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China's success in capitalizing from surging US oil production

Alejandro Barbajosa
Hangzhou, September 2019

illuminating the markets

London
Houston
Moscow
Singapore
Dubai
New York
Beijing
Kiev
Tokyo
Astana
Shanghai
Rio de Janeiro
Washington DC
Riga
Calgary
Brussels
Cape Town
Mexico City
Berlin
San Francisco
Sydney

Market Reporting

Consulting

Events

Argus is largest independent price reporting agency

- Founded in 1970
- 1000 employees
- Offices in almost 25 countries
- Publishing prices and benchmarks for crude, products, LPG, LNG, petrochemicals, freight coal, electricity, metals, fertilizers, rare earths and more



Argus crude coverage in the Middle East & Asia-Pacific

Mideast Gulf

- Abu Dhabi grades (*Murban & others*)
- Iraqi grades (*Basrah Light & Heavy*)

Russia/Asia-Pacific

- *ESPO Blend* fob Kozmino, Russia

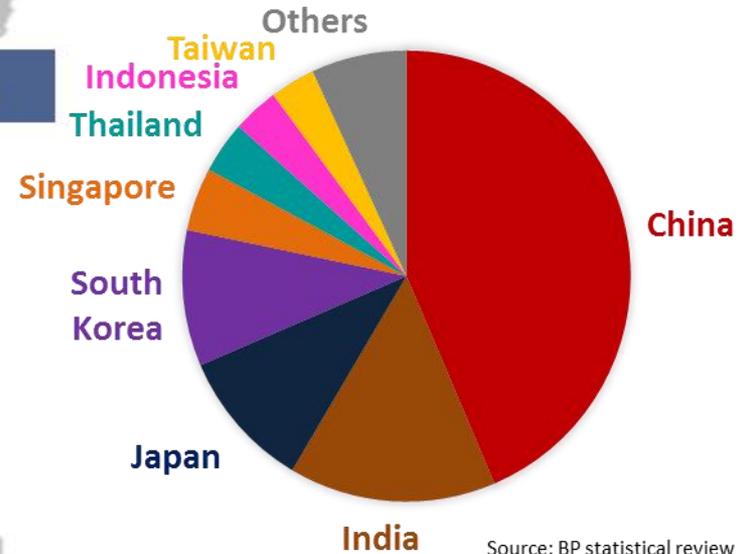
Delivered Asia-Pacific

- Delivered ex-ship (des) Shandong (*Lula*)
- Delivered Singapore (*WTI & others*)

Asia-Pacific refining capacity: 33mn b/d, 34% of global

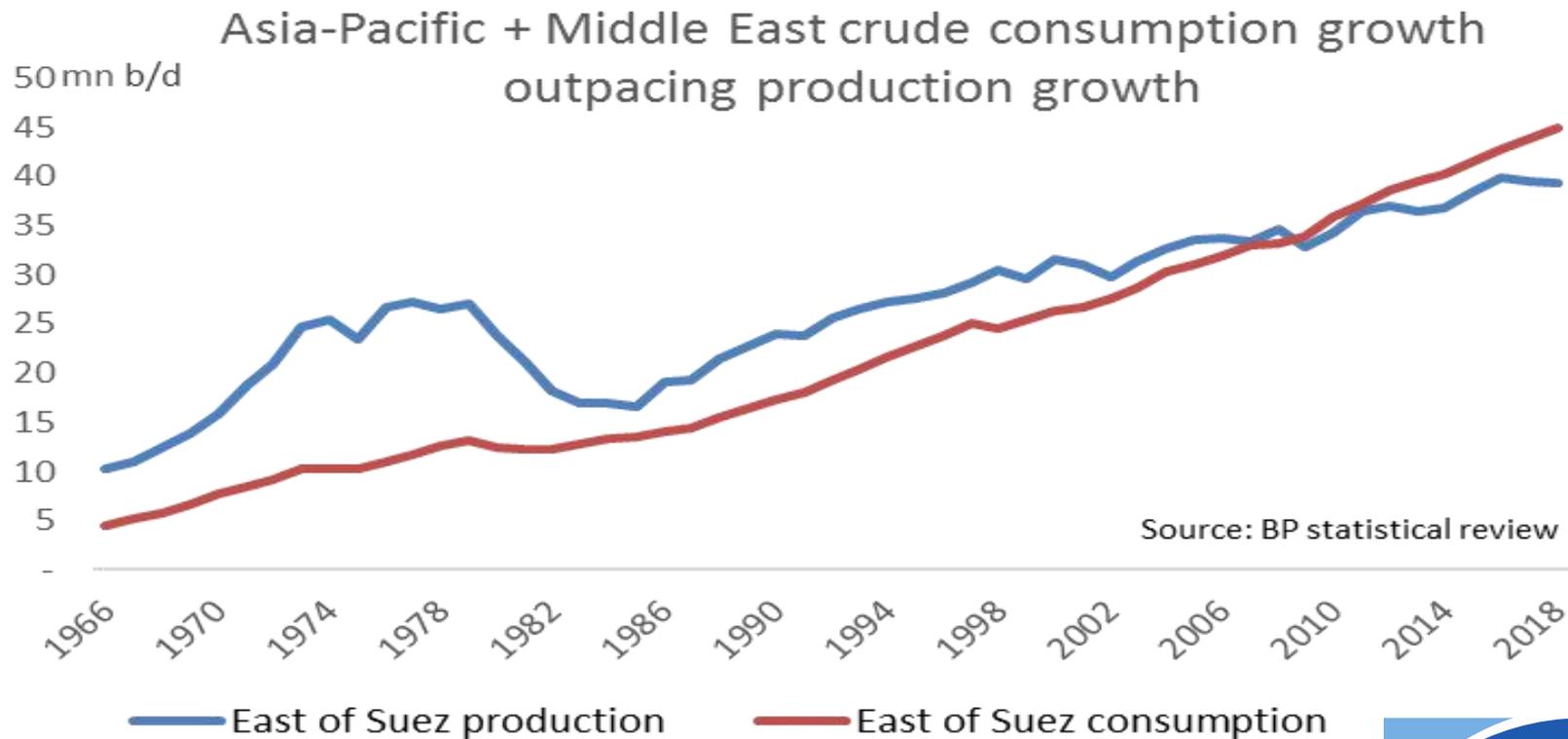


Eight countries with more than 1mn b/d capacity in 2017:



Source: BP statistical review

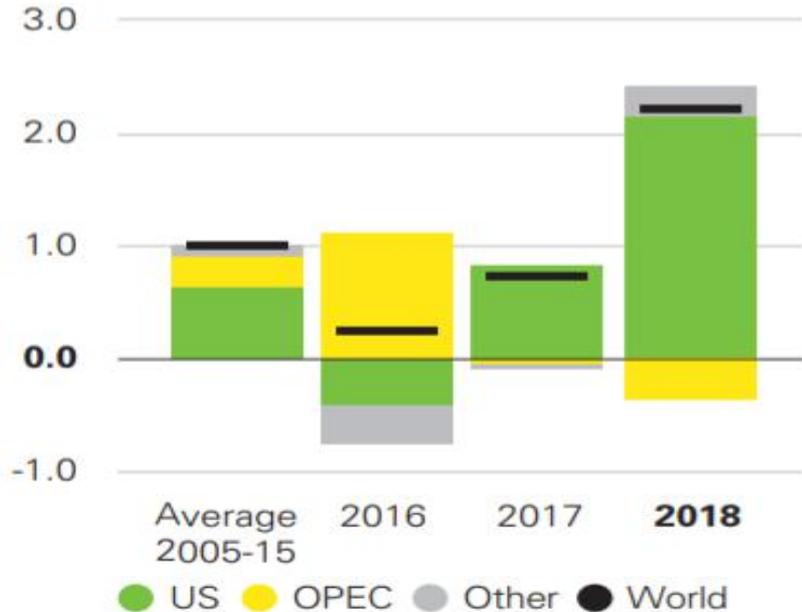
Asian refiners must import more Atlantic basin crude



US displaces OPEC as top source of oil output growth

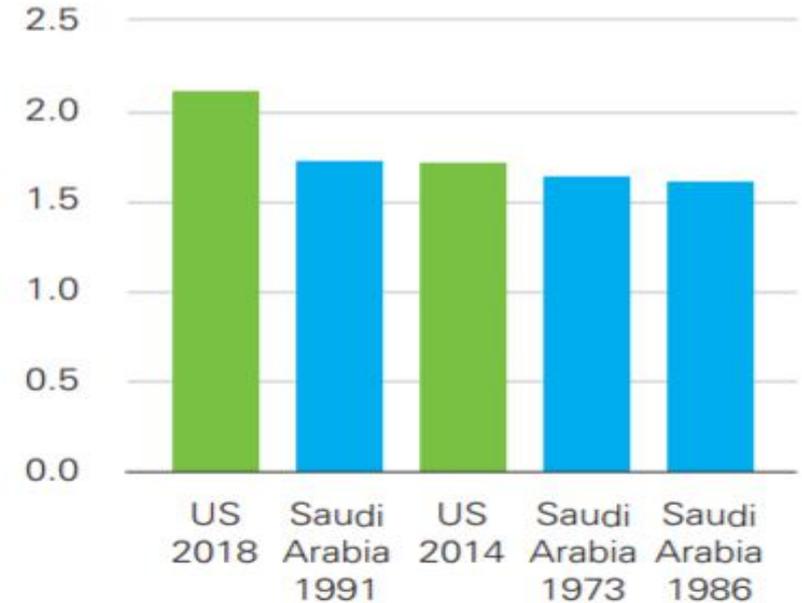
Global oil production

Annual change, Mb/d



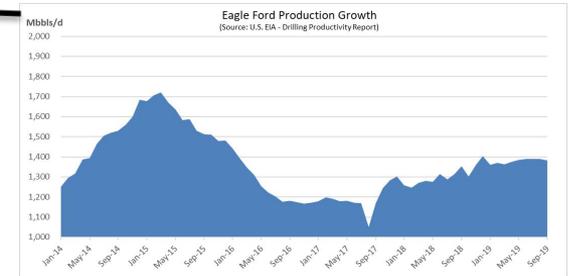
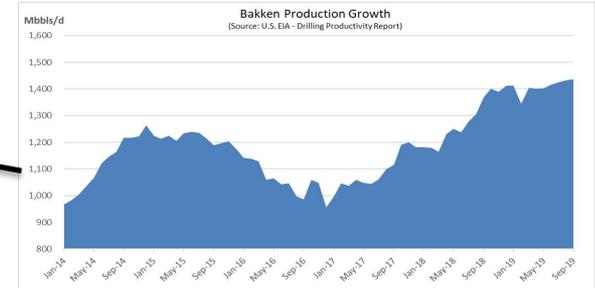
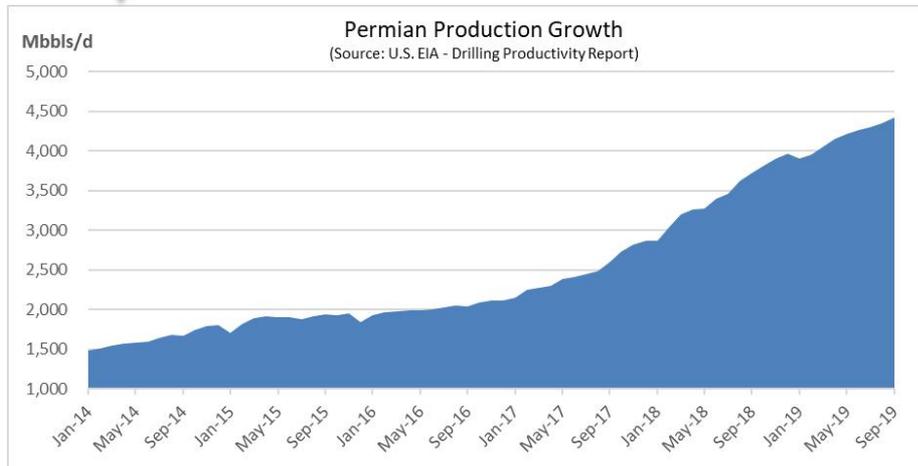
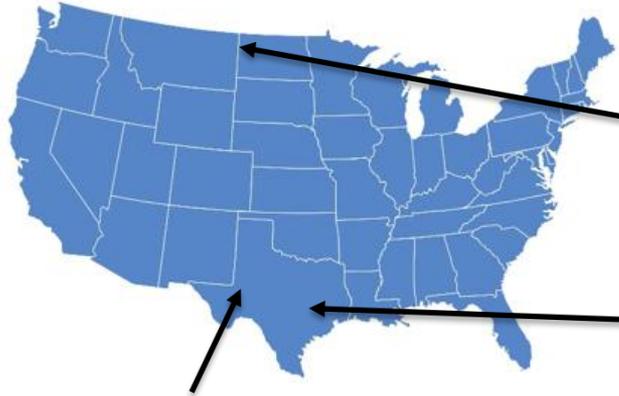
Largest annual increases in oil production

Mb/d



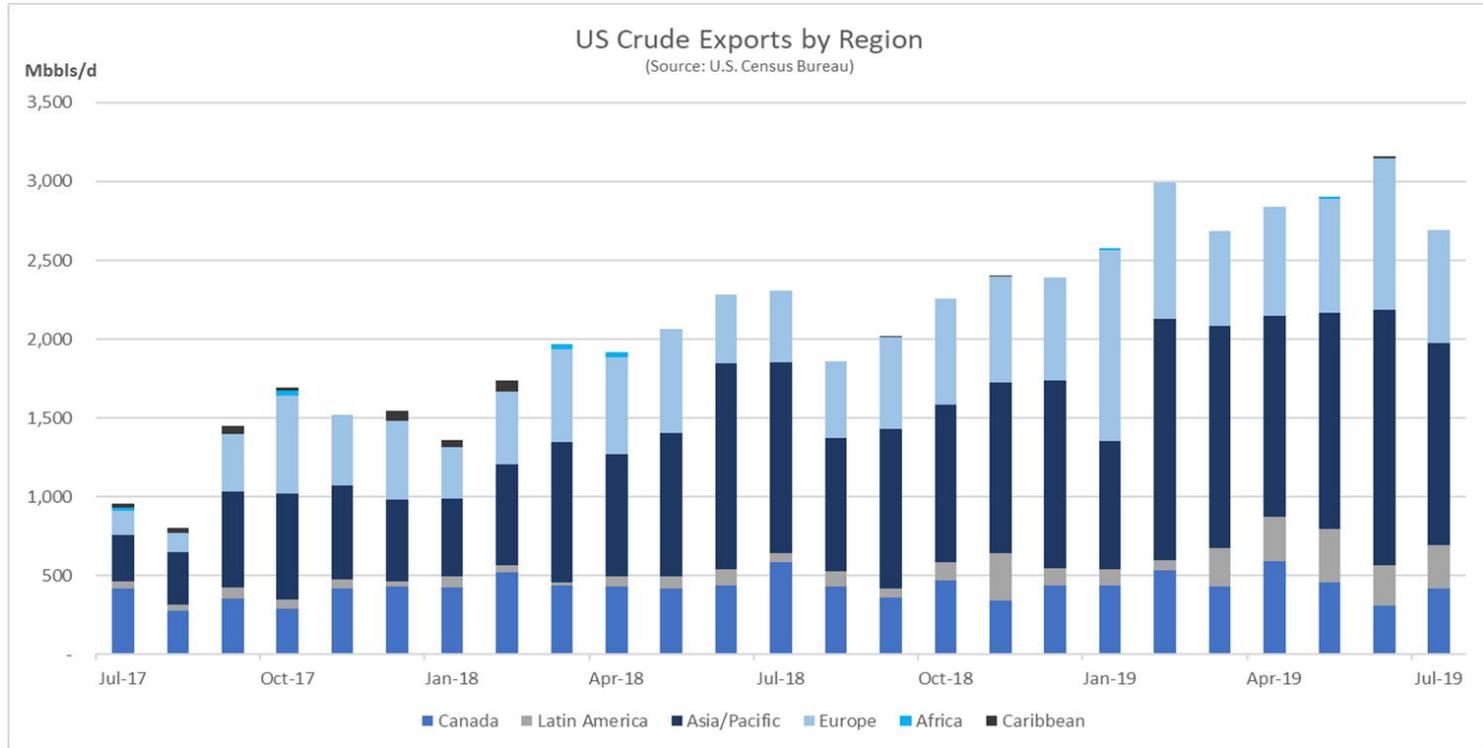
Source: BP statistical review

Permian continues to lead growth in US crude output

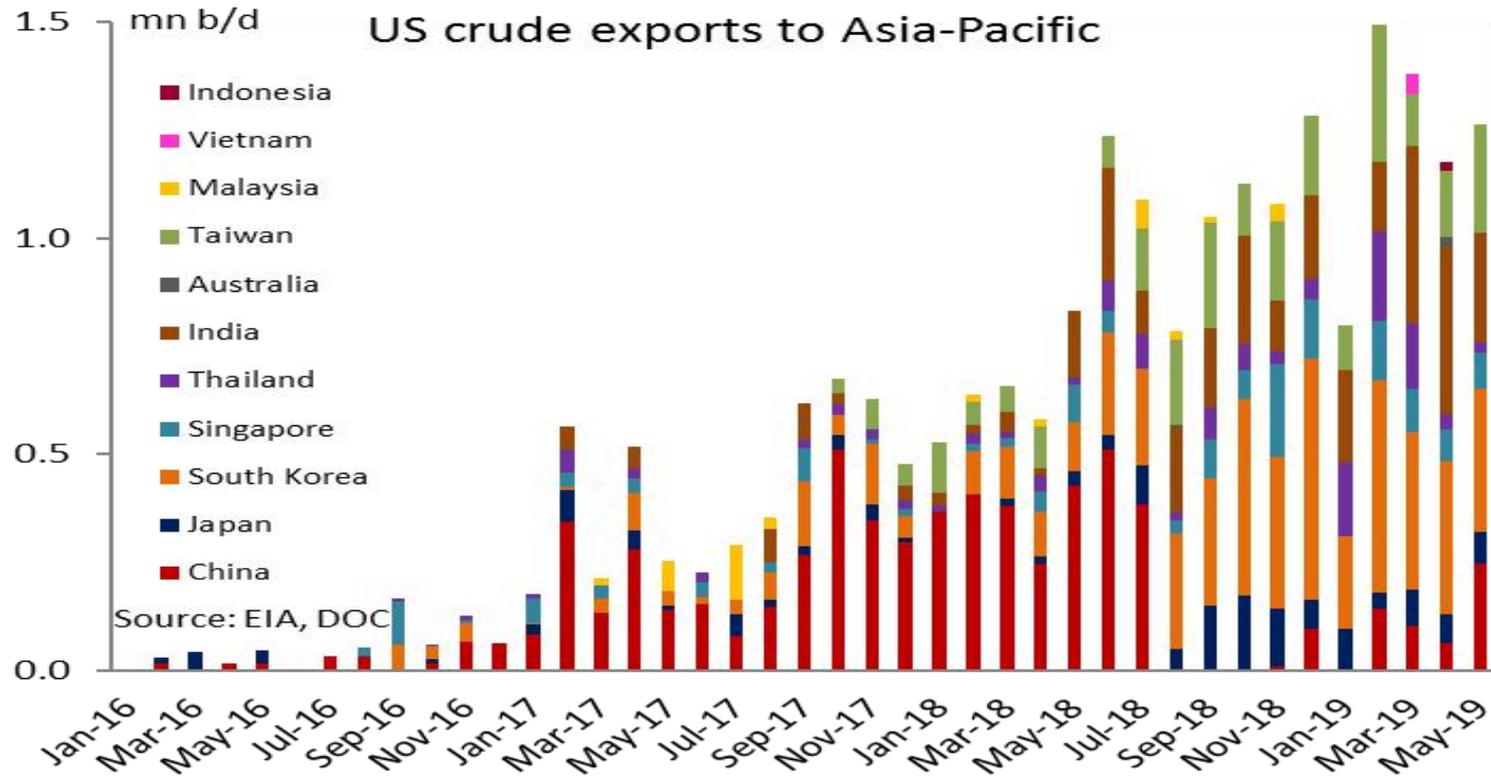


Source: EIA Drilling Productivity Report

US crude exports now often exceed 3mn b/d

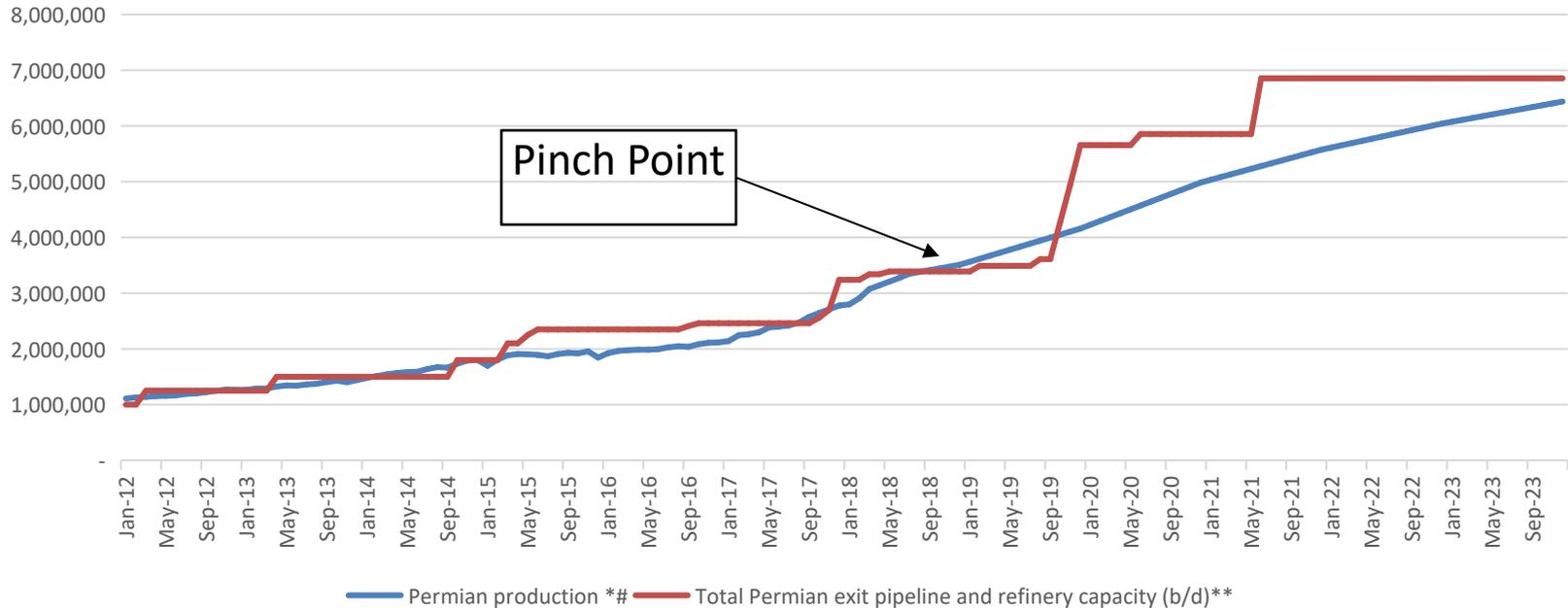


Asia-Pacific takes about half of total US crude exports

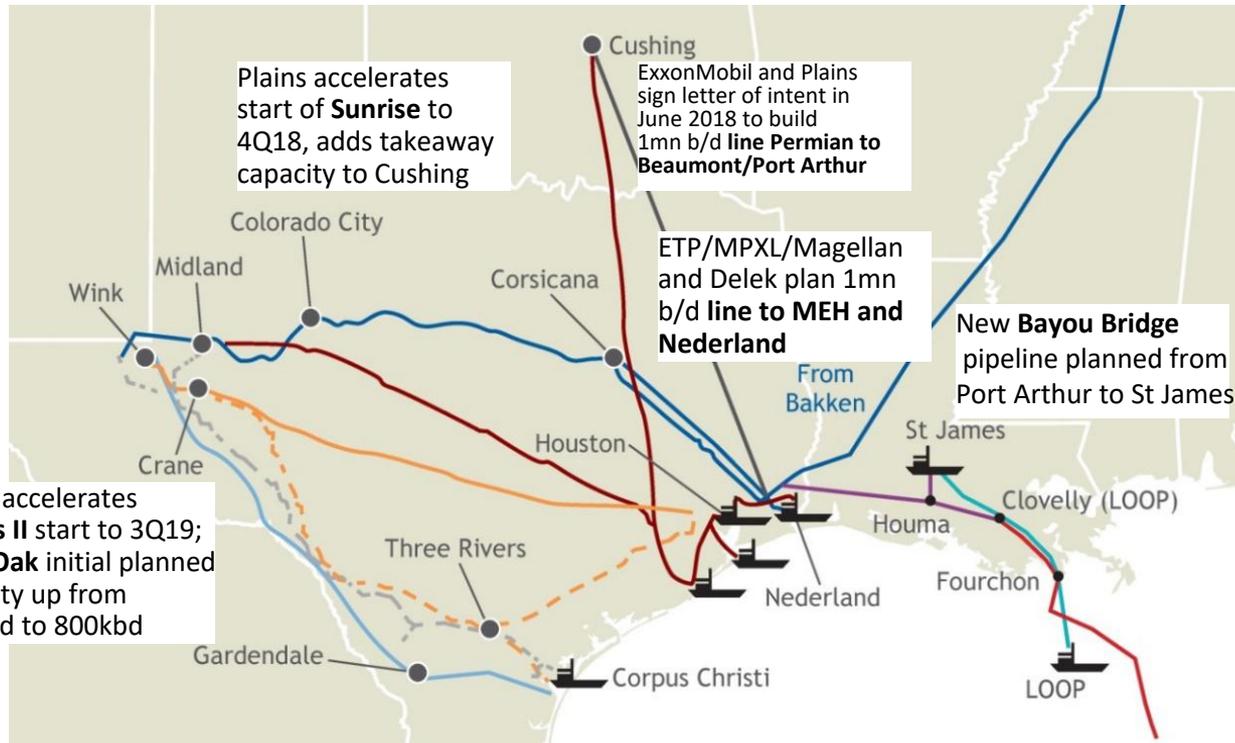


Permian tight on pipeline space through late 2019

Argus estimates of Permian production vs take away capacity



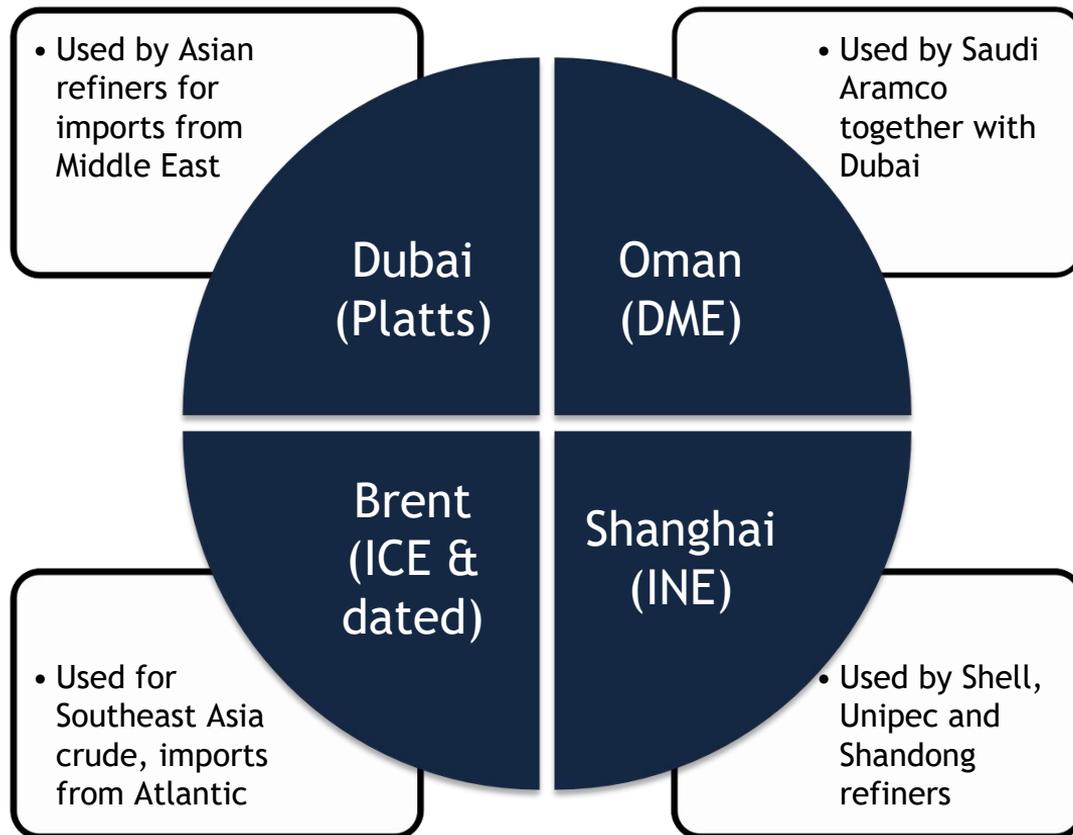
Pipeline capacity set to outpace production by 2020



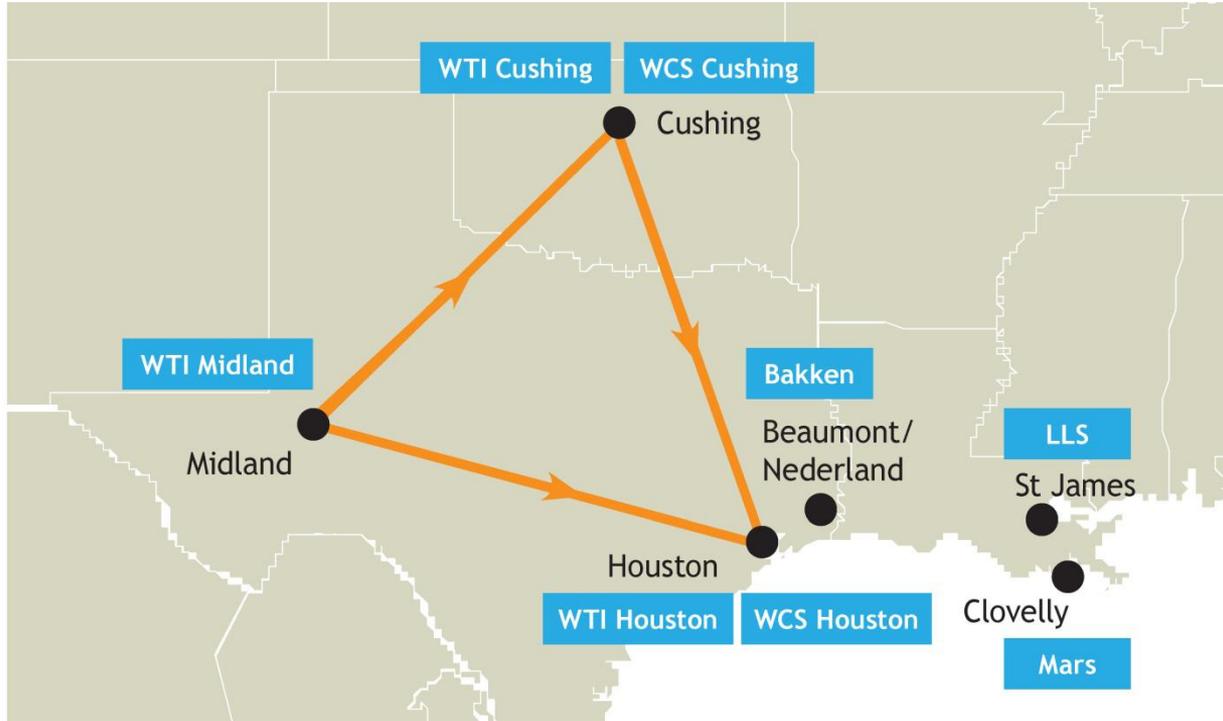
Almost 2mn b/d of new Permian pipeline capacity by 4Q19:

- Epic 400kbd
- Cactus II 670kbd
- Gray Oak 900kbd

WTI entering Asia-Pac benchmark space dominated by:



Key WTI pricing locations: Midland, Cushing & Houston

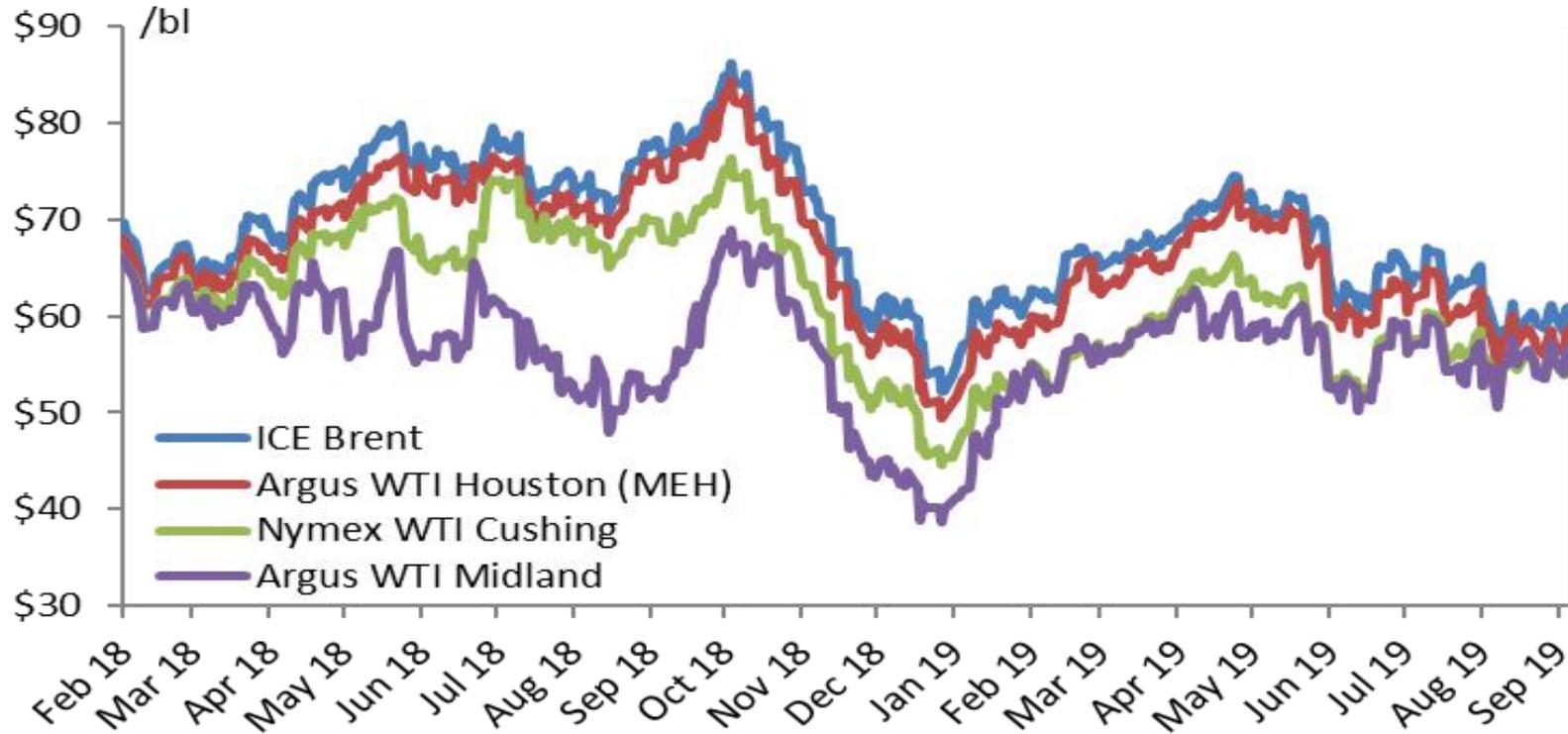


Hub-and-spoke crude pricing: futures & physical diffs

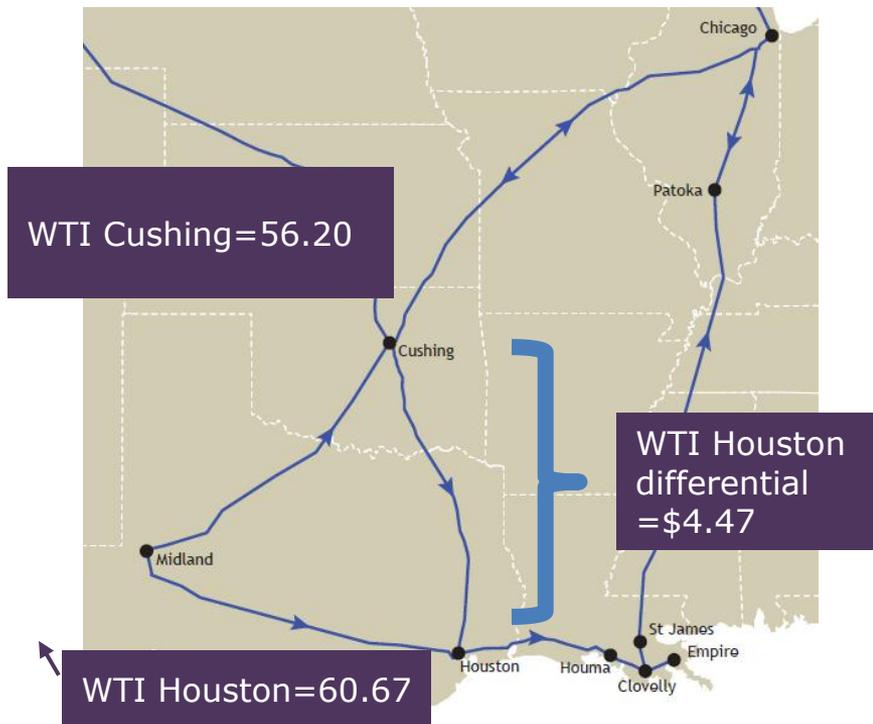


Exchanges and price reporting agencies complement each other

WTI Houston (MEH) represents US crude exports price



WTI Houston brings together liquidity and precision



**Nymex WTI/CMA
(Cushing)**
[\$ 56.20]

*Most liquid paper crude contract
in the world (BASIS)*



**Argus WTI Houston
(Magellan East Houston) diff**
[+\$ 4.47]

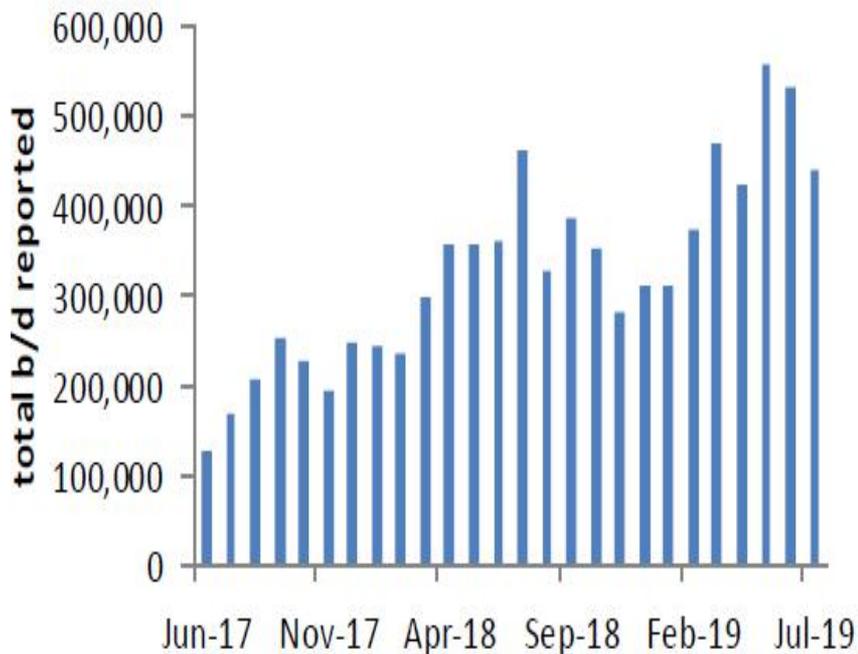
*Add precision by reflecting trade on value differential
at the coast*



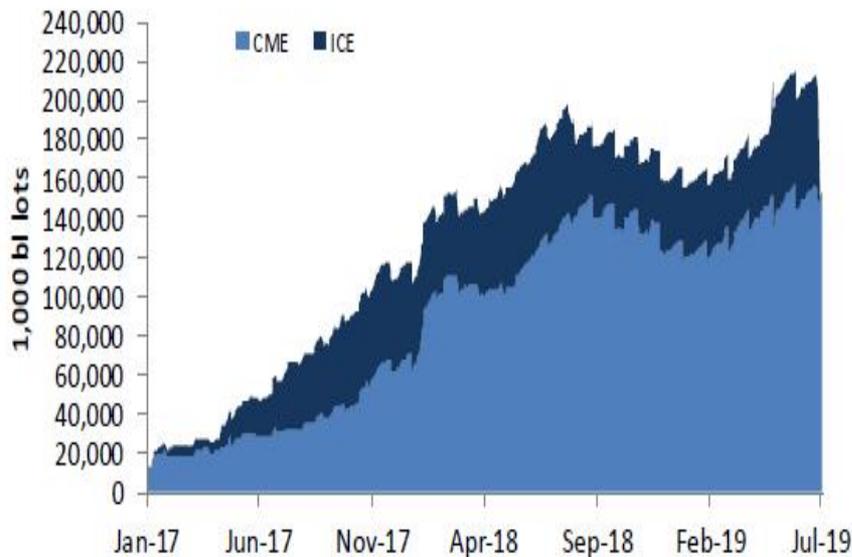
\$ 60.67

WTI Houston: highly liquid hedge for US crude exports

WTI Houston Physical Volume

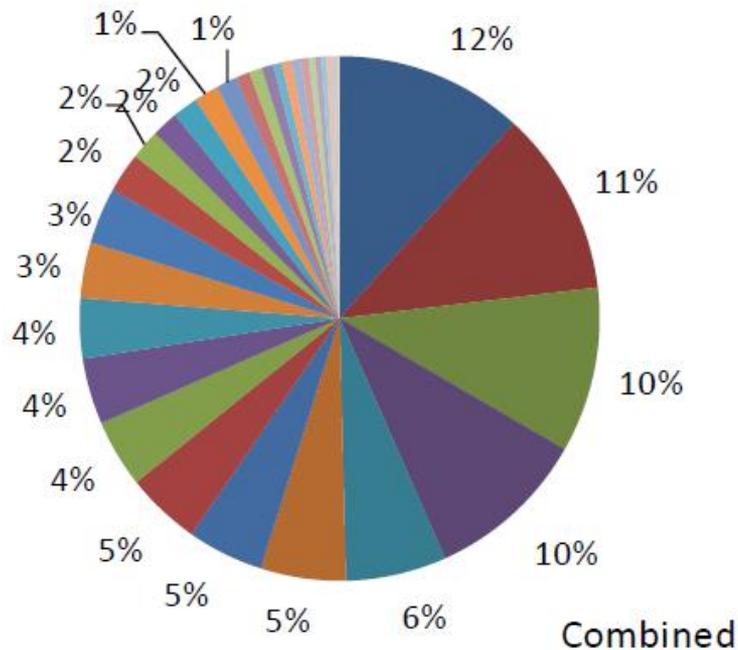


WTI Houston Open Interest



Argus WTI Houston participants multiply & diversify

WTI Houston Market Participation

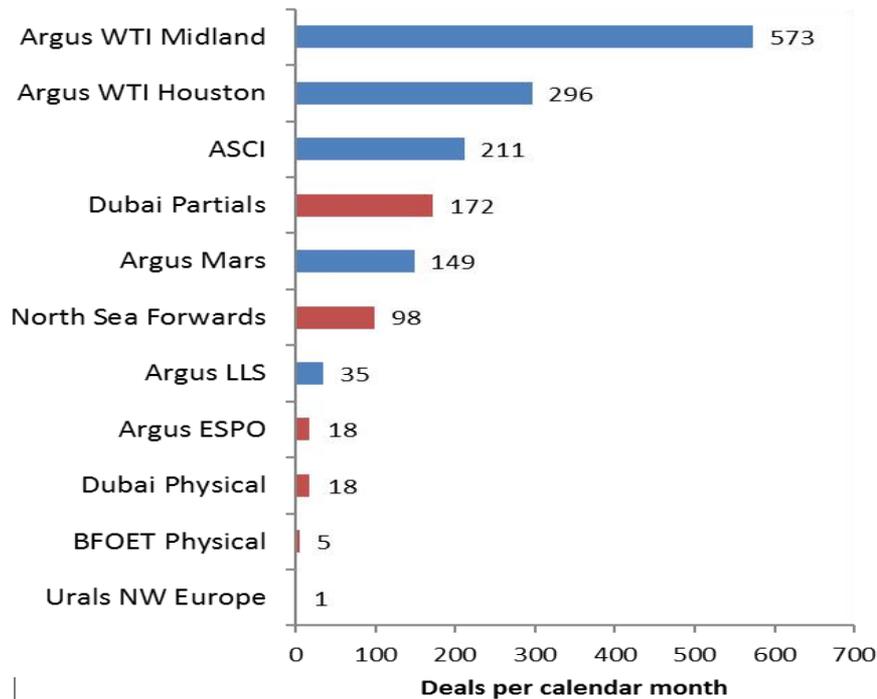


WTI Houston Participants

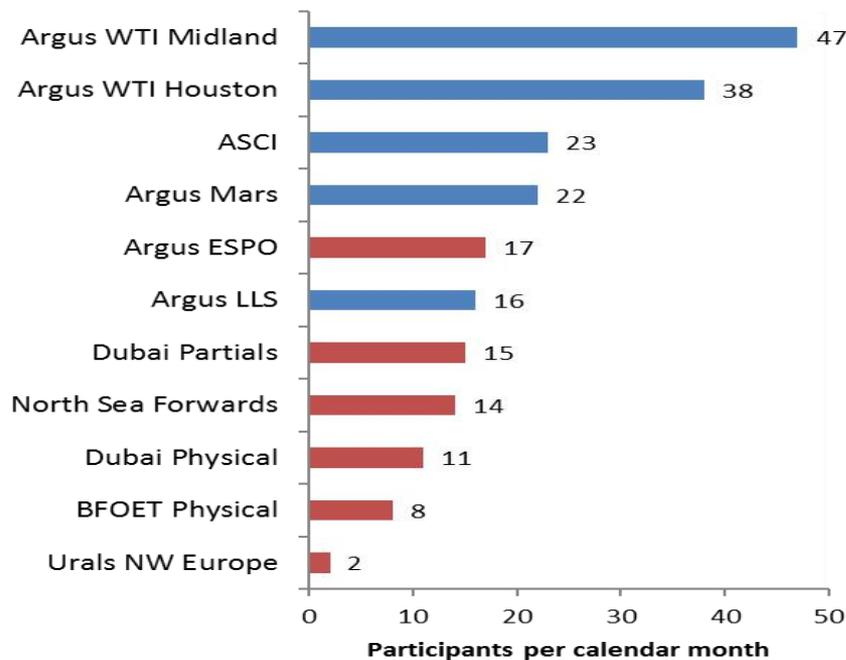


US markets more liquid & diversified than elsewhere

Average monthly deal count underlying benchmark in 2Q 2019



Average monthly unique spot market participants in 2Q 2019

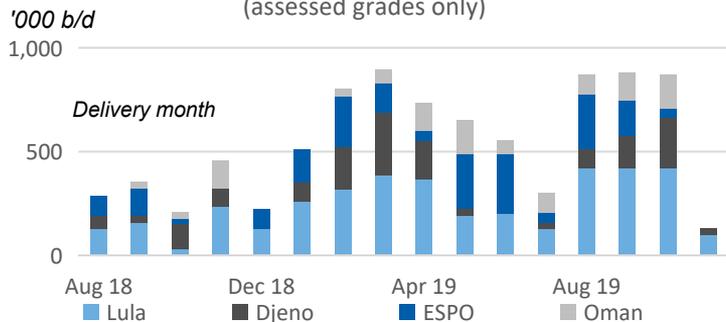


US crude starting to replace Middle East grades in Asia



Shandong is first market for delivered crude in Asia

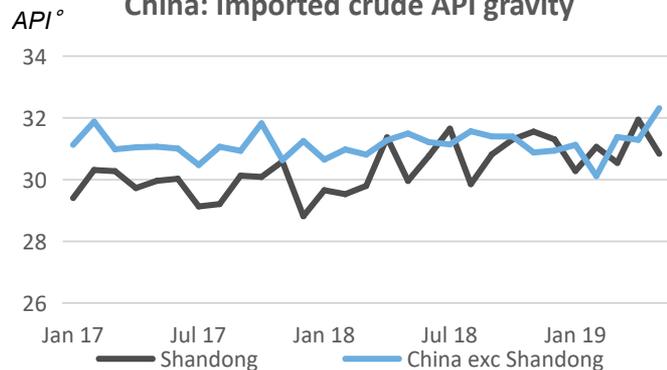
Des Shandong: Reported deals
(assessed grades only)



Des Shandong: Key trade flows



China: Imported crude API gravity



WTI Houston pricing gains relevance across Asia-Pacific

- Japan & Taiwan using Argus WTI Houston to price imports of US light sweet crude
- South Korea, India, Thailand, China using it as reference price
- WTI Houston becomes basis for calculation of delivered price of US crude in Asia-Pacific
- Delivered WTI Houston used for comparison against competing grades from different regions

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