IMO 2020: Price Directions for Refining Products

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S&P Global
Platts
Agenda

IMO 2020

Market Clarity
Fuel Supply
Compliance
Pricing

IMO 2020

Price Assessment

Clarity on Market Direction
Platts 0.5% S Marine Fuel Assessments

Price Assessments Offer Market Direction & Aids Decision Making

- **JANUARY**
  - Platts launches Marine Fuel 0.5% cargo and barge assessments at key ports globally

- **FEBRUARY**
  - ICE, CME launch Platts 0.5%-settled futures instruments

- **MAY**
  - Platts launches Marine Fuel 0.5% derivatives assessments

- **JULY**
  - Platts launches Marine Fuel 0.5% bunker assessments globally

**Americas:**
- Balboa
- Houston
- Los Angeles
- New York

**EMEA:**
- Algeciras
- Durban
- Gibraltar
- Malta
- Piraeus
- Rotterdam

**Asia:**
- Busan/Ulsan
- Fujairah
- Hong Kong
- Shanghai
- Singapore
- Tokyo Bay
- Zhoushan
IMO 2020 – Impact On Sour Crude and HSFO

• Impact on HSFO more bearish
  ▪ RMG 380 CST 3.5%S considered non-compliant beginning Jan 1 2020
  ▪ Bunker fuel volume affected at about 3.7-mil b/d
  ▪ Not much outlets available for non-compliant bunker fuel
  ▪ Scrubbers to take up 16-17% RMG 380 CST or about 600 kb/d – Jan 1 2020
  ▪ By end 2020 – Scrubber numbers rises to more than 3500

• Medium & Heavy sour crudes values remain healthy
  ▪ OPEC cuts have removed about 1.5 mil b/d
  ▪ Sanctions on Venezuela & Iran – took out about 3 mil b/d
  ▪ High rate of dependence by global refining complex
  ▪ Medium/Heavy sweet values spike

• Some demand for light sweet crude to blend down sulfur
IMO 2020’s Impact On Sour Crudes

2020 Brent-Dubai Spread: 2018- YTD 2019

OPEC begins output cuts

Attack on Saudi oil installations showed not much of a reaction

US sanctions Venezuela and ends waivers on Iran – loss of about 5 mil b/d of sour crudes

Source: S&P Global Platts
Rotterdam 3.5% HSFO Crack to Brent: 2020

Source: S&P Global Platts
Rotterdam 0.5% MF vs HSFO 3.5%

Spread widens as 2020 dateline approaches

Source: S&P Global Platts
Bunker Demand

MGO to dominate until June 2020 and VLSFO becomes the main stay

Source: S&P Global Platts
Fuel Supply: Changing Product Slate

PRODUCTION TOTALS BY ASSAY CUT

5 YEAR PRODUCTION GROWTH BY ASSAY CUT

Source: S&P Global Platts Analytics
IMO Compliant Bunker Fuel Variations

About 2 mil b/d of HSFO will shift to Gasoil

Source: S&P Global Platts Analytics
HSFO Demand

- 2400 by Jan 1 2020 less than 3% total number of ships
- Scrubbers mostly for vessels less than 10 years & new builds (70:30)
- Open Loop Scrubbers: $2-5 mil with Closed Loop costing an extra $1 million
- HSFO curve - demand may improve after 2020
- Open loop not permitted by some ports
- Ships without scrubbers cannot hold non-compliant fuel after March 2020
- Total HSFO demand from scrubbers estimated at 600-700 kb/d

Source: S&P Global Platts Analytics, News
Compliance

- 80,000 ships – 25% consume 85% of fuels
- 20-25% of ships are owned by big companies
- Big companies expected to be more compliant
- Presence of non-compliant fuel on board ships
- Insurance coverage
- Enforcement by leading bunkering hubs

Source: S&P Global Platts Analytics, News
Evolution of Bunker Demand: Post 2020

Bunker demand will evolve after 2020 with lower distillate use, slowly growing LNG bunkers and a partial return of HSFO as scrubber use increases.

<table>
<thead>
<tr>
<th>Year</th>
<th>Residual Containing Fuels</th>
<th>Other Fuels</th>
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<tbody>
<tr>
<td></td>
<td>HSFO Scrub</td>
<td>HSFO* No Scrub</td>
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<tr>
<td>2017</td>
<td>0%</td>
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<tr>
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<tr>
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<tr>
<td>2040</td>
<td>33%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Historically there was some sulfur spec “giveaway”

Source: S&P Global Platts Analytics
Thank You

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