

Market Disruptor: IMO 2020

Esa Ramasamy
Global Director
Market Development & Engagement

Refining Community Forum
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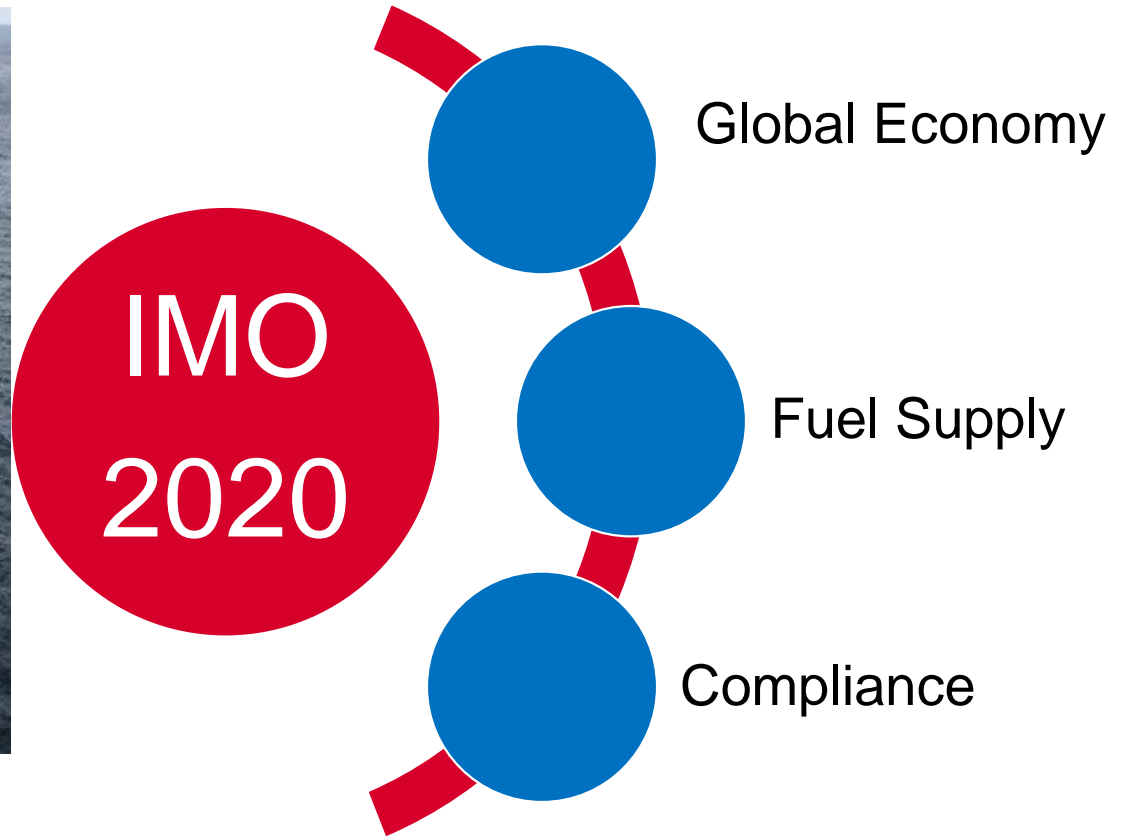
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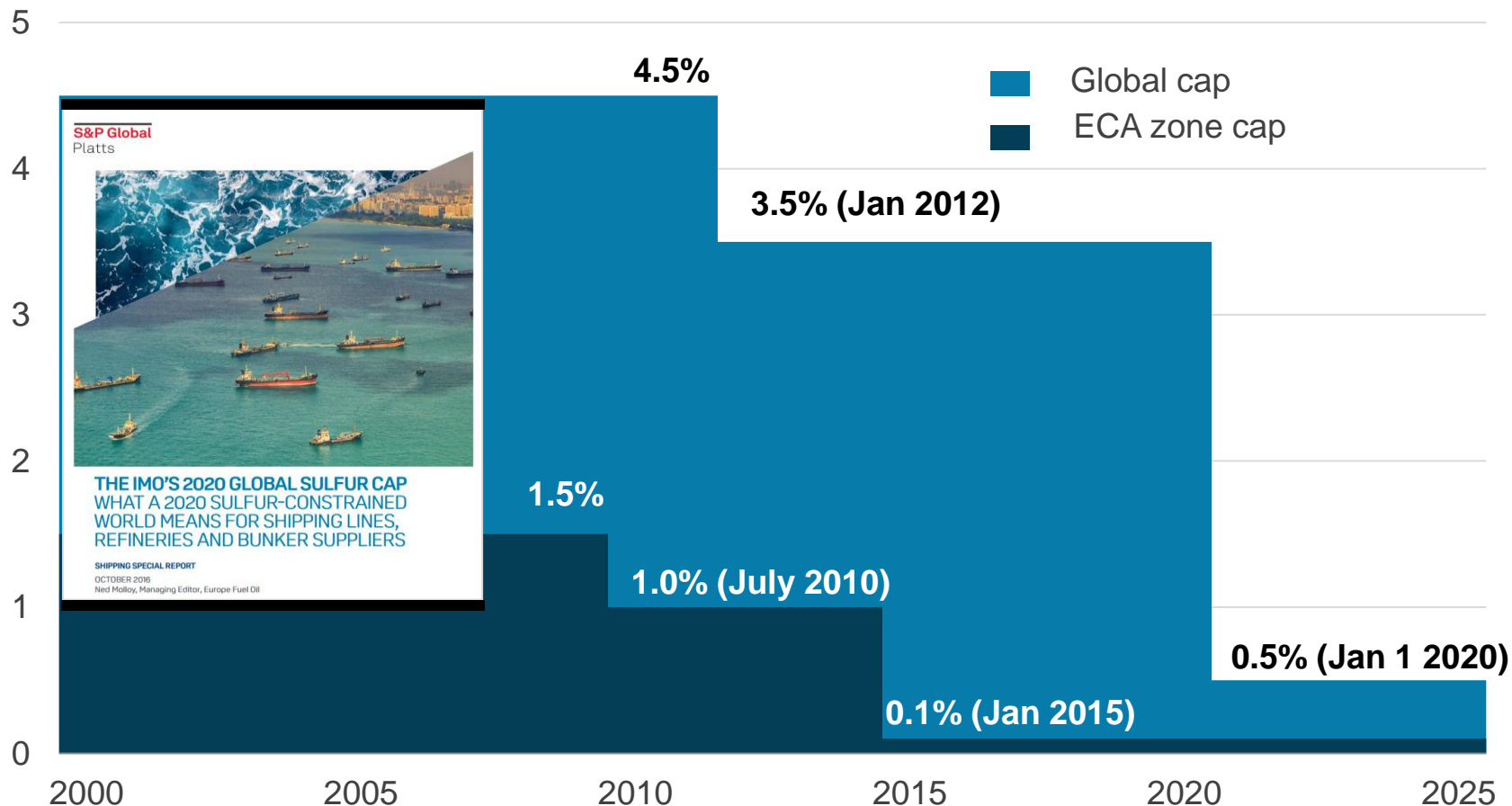


IMO 2020 – What is it ?

- **Global agreement to cut sulfur emissions by ships**
- **Implementation set for January 1, 2020**
- **Oil industry and shippers awaiting final bunker specifications**
- **Impact felt by all transportation sectors**

Chronology Of Bunker Fuel Sulfur Cap

IMO Sulfur Limit (%S)



IMO 2020: Includes All Major Supply Hubs

About 175 countries along with the EU have ratified IMO 2020
Some ex-FSU, African countries & Laos have not ratified

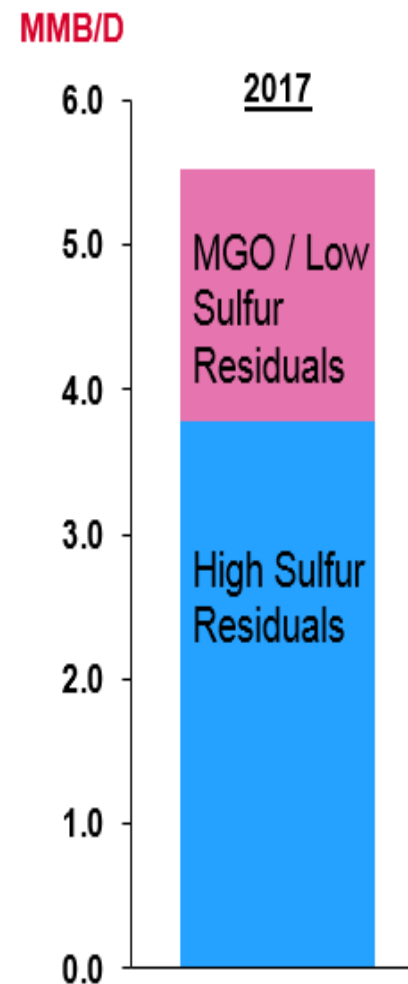
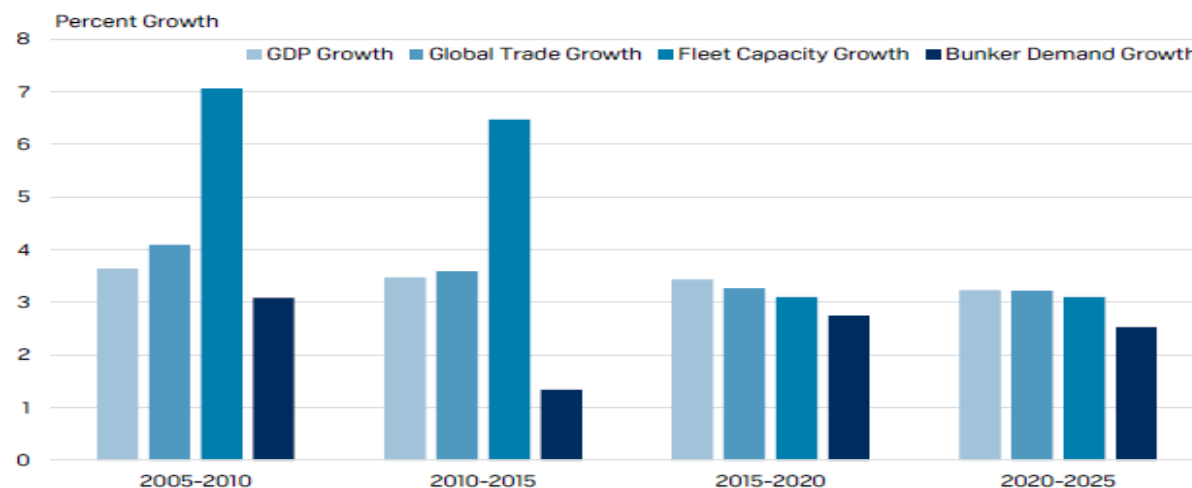


IMO 2020 . . .

• Impact on Global Economy

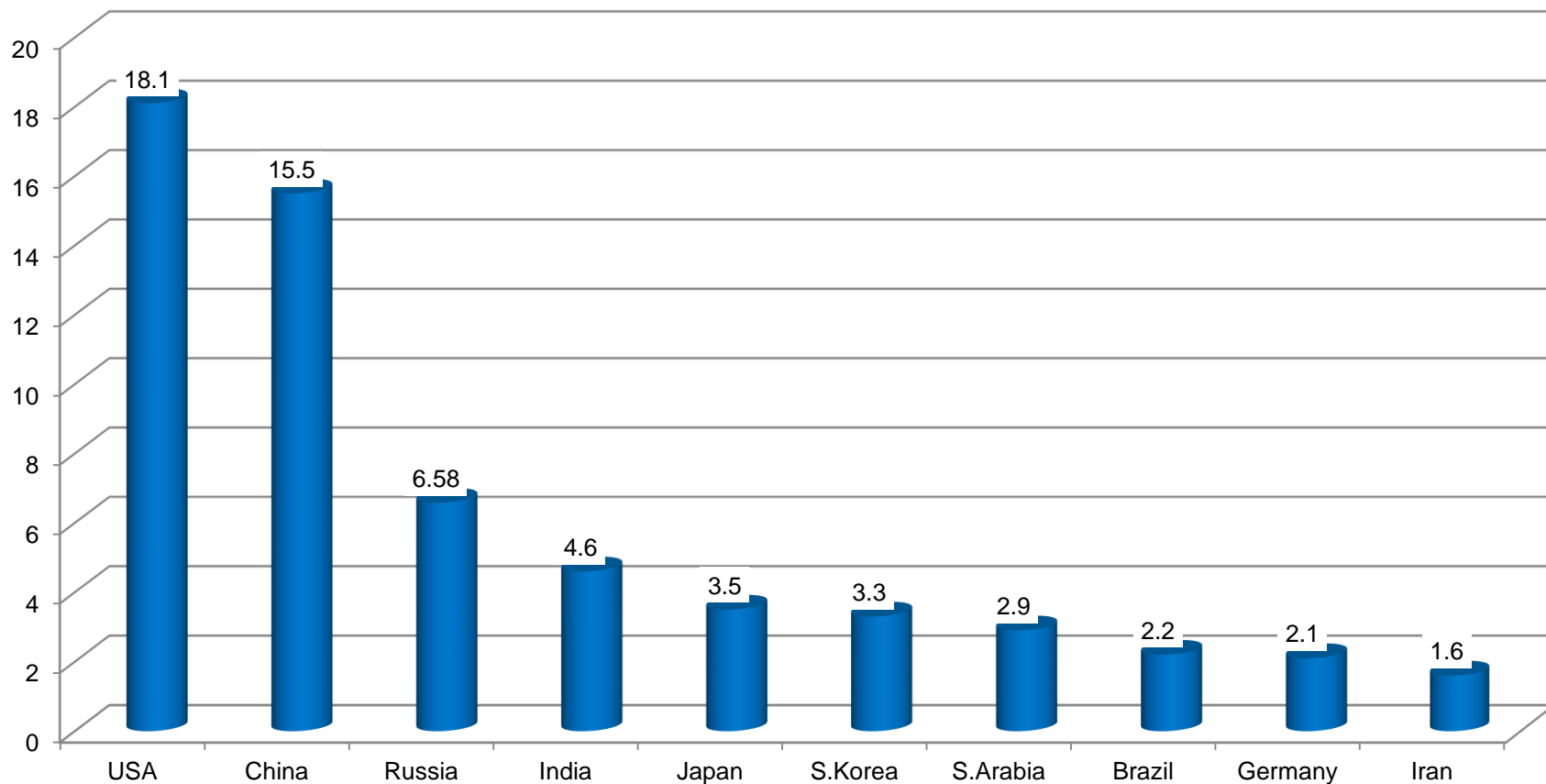
- Bunker fuel prices expected to rise by 50% (2017 as base year)
- Meeting 2020 goal would cost an estimated \$1 trillion
- Fuel price increases would be passed on
- Likely to have inflationary pressures

BUNKER DEMAND CONTINUES TO GROW WITH GLOBAL ECONOMIC ACTIVITY AS WATERBORNE TRADE INCREASES

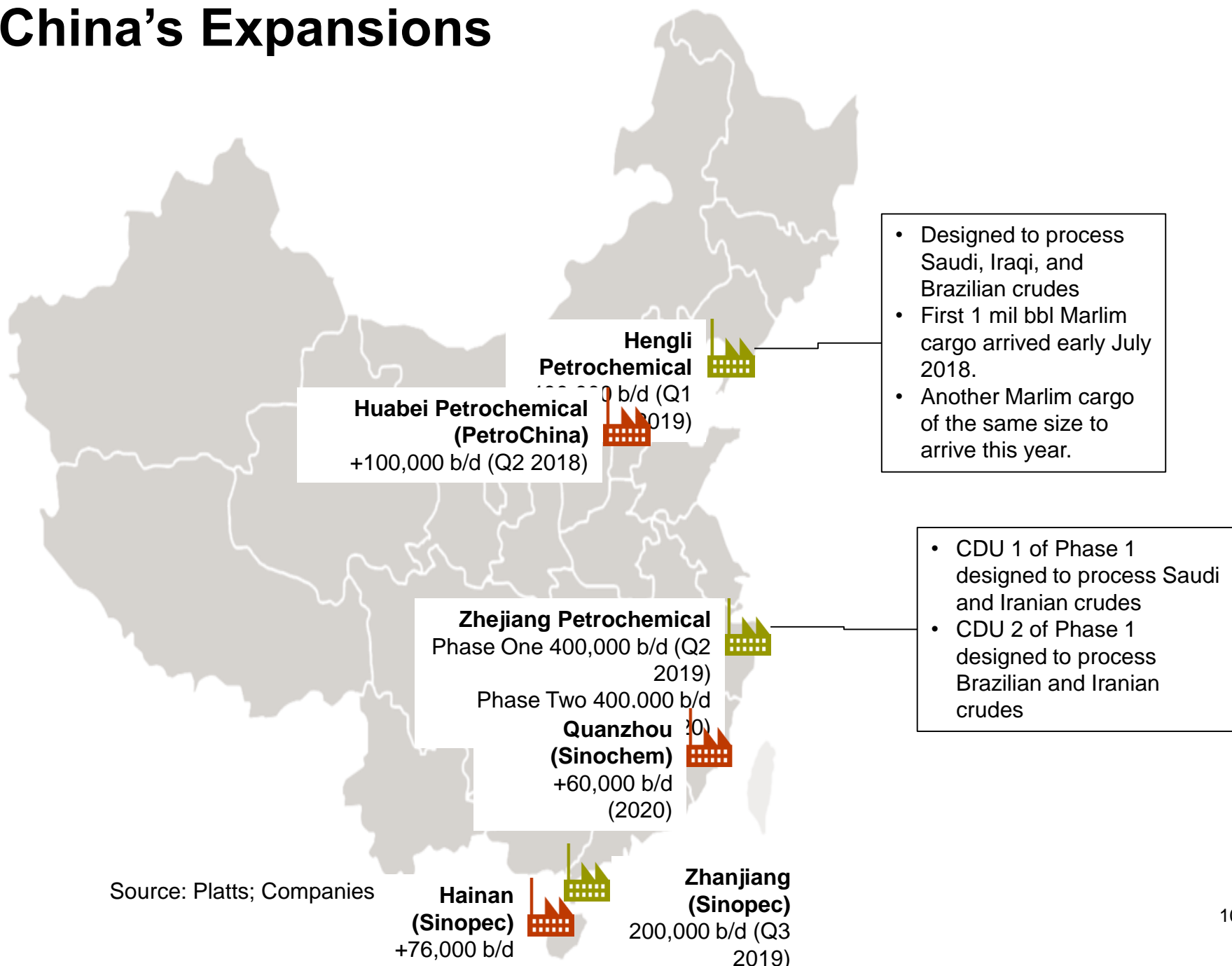


Refining Capacity: Top 10

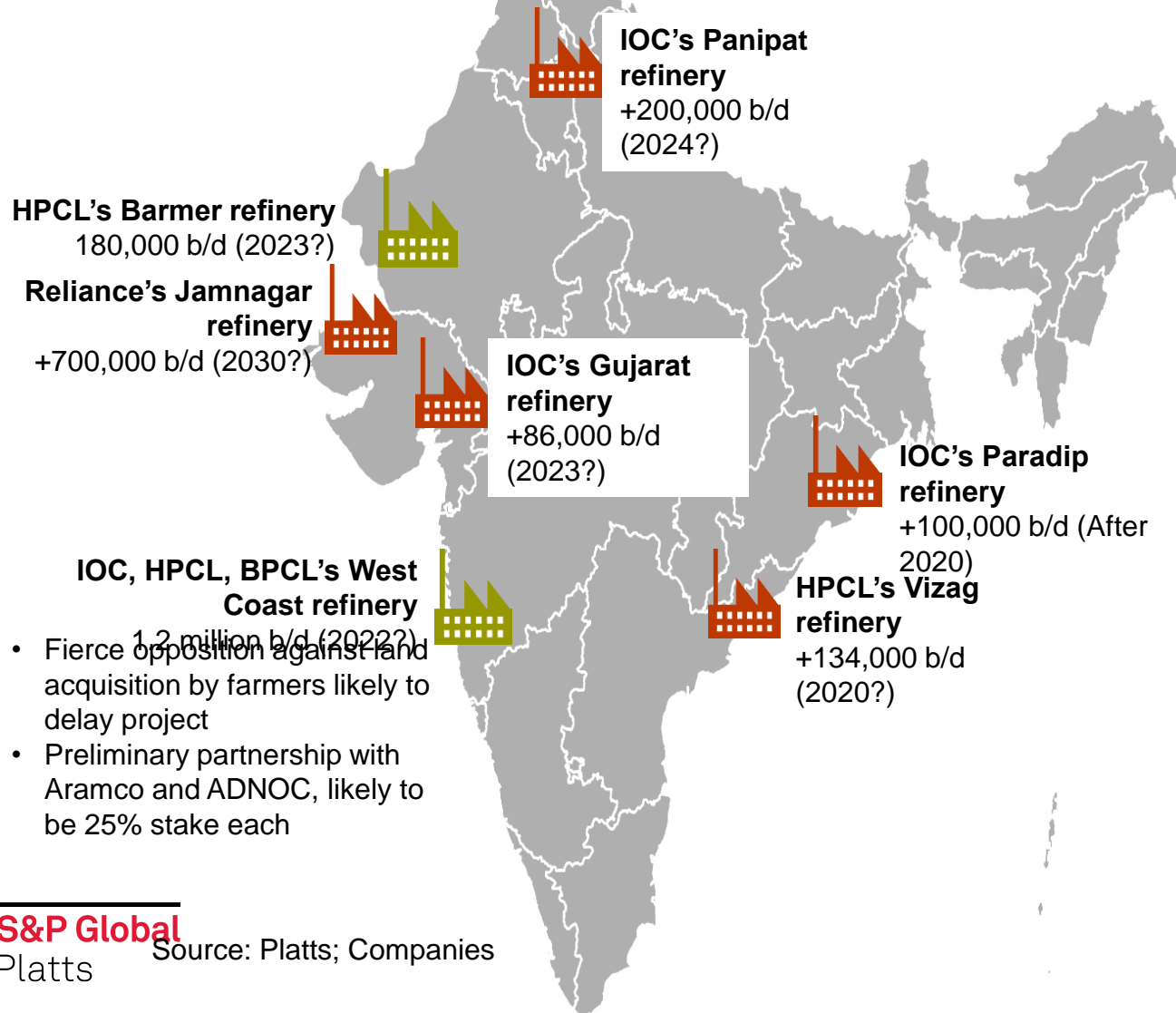
'000 B/D



China's Expansions

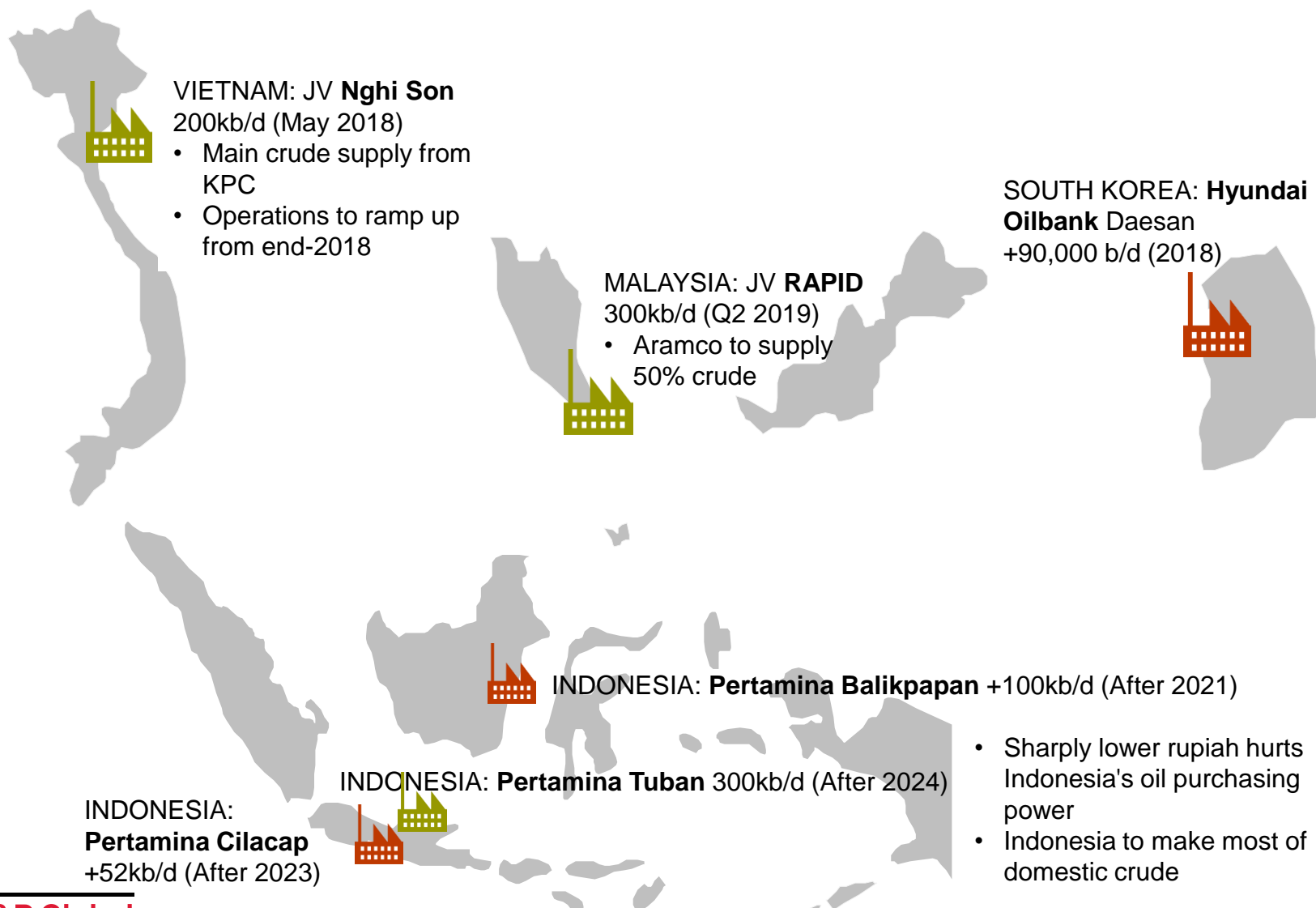


Indian Expansions

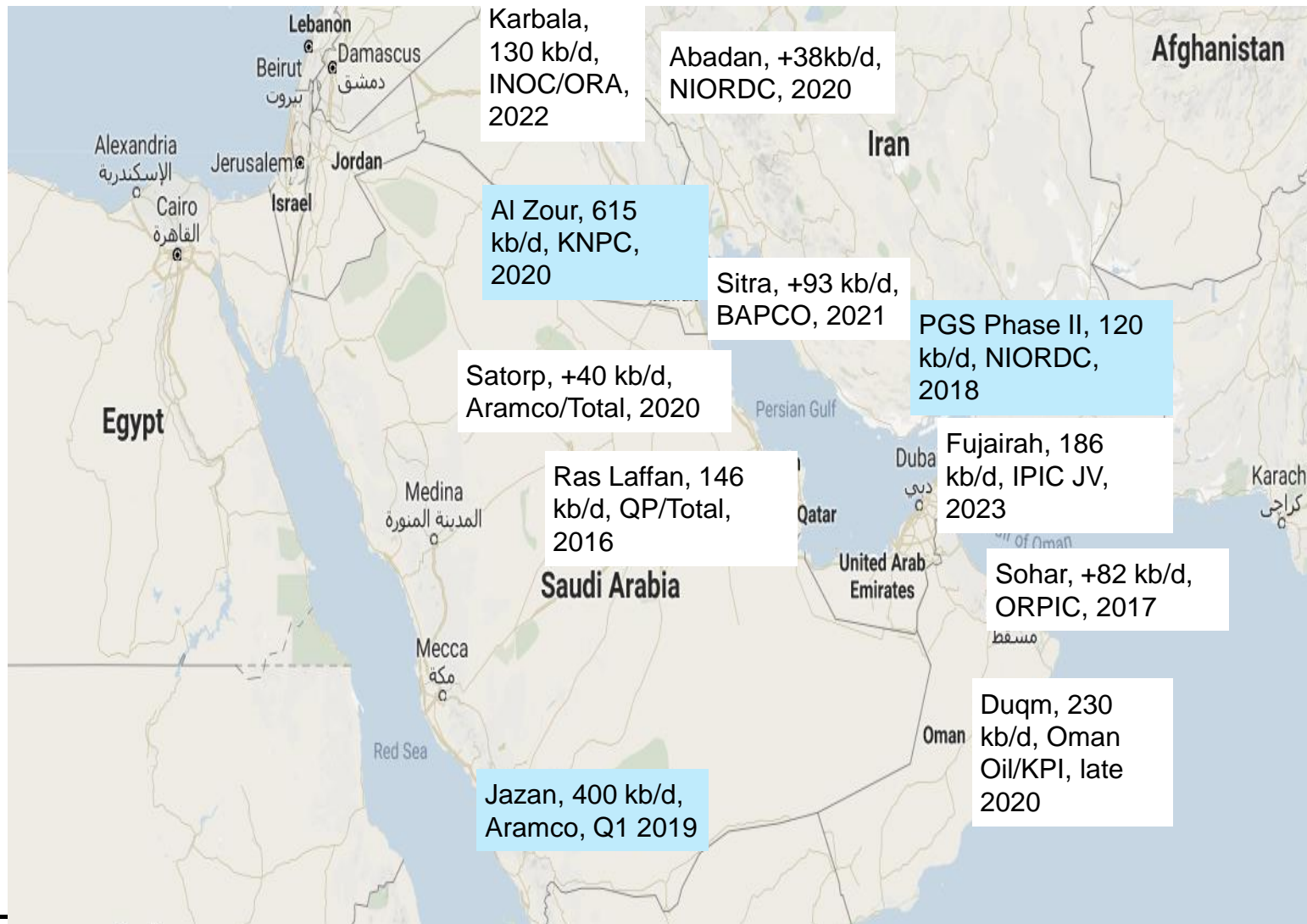


- All existing refineries in India run at 100% or higher rates
- No significant increase in crude intake possible until expansion projects complete
- Any growth in domestic product demand to decrease export availability

SE Asia Expansions

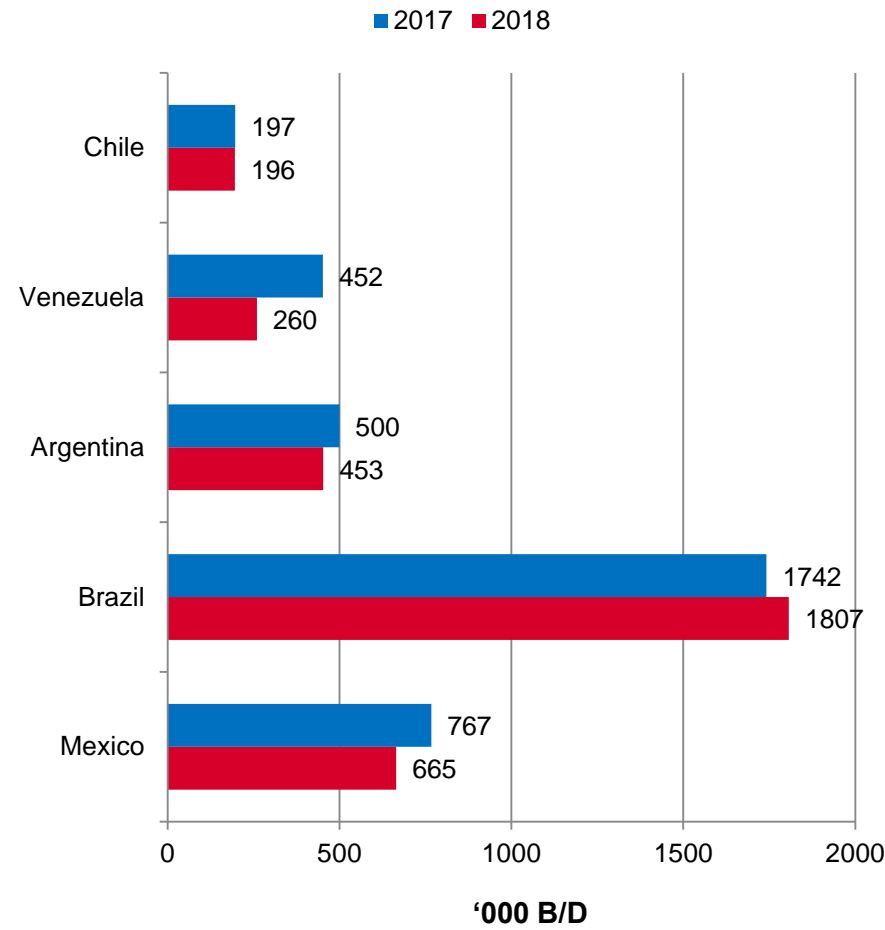


Middle East Expansions

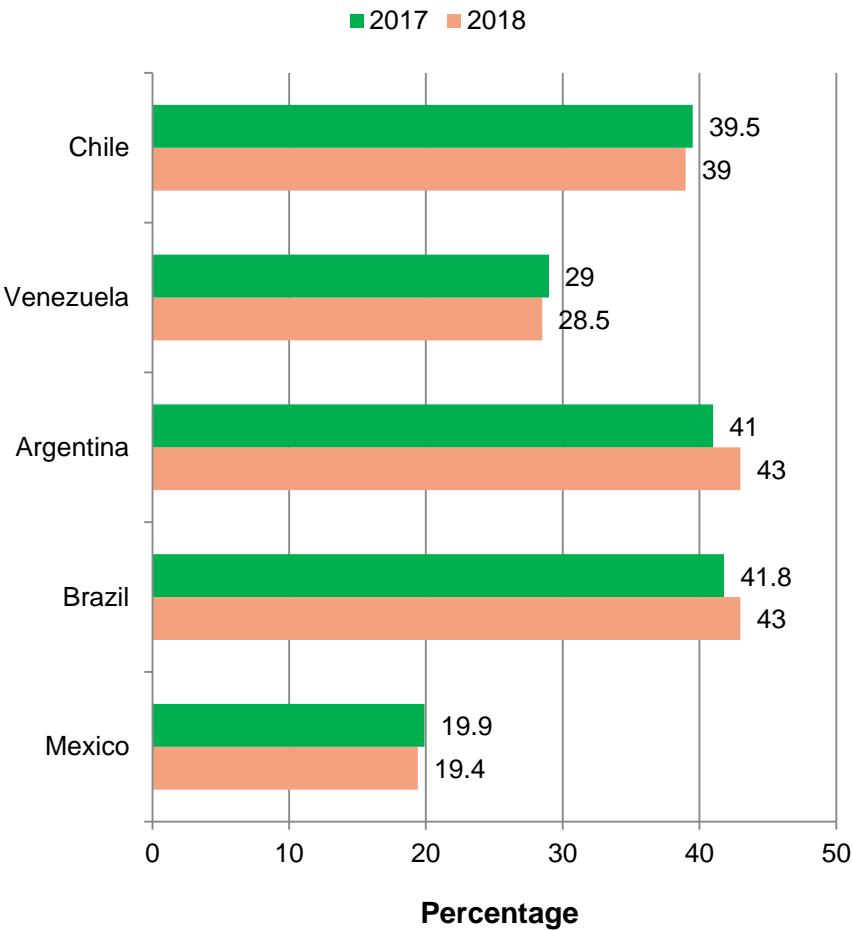


Latin America

Major Latam Refiners Crude Runs ('000 B/D)

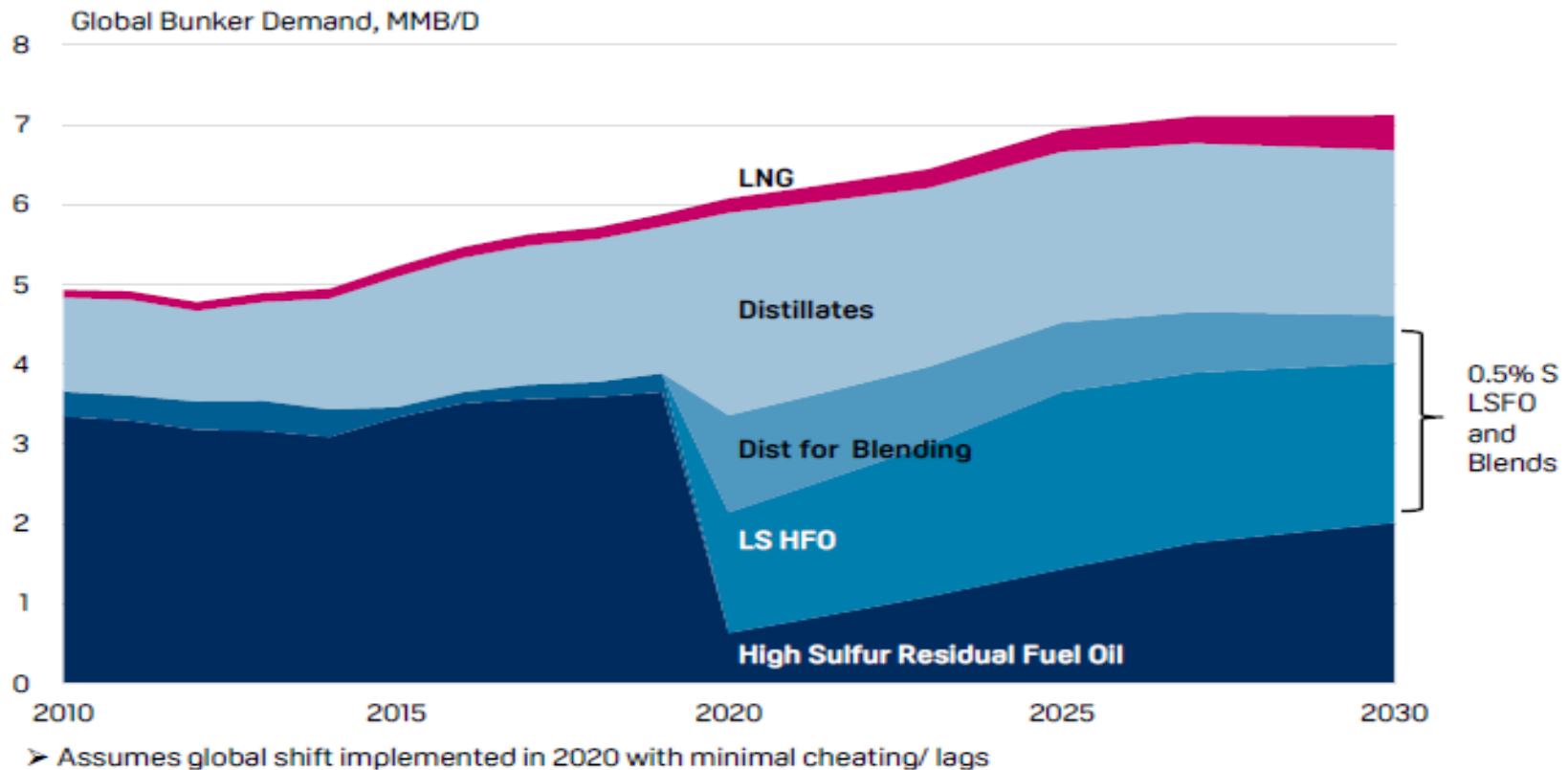


Diesel Yield

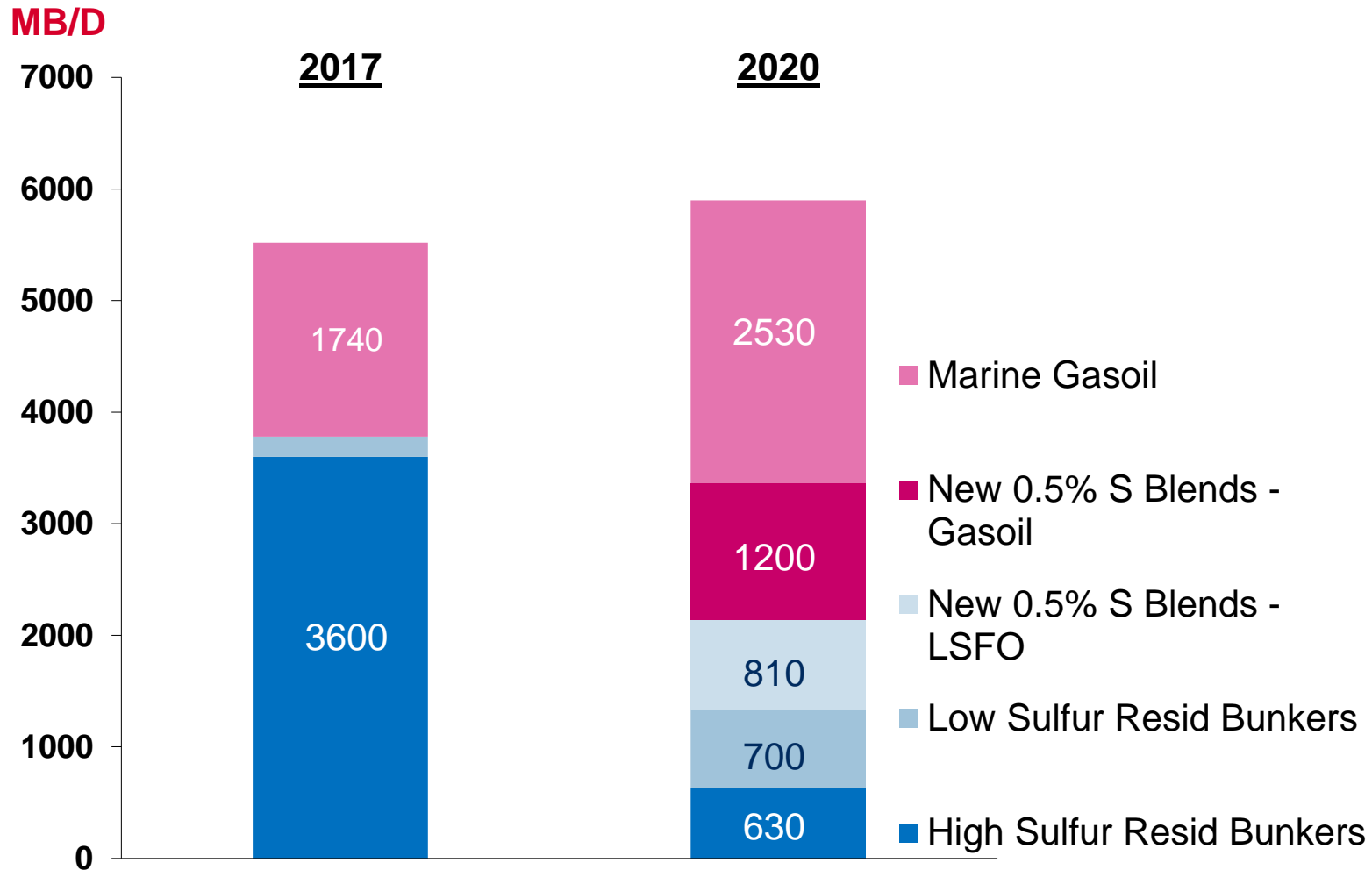


IMO 2020: Middle Distillate Rises Again

THE IMO 2020 BUNKER FUEL SPEC CHANGES WILL FORCE 3 MMB/D OF HSFO TO SWITCH TO LSFO AND DISTILLATES



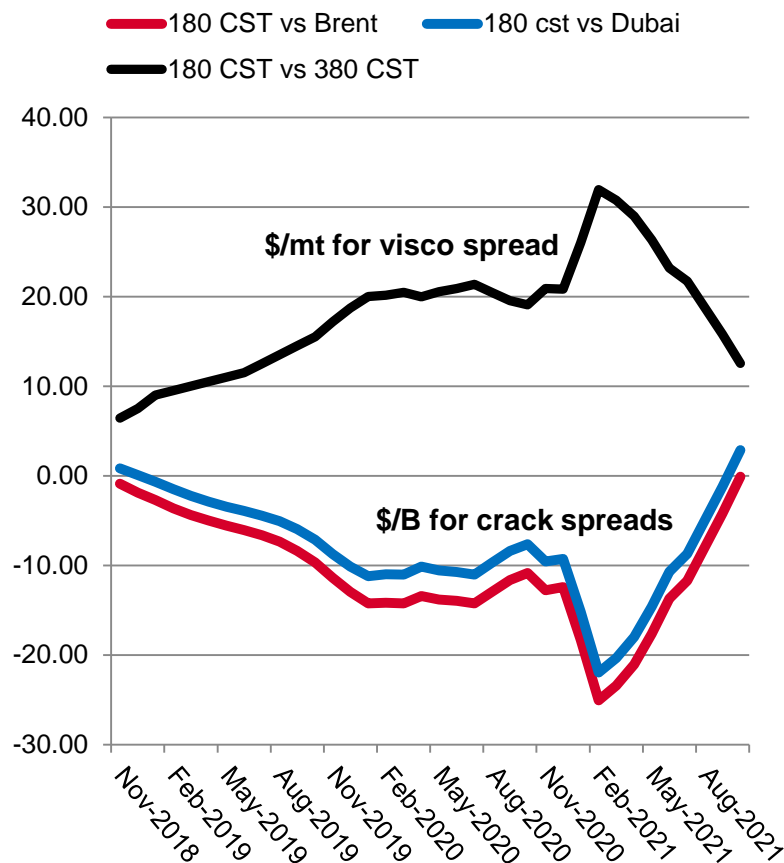
Global Bunkers to Morph Into Varied Complex



Status of HSFO After 2020

- **Plunge in HSFO values would pump up demand from other sectors**
- **Rebounds as more scrubbers are installed**
- **Higher demand for straight-run HSFO from refiners & blenders**
- **ECA states already have blend formula for 0.1% - implications**

Singapore 180 CST Cracks



- Lower HSFO value incentivizes use of scrubbers
- Shippers demand for FO is about 35-40%
- Demand from refiners to rise as HSFO prices plunge
- Rebounds as more scrubbers are installed
- Scrubbers mostly for vessels less than 10 years & new builds
- Scrubbers installed/on order rose from 200+ to 800 (Sep'17 to Jul'18)
- By 2020 : 1600 scrubbers to be installed: 43 needed/month
- Vessel capacity may decline by 7-10% of capacity
- MGO/LSFO fuel choice for 10-15 year old ships

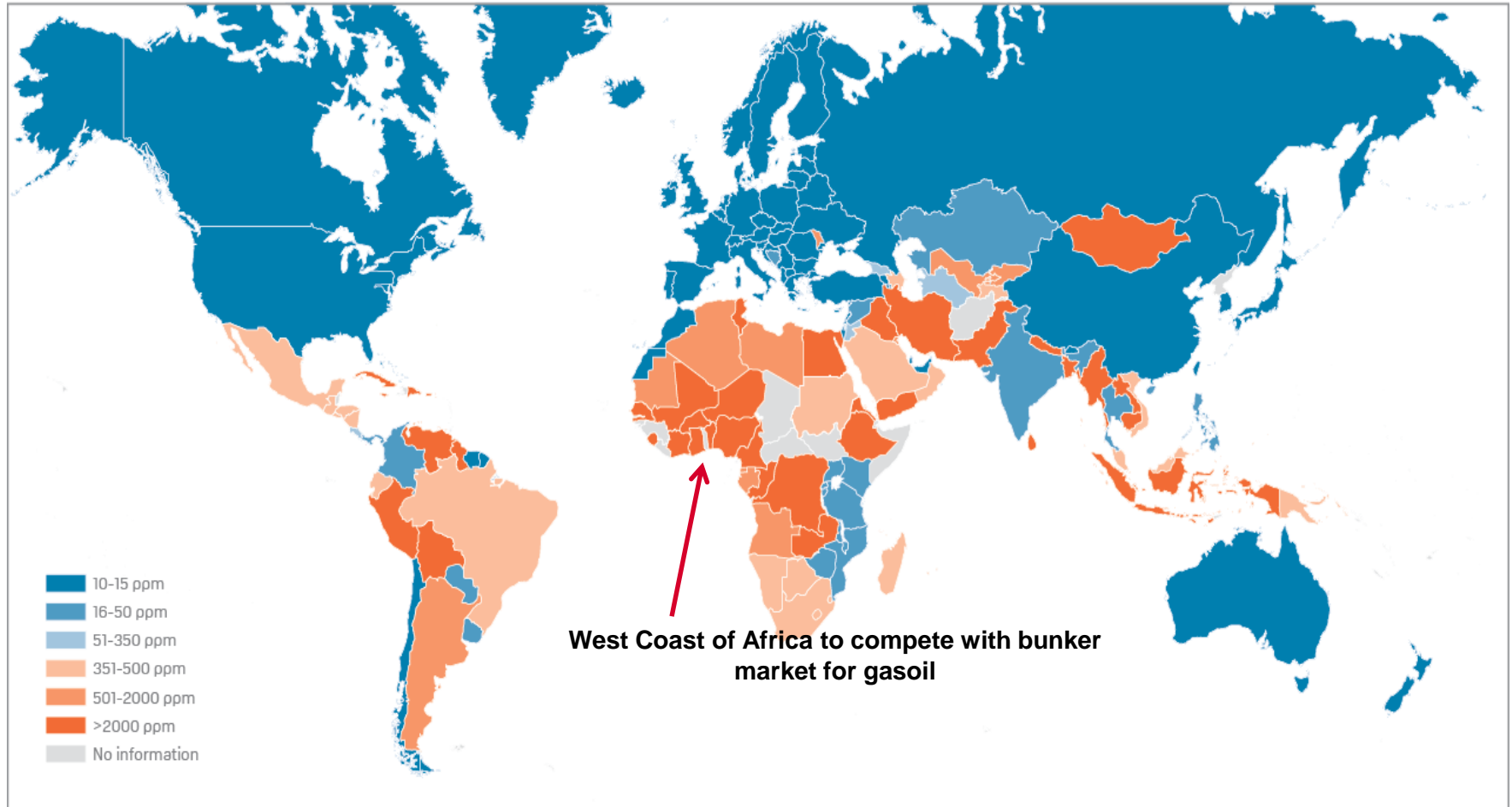
IMO 2020: Impact On Gasoline Yields

Gasoline output could be affected by spike in diesel demand

Unit	Action	Purpose	Result
FCC	Cracking severity change	Maximising distillates yield	Lowers gasoline component yield
FCC	Reduced Runs	Diverting VGO to bunker pool	Lowers gasoline component production
Reformer	Reduced Runs	Bigger distillates cut from CDU	Lowers gasoline component production

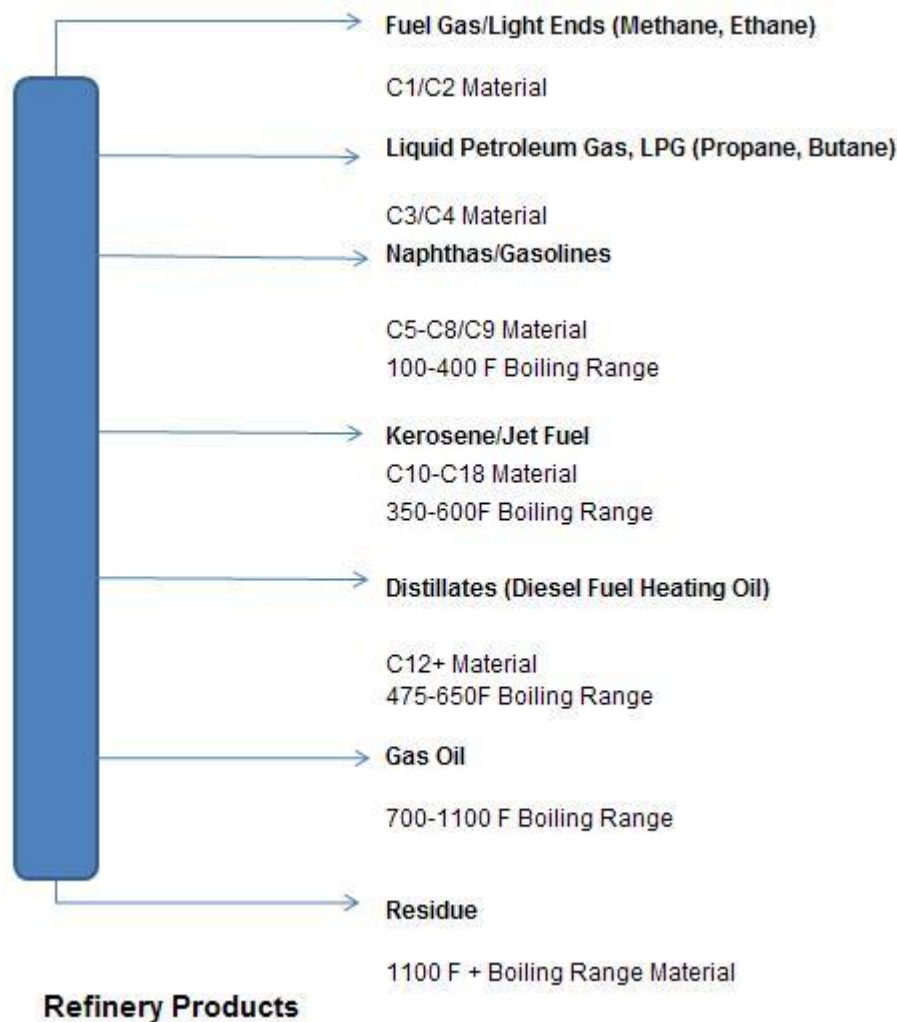
Global shift towards ULSD – 2018

MAXIMUM ON-ROAD DIESEL SULFUR LIMITS 2018



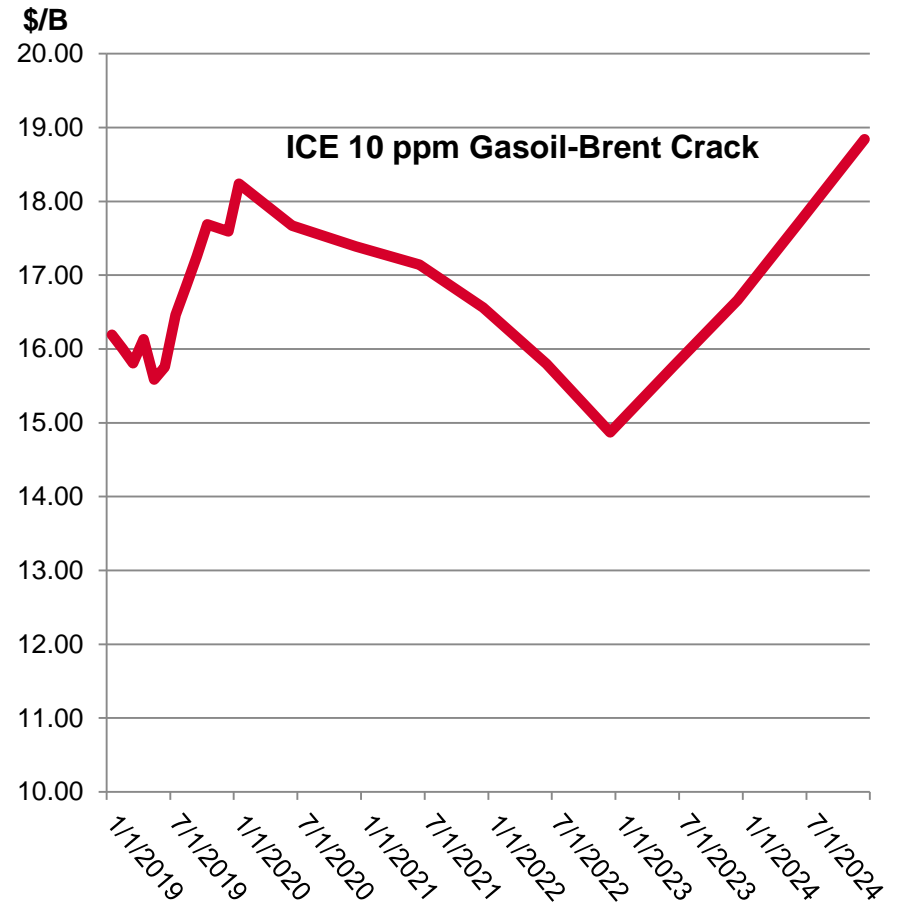
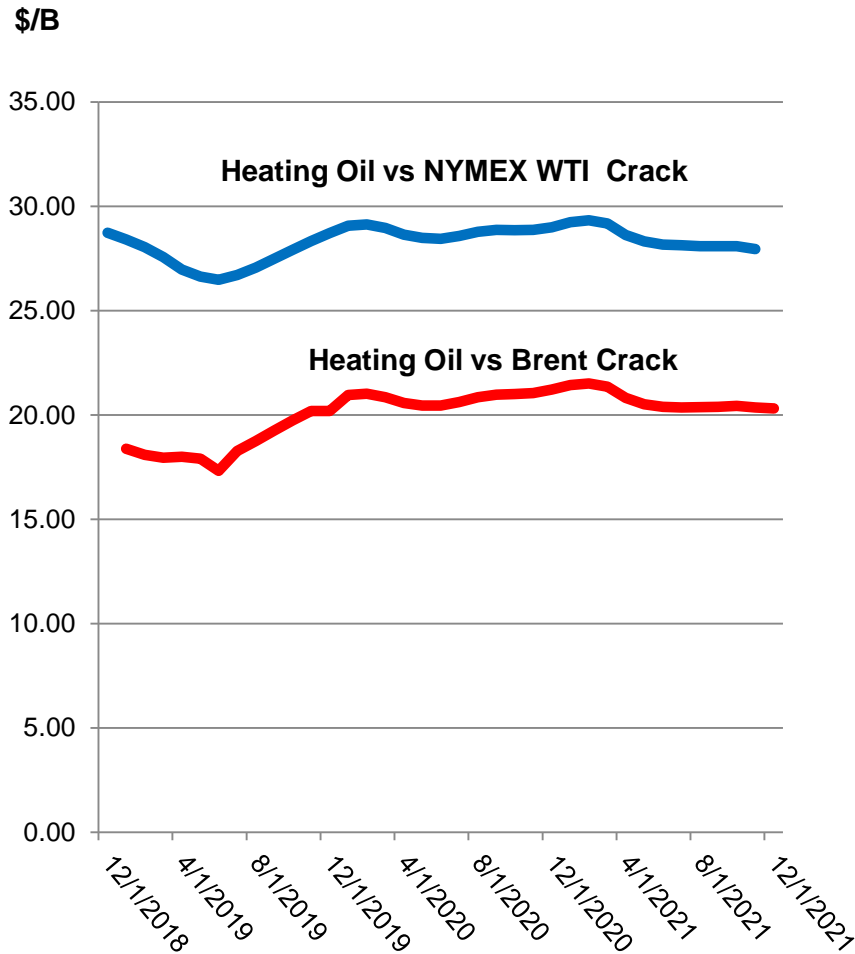
Source: Stratas Advisors, S&P Global Platts

Impact of IMO 2020: Kerosene

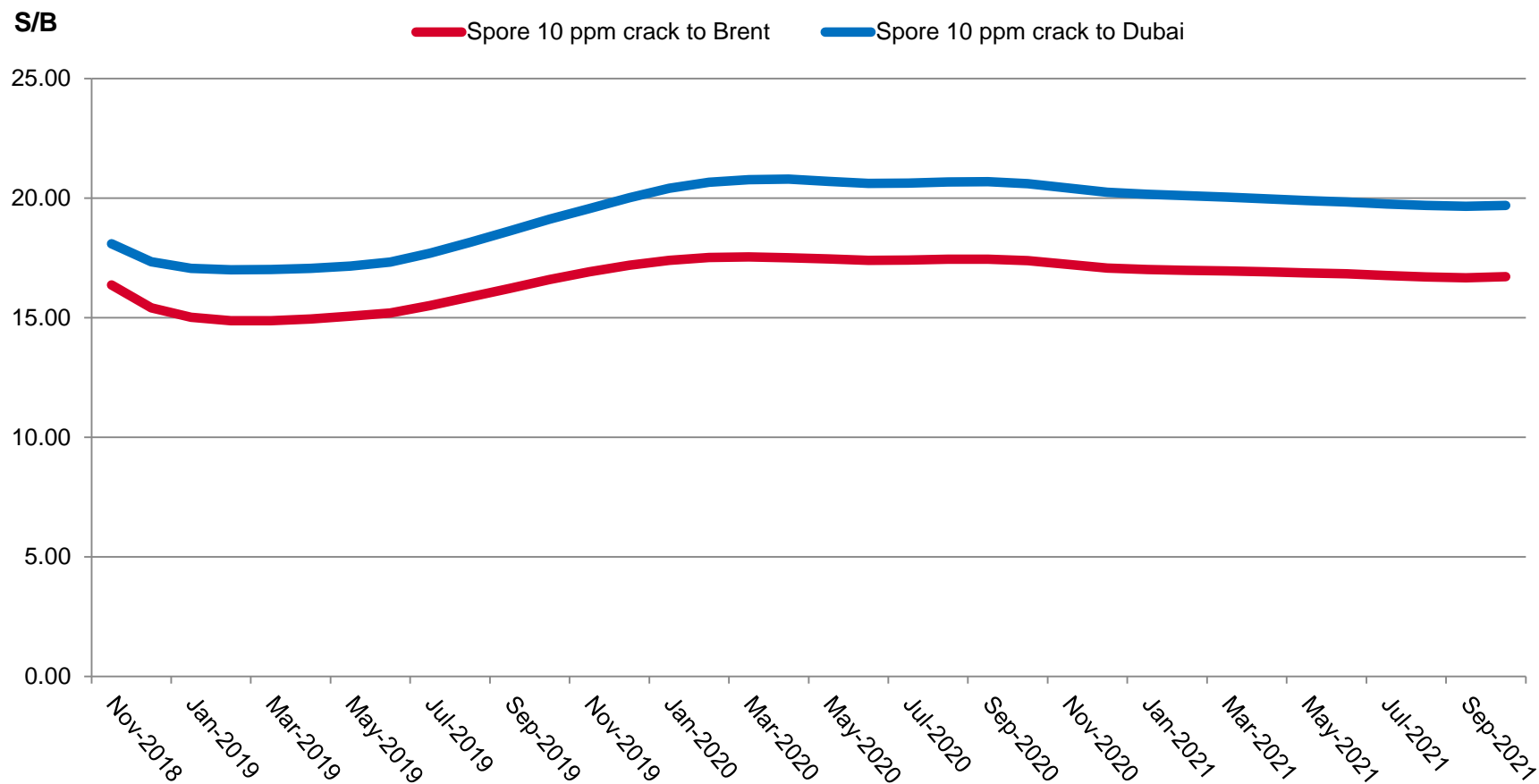


- **Global kerosene/jet production averages about 7% of product yield**
- **Higher diesel margins may lead refiners to adjust Kerosene/Jet fuel production to increase diesel yield**
- **Resulting in lower kerosene/jet output**

Diesel-Brent & WTI Crack



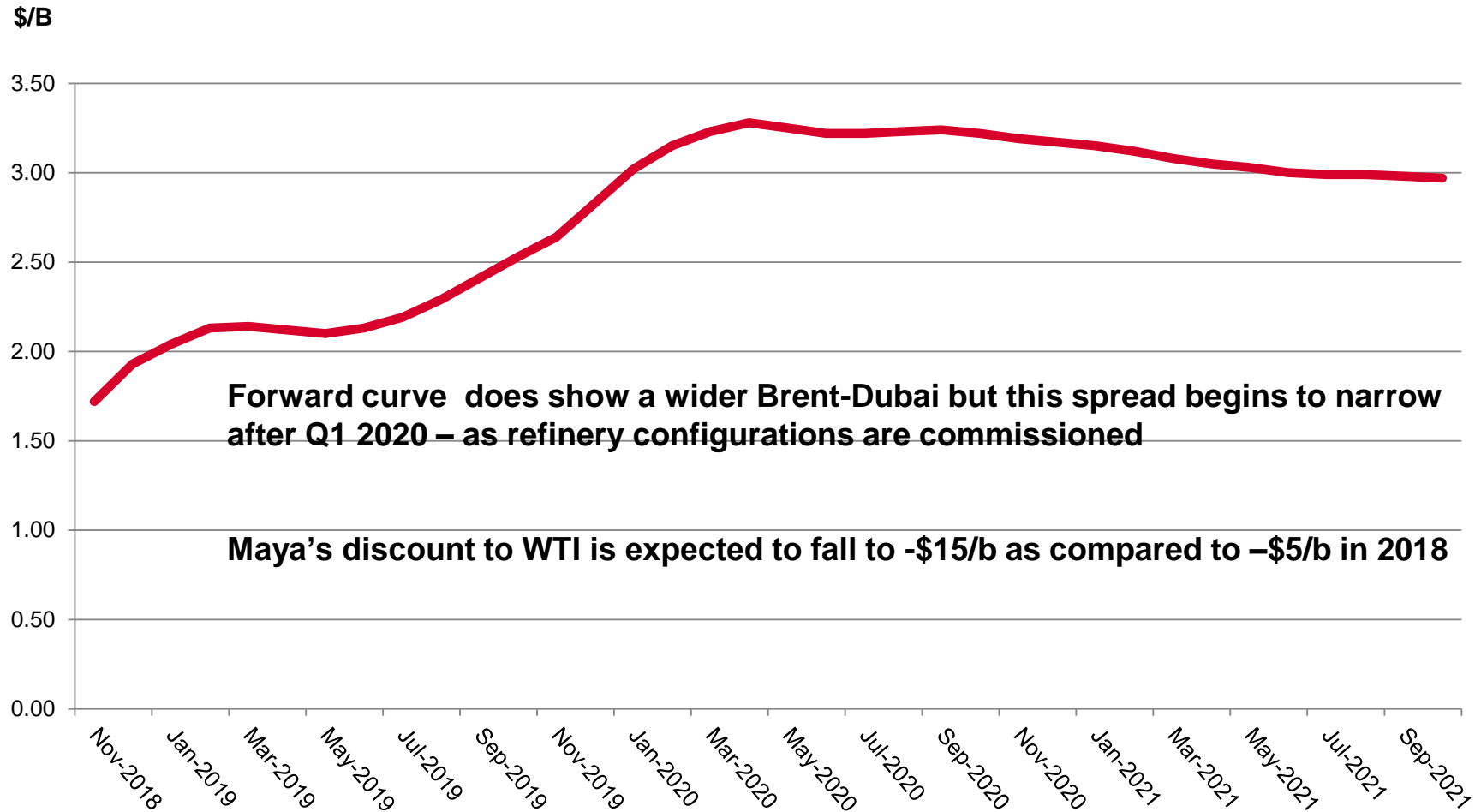
Singapore 10 ppm Diesel Crack



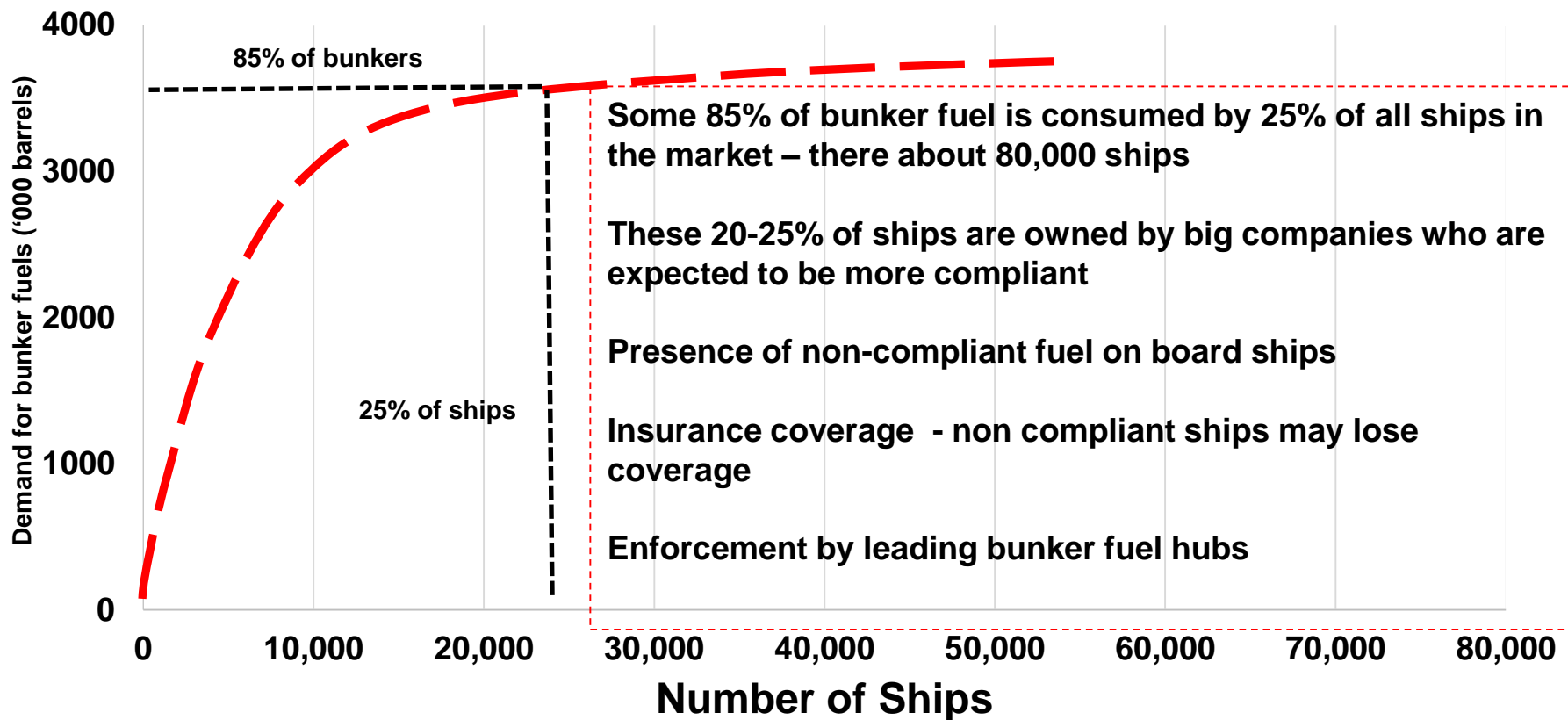
Impact on Crude Oils

- **Sulfur reductions in transport fuels – augment increased demand for Super Heavy, Heavy & Medium & sweet crudes**
- **Demand from bunker market expected to emerge in addition to refiner demand**
- **Some low TAN medium & heavy sweet crudes could end up in bunker market with very little blending**
- **Brazil stands to benefit from higher demand for its medium/heavy sweet crudes**

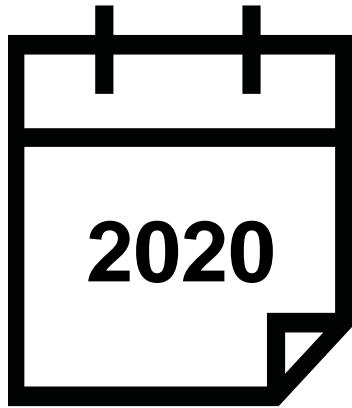
Brent-Dubai Spread



Compliance



Platts To Assess 0.5% Bunker Fuels: Jan 2019



Platts to launch new **0.5% sulfur residual** fuel assessments from **January 2019** in Singapore, Fujairah, Rotterdam, Houston

Platts to launch **bunker assessments** for the new grade in July 2019 across global ports

Platts to **retain all existing** high sulfur marine fuel, cargo and barge assessments during and after 2020

Platts to move all marine assessments to **ISO 2010** from **January 2019**

Platts Analytics: Update to IMO 2020

MAKING WAVES THE FINAL COUNTDOWN TO IMO 2020

April 2018
Rick Joswick
Gary Greenstein
Ken Bogden
Chris Midgley



S&P Global
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Conclusion

- **Chances of deferring Jan 1, 2020 implementation date very slim**
- **Enforcement proposals expected to be finalized by end 2018**
- **Compliance expected to be about 85%**
- **Industry wants clarity on specifications, minimum viscosity**
- **Insufficient capacity to meet hike in diesel demand**
- **China takes lead in implementing 0.5% S bunker fuel requirement**
- **2020 change estimated cost at or more than \$1 trillion**

Gracias

Eswaran (Esa) Ramasamy
Global Director
Market Development & Engagement
Email: esa.ramasamy@spglobal.com
Cell: +1 281 818 3286