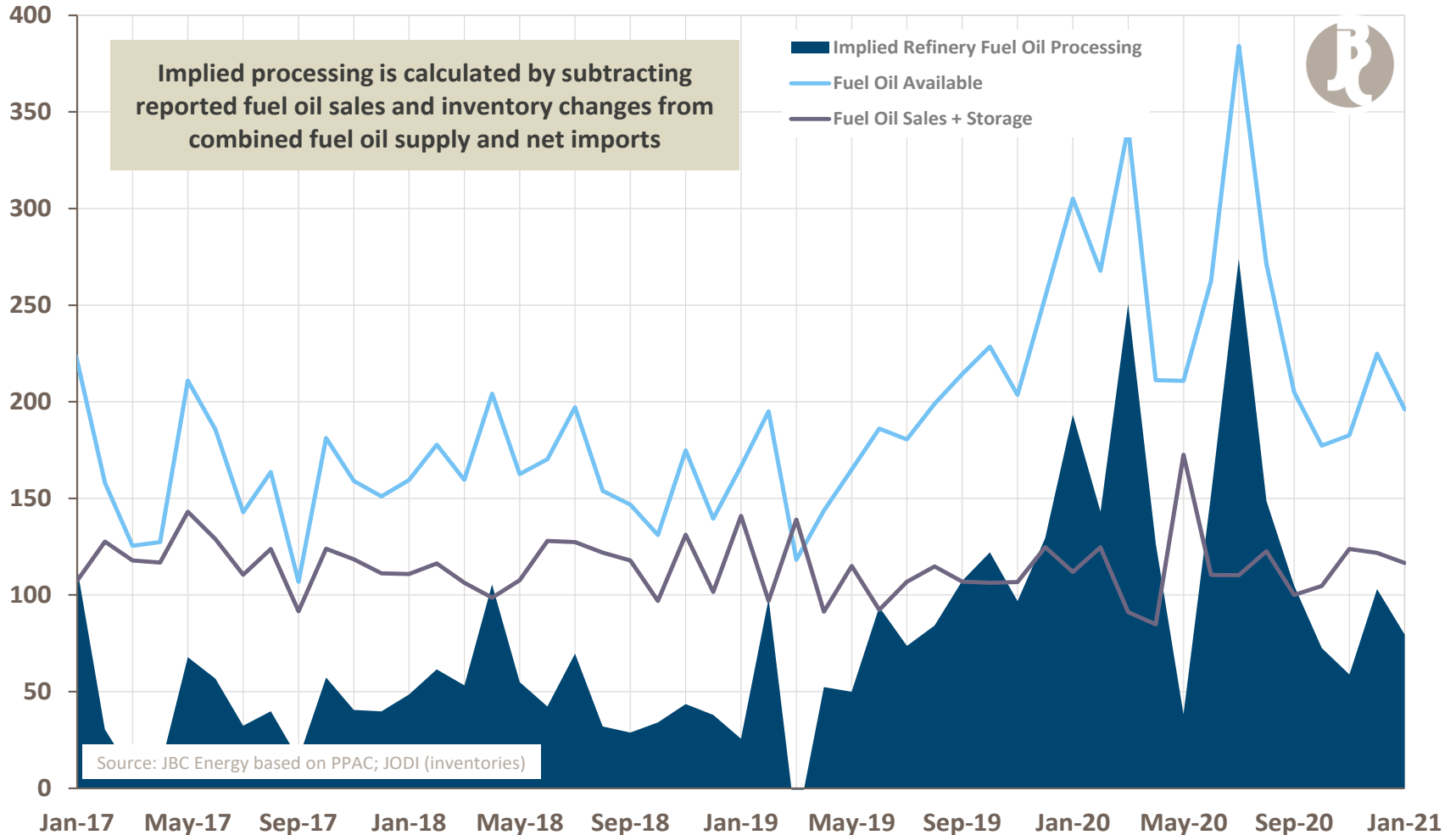
US: Total Intake vs Crude Runs (4WAvG) ['000 b/d]



At the same time, interest in fuel oil as a secondary feed remains well above the five year average. Narrow light/heavy product spreads tend to exacerbate this trend.

Fuel Oil in Transition

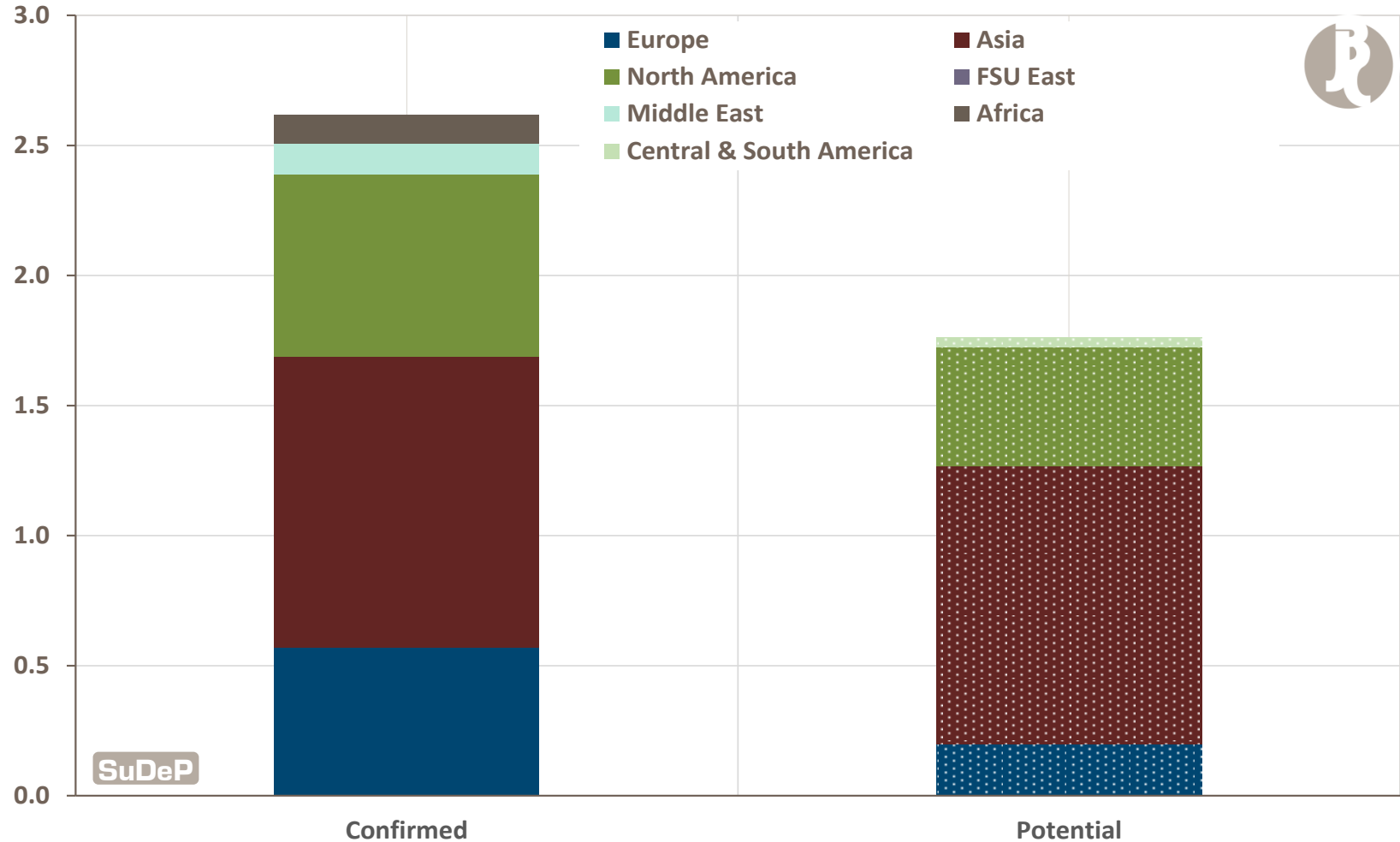
India: Implied Refinery Fuel Oil Processing ['000 b/d]



And this is not just a USGC story, but now more of a global one with Asian refiners now also running more HSFO when the econs work. This mechanism will set a floor beneath HSFO, keeping it from falling too far.

Fuel Oil in Transition

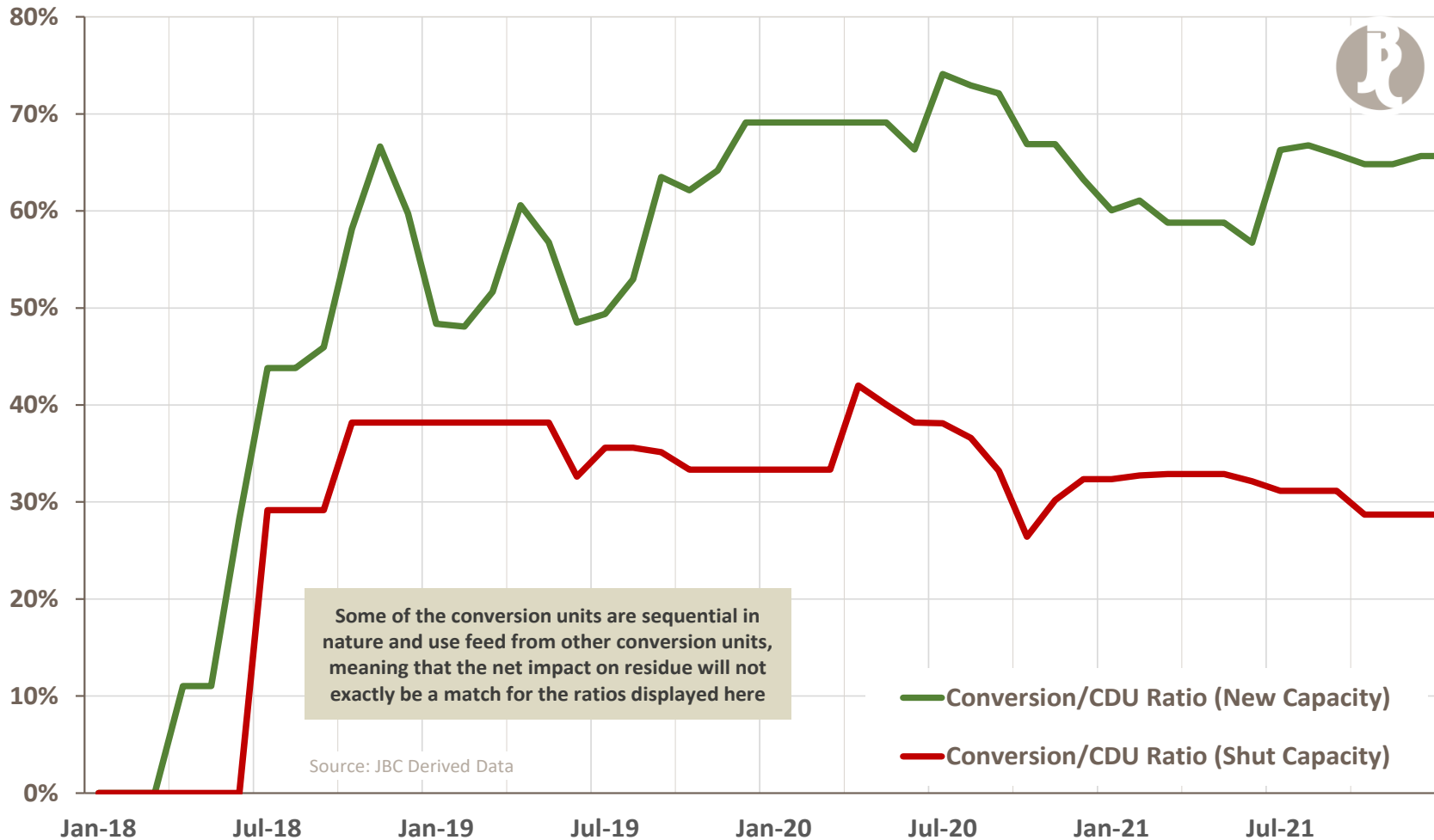
World: Refinery Capacity Shutdowns (2020-2023) [million b/d]



Refinery shutdowns are another factor supporting HSFO. So far, we have confirmed shutdowns of over 2.5 million b/d of primary (=CDU) refining capacity over the 2020-2023 period.

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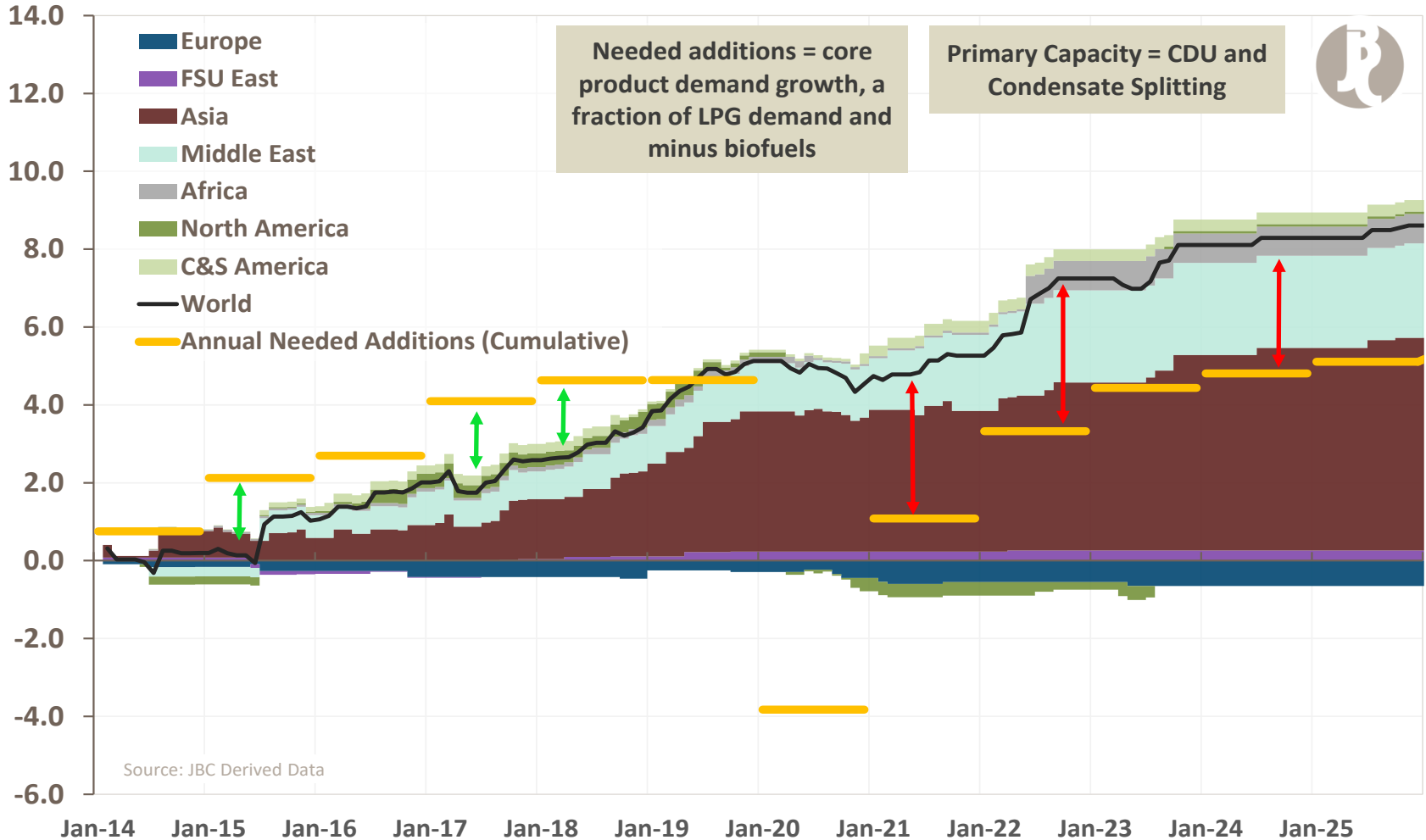
Cumulative Effect: Conversion to CDU Capacity Ratio [%]



Of course the refiners being crowded out are usually the least efficient ones. But less efficient in refining means that they yield more fuel oil. So closing these refiners will deprive the world of more fuel oil, particularly as the capacity replacing it is purpose-built to convert more residue into higher value products.

Fuel Oil in Transition

Cumulative Global Primary Capacity Additions Since Jan-14 [million b/d]



This trend will only increase. We estimate the need for another 3 million b/d of refining capacity to shut down so as to allow for a

Conclusions

- The extreme highs for HSFO are over
 - FO supplies will rebound as crude intake recovers and more OPEC+ barrel return
- But don't expect a return to steep HSFO discounts
 - Closure of older refineries will reduce supplies
 - New refining capacity built to minimise residue supply
 - Bunker demand is holding up well
 - More scrubber-equipped tonnage hitting the water
- VLSFO is easy to make in the current environment
 - Refiners have grown adept at producing VLSFO (China only now ramping up)
 - Unreasonable to expect VLSFO blow out as there are many ways to produce VLSFO
 - Return of gasoline demand and eventual rebound in gasoil cracks to reduce availability of blend components, proving some support to VLSFO
 - However, upside will be checked by declining VLSFO bunker demand, due to more scrubbers
 - Greener shipping will increasingly eat into VLSFO's share
 - New fuels will replace VLSFO also in the medium-term (next 5 years)
 - Efficiency gains from shipping regulations such as EEDI and EEXI to reduce consumption, disproportionately impacting VLSFO relative to HSFO
 - VLSFO demand may have already peaked!
- VLSFO/HSFO spread expected to average around \$100 per tonne over 2021



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