



GLOBAL CRUDE OIL SUPPLY AND DEMAND

PREVIEW | FundamentalEdge Report | October 2018

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FundamentalEdge
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Key Takeaways

This is a **PREVIEW** of a 20+ Page Report

- **Global Crude Oil Supply and Demand** is an interim report of Drillinginfo's FundamentalEdge Series. This update covers key drivers of the crude oil market impacting the supply and demand balance.
- The crude oil oversupply that started four years ago and drove prices down to near \$30/Bbl by January 2016 has been alleviated. OPEC supply cuts and downward trajectory of Venezuelan production were the drivers. Prices rebounded to four-year highs in early October as pending Iranian sanctions and continued declines in Venezuela increased concerns of a supply shortage.
- Recently however, bearish sentiment has returned. Higher crude prices have rekindled concerns of a slowdown in economic growth, uncertainty regarding ongoing trade wars, growing US production, and Saudi Arabia and Russia signaling a desire to increase their production provide resistance to further rallies in price. As a result, prices have declined ~\$10/Bbl just a few weeks after reaching their four-year highs.
- OECD inventories are now close to their 5-year average levels, but are now expected to increase through the remainder of 2018. Should this trend continue, driven by overall OPEC production, prices should face pressure throughout 2019. The wildcard here is continued declines from Iran and Venezuela.
- Uncertainty surrounding the impact of Iranian sanctions will keep the trade volatile. It is unclear yet whether all relevant players will participate in the sanctions, and this potential lack of consensus could keep Iranian barrels flowing to alternative destinations. So far, declines by Iran are being offset with increased OPEC production.
- Notwithstanding bearish sentiments about global oversupply and uncertain demand growth, US shale production will continue to increase. Most US basins have acreage that remains economical at sub \$40-\$50/Bbl. The Permian Basin should also see a rapid production increase when pipeline takeaway constraints are resolved in late 2019.

Crude Oil Prices: 2014-18 Drivers

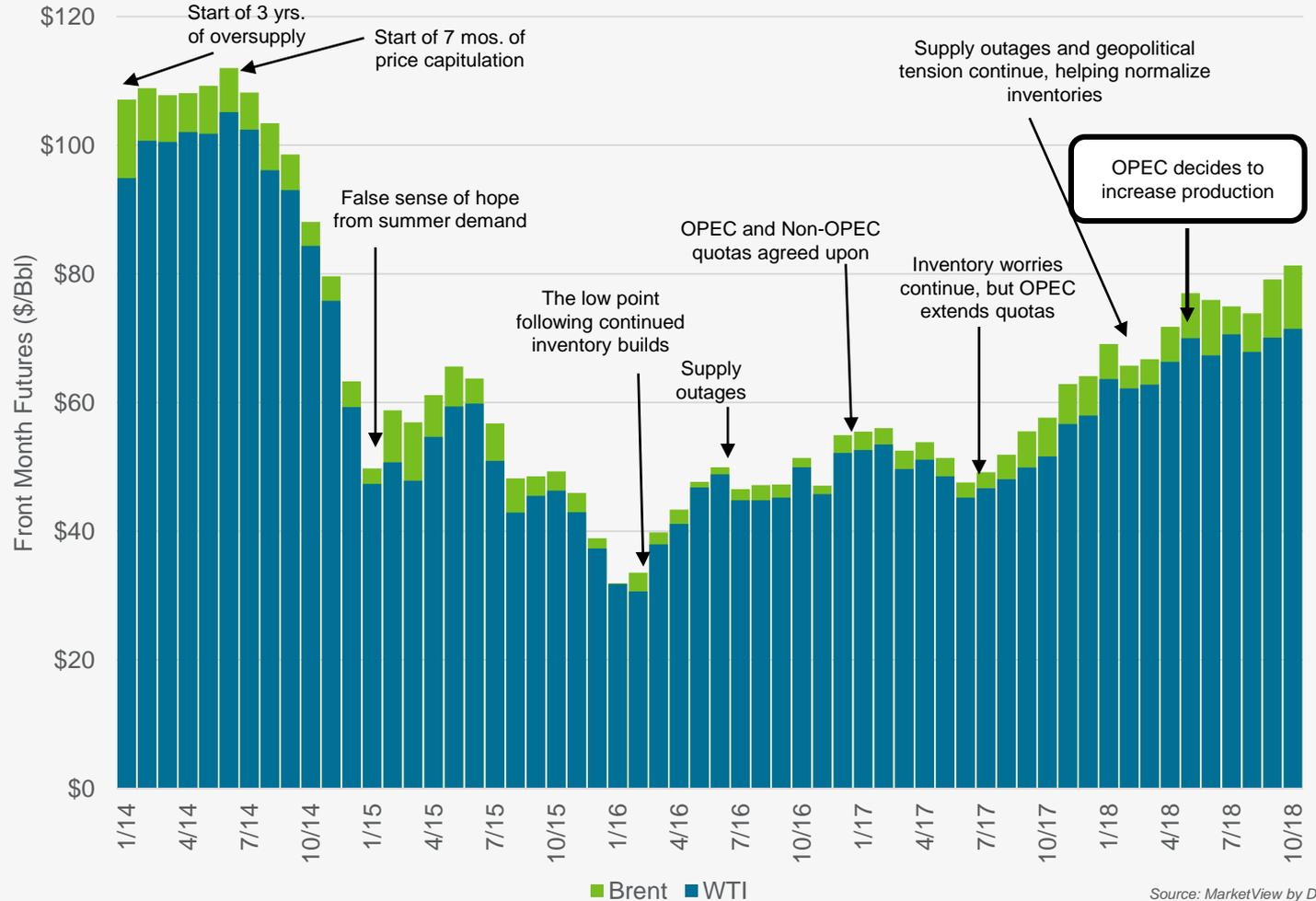
Crude oil prices recovered after OPEC and Non-OPEC supply quotas were put in place in late 2016.

Prices reached their four-year highs in early October 2018 after concerns about Iranian sanctions and declining Venezuelan production put the market created concerns about a possible supply shortage.

However, following the price peaks in early October 2018, production increases from US/OPEC/Russia, as well as Saudi Arabia's assurance to the market that they will do everything to keep the world adequately supplied, and a weaker demand growth expectations due to ongoing trade disputes have caused a shift in sentiment and pushed prices down.

Both global benchmark prices have fallen about \$10/Bbl after reaching their four-year highs in early October.

CHART 1
Global Supply and Demand Outlook



Source: MarketView by DI

Global Oil Supply and Demand

Global supply/demand data from IEA indicates a reemergence of oversupply in both the second and third quarters of 2018, with both quarters showing approximately 500 MMBbl/d surplus.

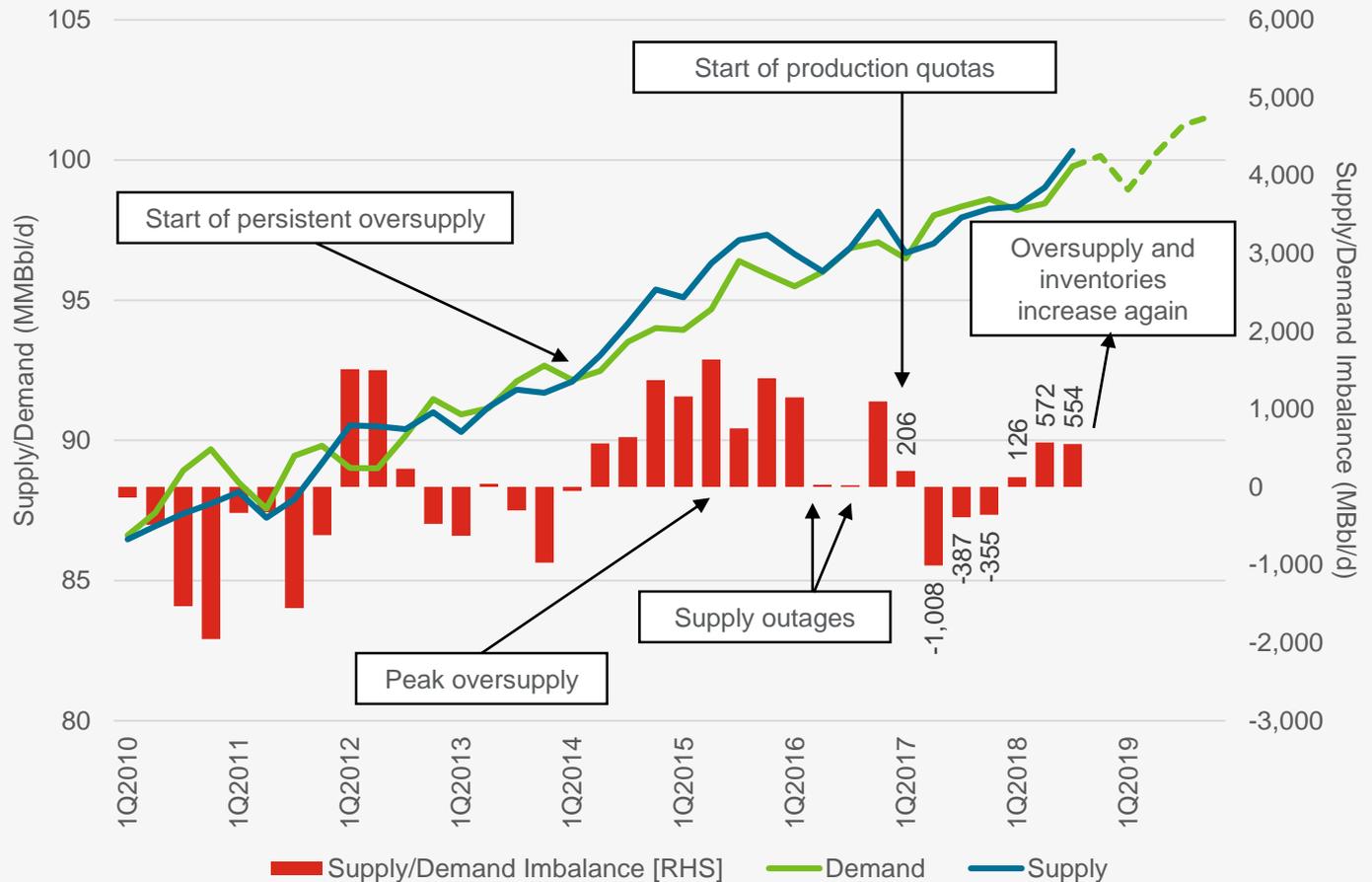
The increased production from OPEC (led by Saudi Arabia) made up for Iranian and Venezuelan declines.

Saudi Arabia has ramped up production to historically high numbers, while Russia also started increasing production at a rapid rate.

These factors with continued US production growth, and increases from Libya and Nigeria, have led to the oversupply.

After Saudi Arabia's assurance that any supply shortages due to Iranian sanctions would be offset and the world would be supplied with adequate crude, the worries of a supply shortage dissipated and focus shifted to fundamentals and supply/demand balance.

CHART 3
Global Supply and Demand



Source: IEA MODS

Possible Impact of Iranian Sanctions

During 2012-15, under previous sanctions, Iranian production averaged 2,836 MBbl/d. When those sanctions were lifted, Iranian production quickly increased by 1 MMBbl/d.

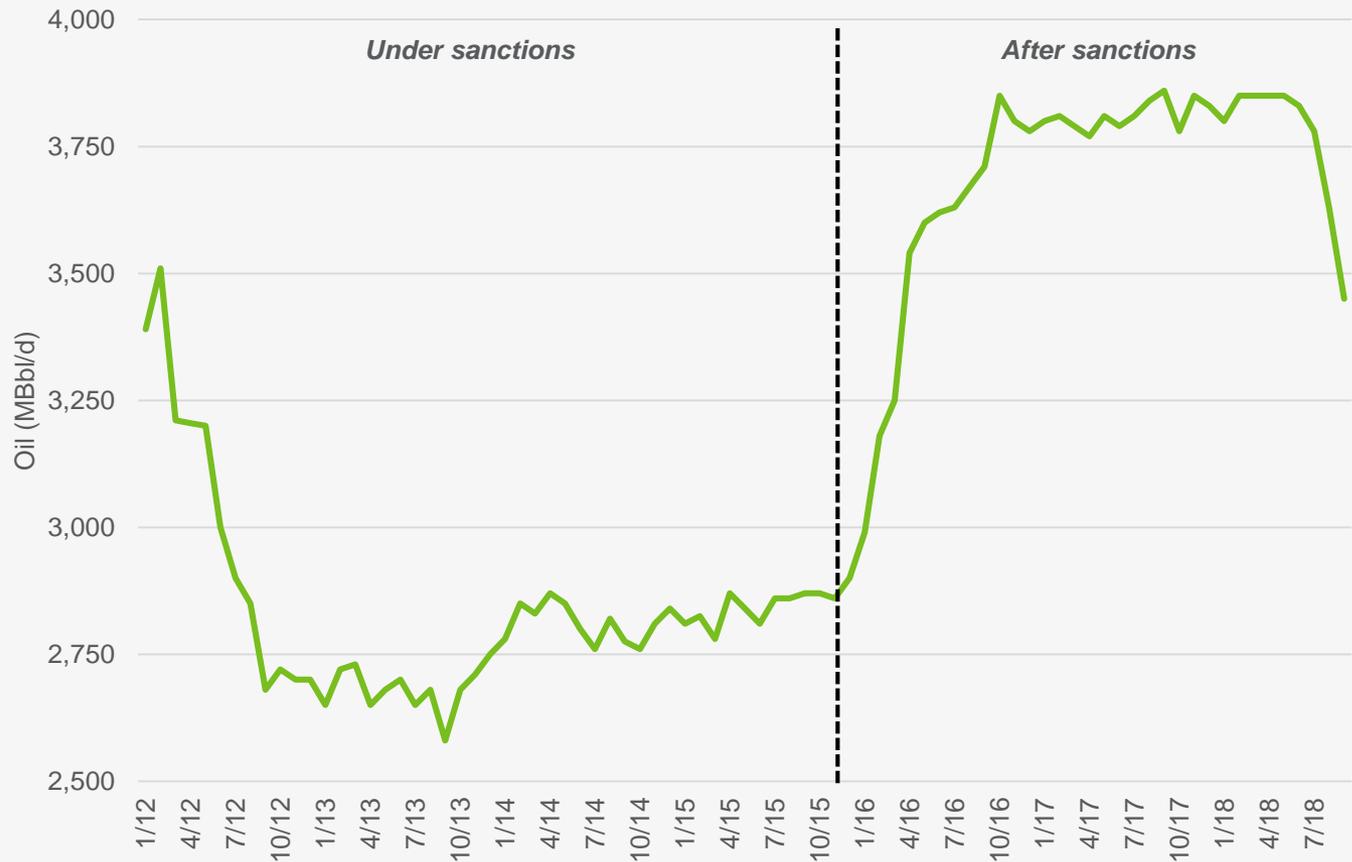
Iranian production and exports have dropped ahead of the official sanctions date of Nov 4, but these declines have been offset by OPEC so far.

For Iranian production to average the levels from the prior sanctions era, a further drop of 794 MBbl/d would be necessary. Although additional declines are expected from Iran, OPEC's has expressed willingness to offset any declines with increases from other countries.

However, China, under attack from US tariffs, will likely turn to Iran to supplement its crude oil import needs. This will also mean that the considerable US crude oil volumes exported to China today will likely have to find a new home.

In addition to China, India, Turkey and some EU countries may continue importing crude from Iran.

CHART 5
Iran Crude Oil Production



Source: IEA MODS

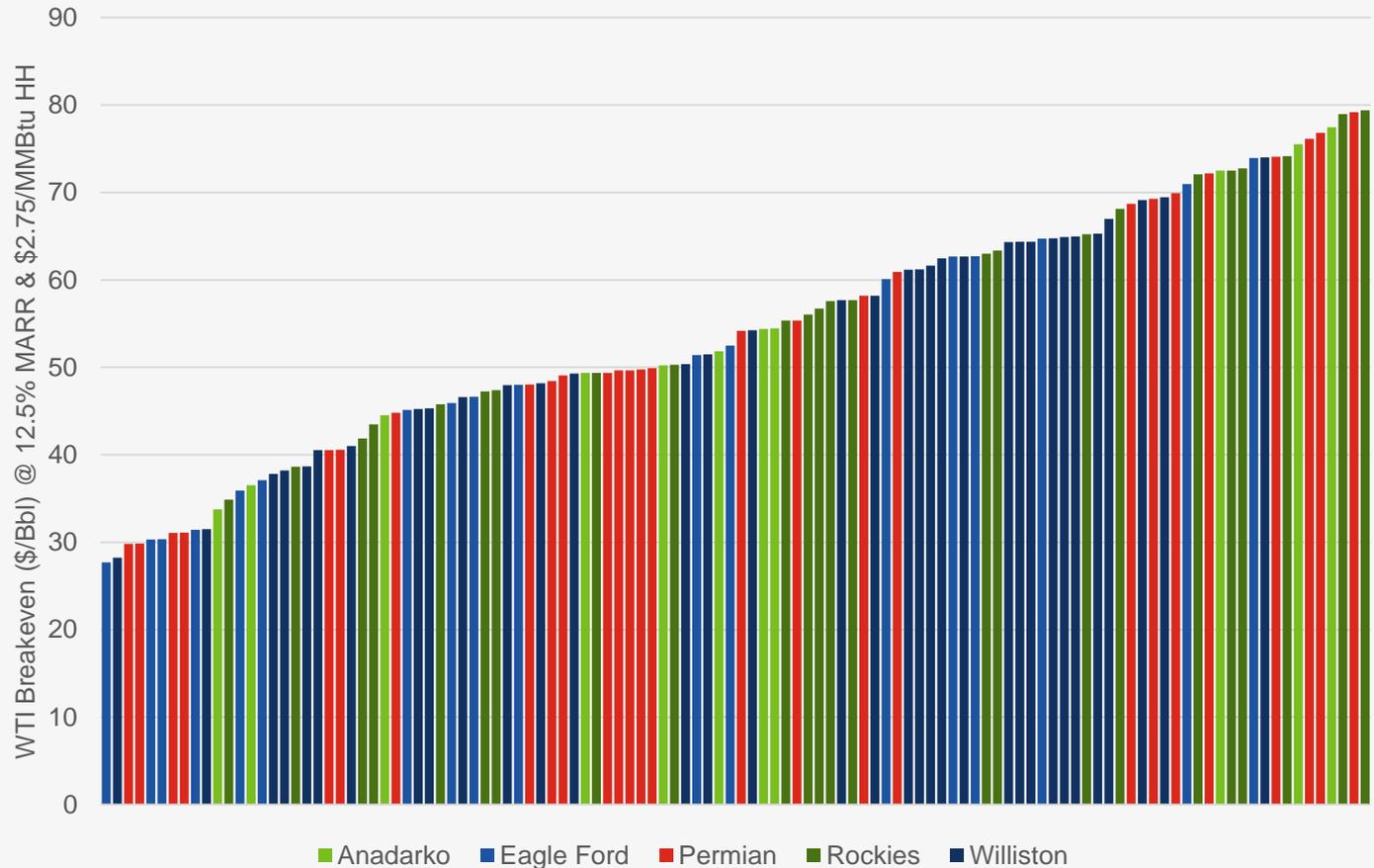
US Oil Breakevens

US production is among the most economic in the world.

The efficiency gains have brought about a very low breakeven cost for shale production.

Although the Permian is grabbing headlines with its top-tier economics and stacked pay, in today's price scenario, there is economic acreage available in all major shale basins in the country.

CHART 7
Crude Oil Breakevens



Source: DI ProdCast

US Production: Growth in Light Crude Oils

US production growth consists of lighter sweet crude oil grades.

These grades are not a great fit for the US refining fleet, which are more complex and tooled for heavier crude oils.

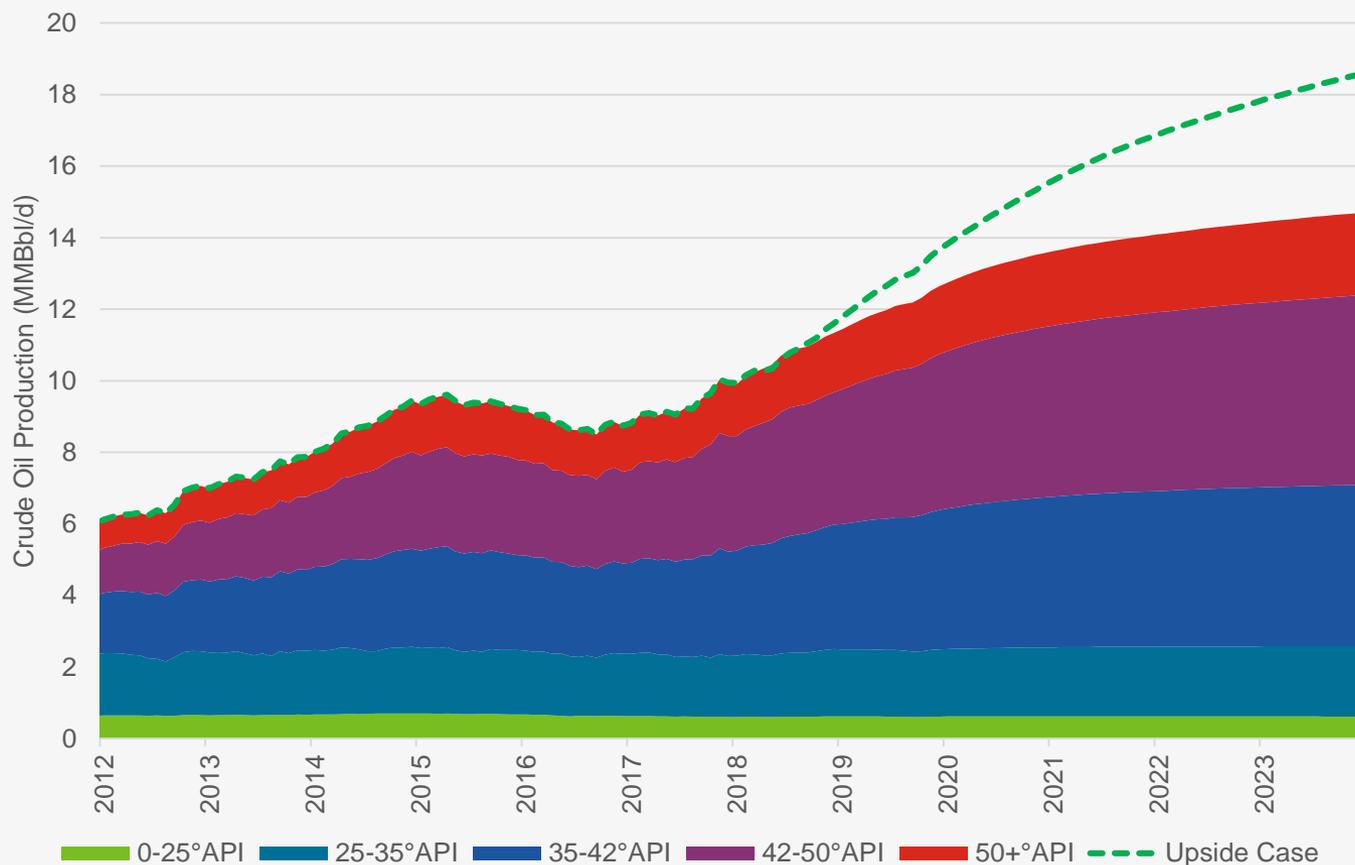
Thus, light crude oils will make their way to the less complex refining infrastructure around the world, while the US continues to import the heavier grades they crave.

Lighter crude oils are currently discounted due to the lack of demand in the US for these volumes.

However, as the IMO sulfur regulations come into effect in 2020, light, sweet grades may demand a premium in refining centers that can't process the heavier ends of the barrel.

CHART 10

US Production by Crude Quality



Source: DI ProdCast

US Oil Exports: Destinations

Monthly average exports recently surpassed 2 MMBbl/d and continues to climb.

To support further increases in exports, new infrastructure is needed.

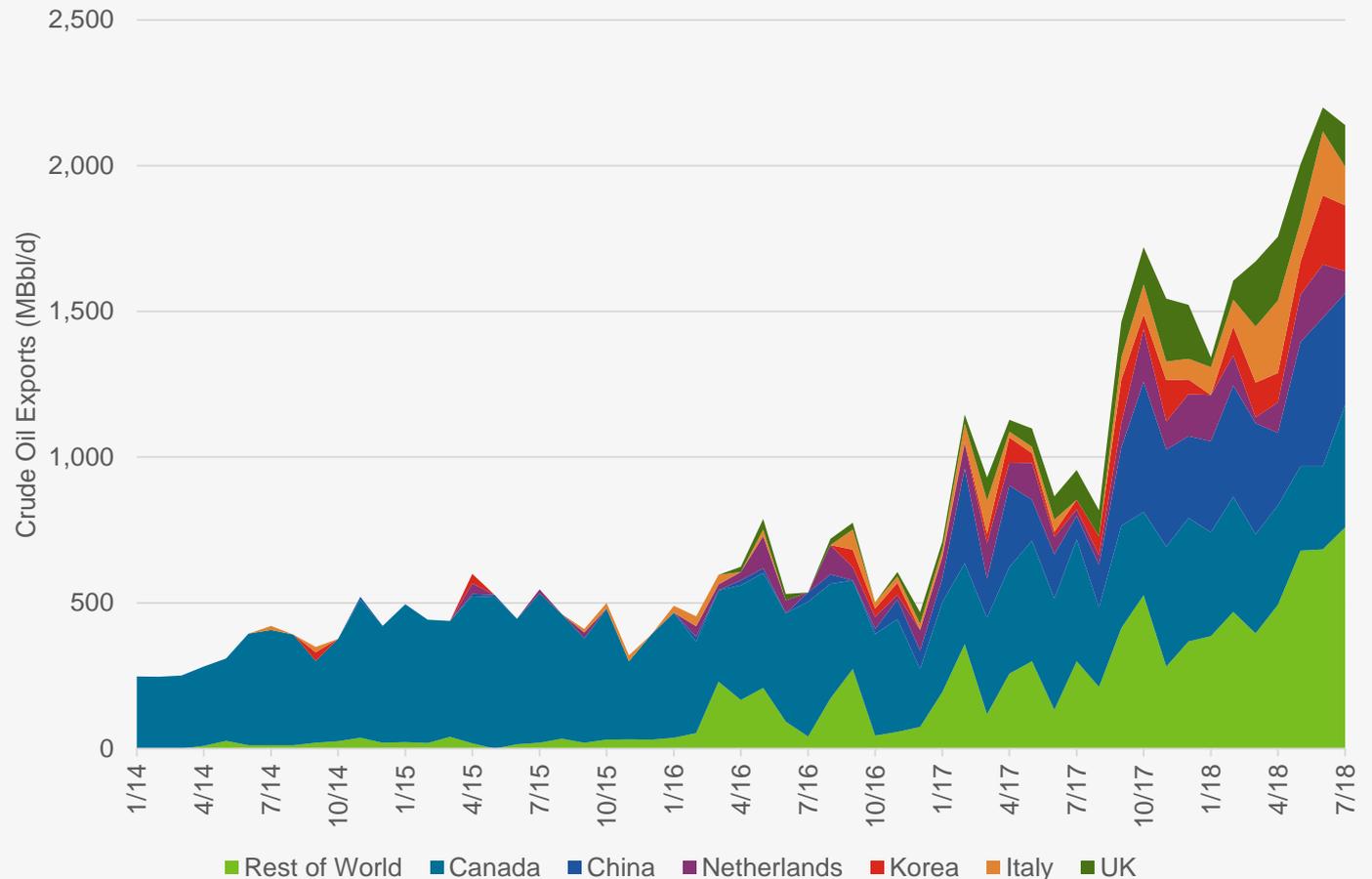
Of the volumes exported to date, the largest volumes have gone to China, the Netherlands, Korea, Italy, and the UK.

Volumes that used to go to Curacao for blending with Venezuelan barrels have slowed down due to Venezuelan production declines.

Chinese exports have declined after reaching ~500 MBbl/d due to trade disputes.

The continuing trade war between US and China puts the US's largest export market at risk moving forward. It would be no surprise to see Iran start to supply these barrels in lieu of the US.

CHART 12
US Oil Exports by Destination



Source: EIA

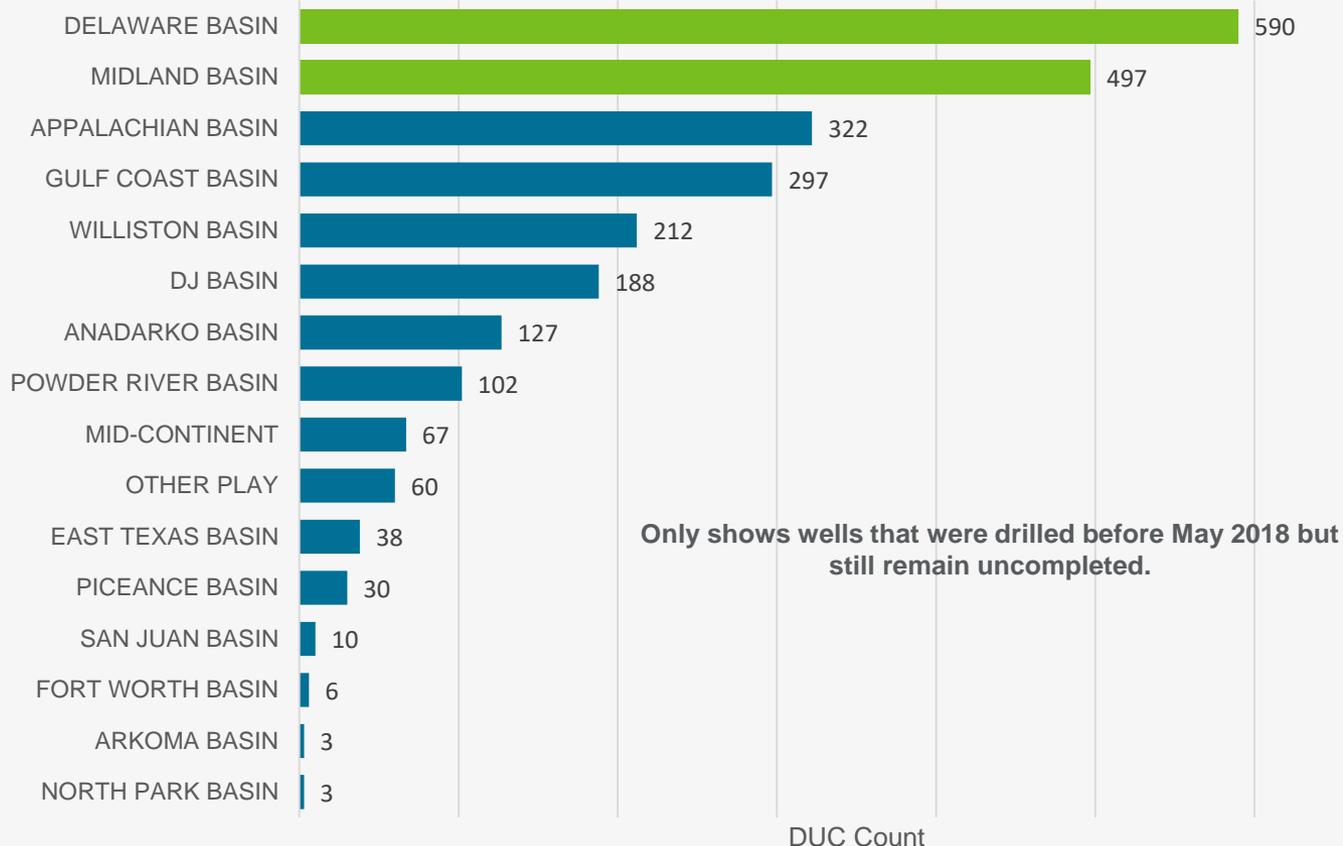
US DUC Count: Building Quickly

Given the high rig count and limited takeaway capacity, the DUC count has climbed steadily over the last several months.

Of those wells that were drilled more than six months ago (May 2018 and earlier), 590 Delaware and 497 Midland wells remain uncompleted to date.

Thus there is a pent-up potential for rapid production increases when additional takeaway capacity comes online.

CHART 14
US DUC Count by Basin



Source: DI Rig Analytics

Short-Term Forecast: OECD Inventories

OECD inventories peaked in 2016.

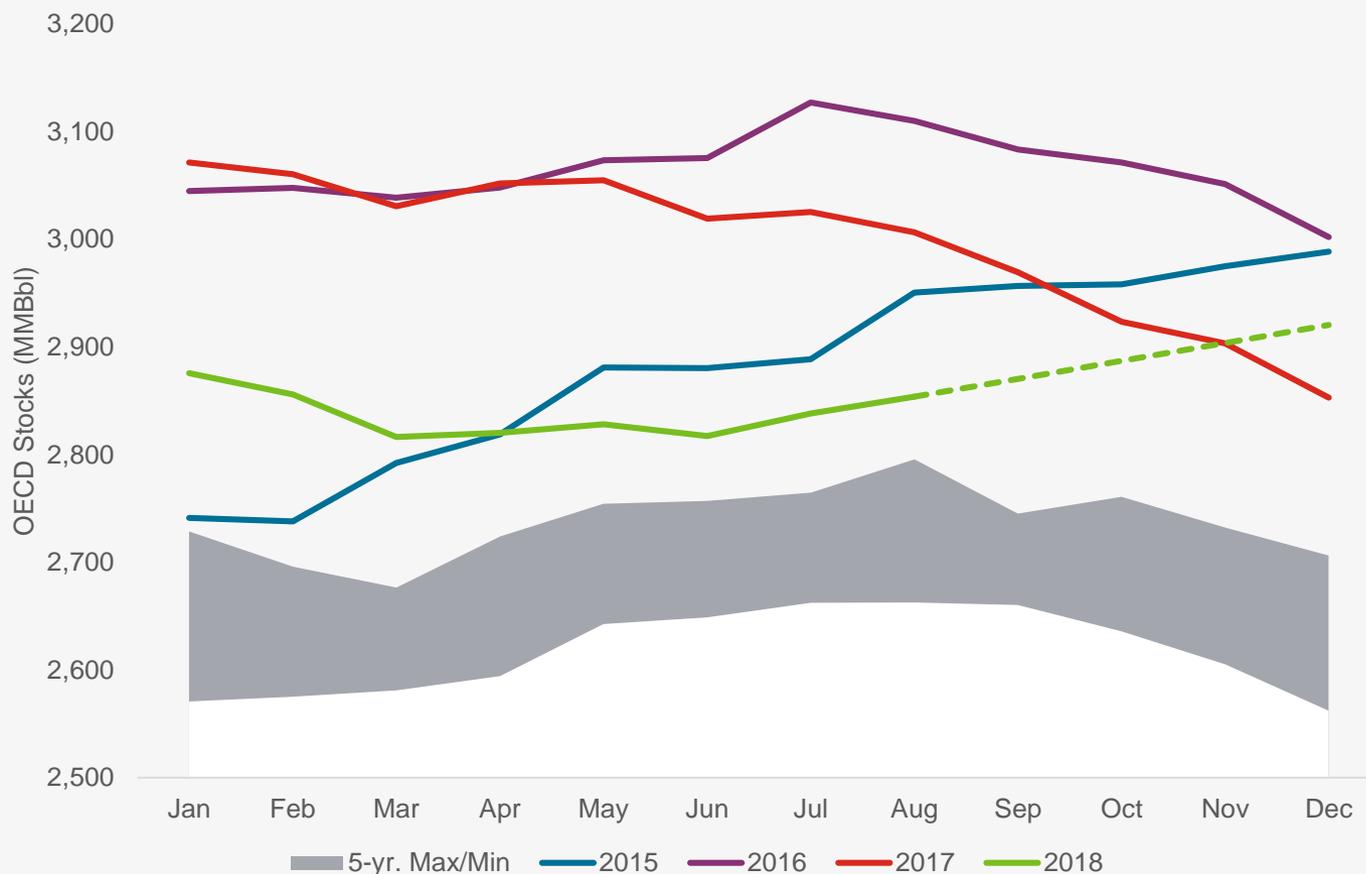
OPEC cuts and Venezuelan declines began to draw down inventories in the latter half of 2017.

Stock levels are now again increasing for the first time since OPEC introduced quotas.

Expect increases to continue due to higher supply and weaker demand.

The shift in the fundamental supply/demand balance and increasing inventory levels has been the driver behind the sharp price correction over the last few weeks.

CHART 15
OECD Stocks



Source: DI ProCast, DI Market Intelligence

Long-Term Forecast: Global Supply and Demand

Based on current IEA demand growth expectations and current supply dynamics, there is risk of sustained oversupply through 2023.

This is due to OPEC production significantly increasing despite Iranian declines.

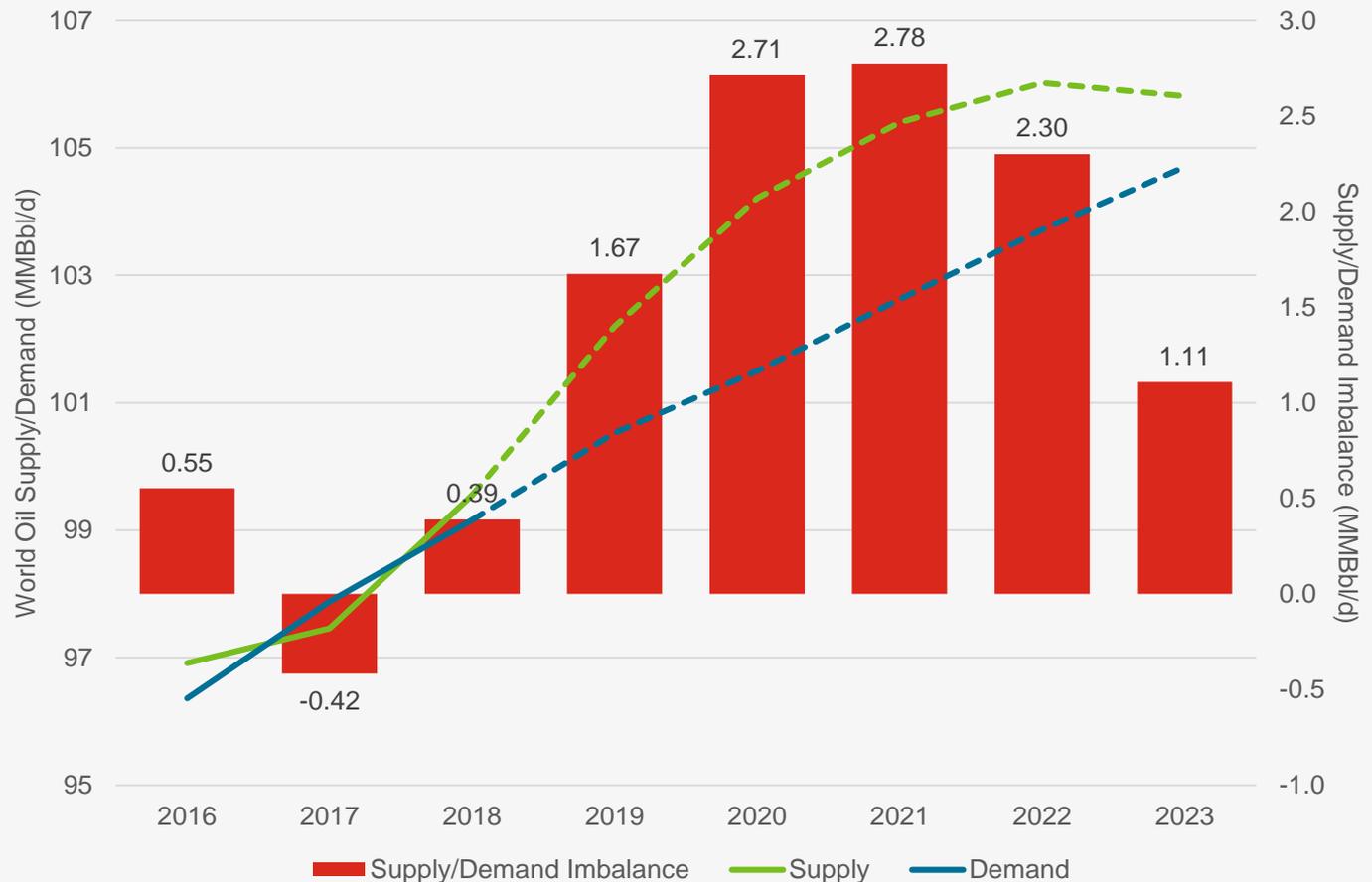
A higher price environment also increases US producers' appetite for ramping up production

Also, rapidly increasing Russian production along with Nigeria and Libya reaching their highest levels in the last couple of years add to the mix.

Current price levels are at risk given the fundamental realities

However, it is clear that the decline profile of shale production will lead to a slowdown in supply in the early 2020s should there not be additional investment made in the long-term supply projects around the world.

CHART 19
Global Supply and Demand



Source: DI ProdCast, IEA MODS, IEA OMR

Contact

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Thank you!

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