Oil & Gas in the Perfect Storm

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March 2020

We could have borrowed from Gabriel Garcia Marquez's *Love in the Time of Cholera* to title this piece, "Oil & Gas in the Time of Coronavirus". But that would only recognize the coronavirus disease of 2019 (COVID-19) and its impact on oil demand and ignore the black swan in the concurrent supply shock posed by Russia's refusal to hyphenate itself with OPEC again in cutting oil production. Broader uncertainties from an election year in the U.S. and growing investor clamor for shale profitability and energy transition initiatives add further, even if now less urgent, uncertainties.

We at ADI instead see the "perfect storm" as a better metaphor for the collective impact from the Russian-Saudi spat and COVID-19. Metaphors and clever writing aside, how should we think about this perfect storm? We try to address this here with our firm's research and consulting work.

Why are we here?

Saudi announced plans to raise production from 9.7 million bpd in March to 12.3 million bpd starting April 2020.

The oil markets – led by Saudi and OPEC through the majors and the shale operators to the traders and analysts – were blindsided by Russia's refusal to cut oil production with OPEC in an year when oil demand growth was expected to decline independent of the coronavirus.

Russia made some noise about OPEC cheating on its commitments but abandoned its three-year alliance with OPEC primarily to harm U.S. shale supply, which has been, as such, constrained by rising investor disenchantment. Larger geopolitical reasons such as U.S. sanctions on Rosneft and Nord Stream 2 also motivated Russia which is today in a stronger economic position relative to the 2014 oil price crash.

Surveying the damage

Unwilling to lose market share and also force Russia to return to negotiations, Saudi announced plans to raise production from 9.7

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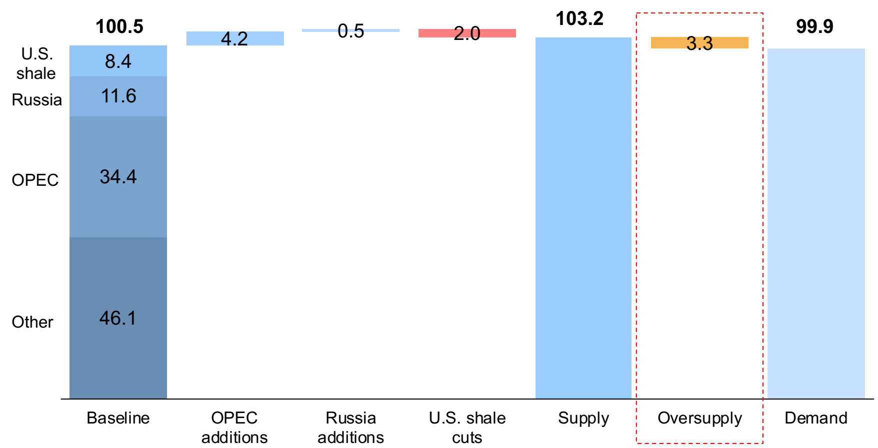
The market in 2020 will be oversupplied by 3-5 million bpd and global inventory will surpass 400 million barrels over the next few months.

million barrels per day (bpd) to 12.3 million bpd starting April 2020. It also doubled down on its bet by offering discounts of $4 to $8 per barrel on its production. In solidarity, the United Arab Emirates will increase supply by 0.8 million bpd.

Russia plans to increase production too but only by 0.5 million bpd as it is limited by sanctions on its oil trading. In addition, incremental supply growth may come from Libya once the outage there ends along with some small production growth in other places.

At this rate, collectively, the market in 2020 will be oversupplied by 3-5 million bpd and global inventory will surpass 400 million barrels over the next few months (see Exhibit 1 for one scenario variant).

Exhibit 1. Global crude oil supply-demand scenario, million bpd.



Oil demand destruction from COVID-19 is highly uncertain and ranges from 0.6 to 1.2 million bpd for all of 2020 with peak demand slump ranging as high as 10 million bpd.

However, two reasons make estimating this supply-demand balance difficult.

1. Oil demand destruction from COVID-19 is highly uncertain and today ranges from 0.6 to 1.2 million bpd for all of 2020. First quarter oil demand alone likely fell more than 3.5 million bpd led by lockdowns in China that are spreading rapidly to U.S. and Europe. Peak demand slump estimates range even more wildly from 3.5 million bpd to as much as 10 million bpd likely peaking in the second quarter of 2020.

2. Operators will cut production as oil prices plumb new depths – Brent was below $25 a barrel on March 18 and WTI barely at $20

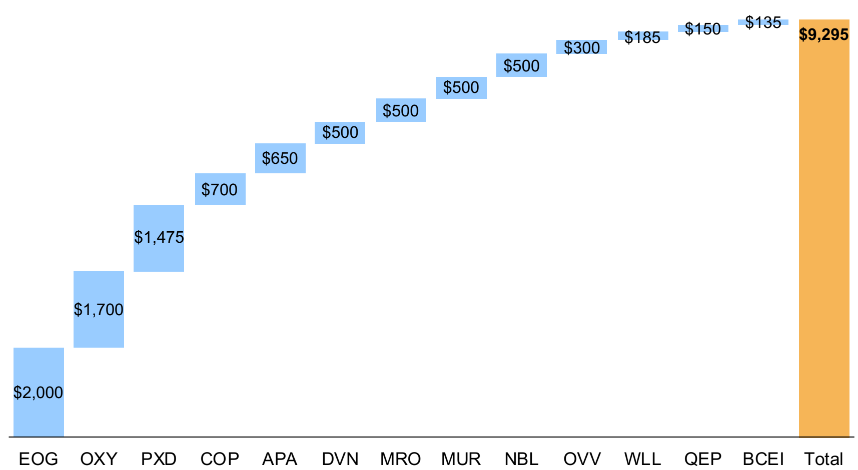
Shale will need to cut deeply – 2 million bpd or so through 2020 – to stop oil prices from staying near marginal cash costs.

Acknowledging role of swing producers, U.S. operators are cutting capex by 25% to 35%.

We try to forecast what happens next through three scenarios.

– but the extent is uncertain. But we do know that most of those supply cuts will likely happen in the U.S. Acknowledging their role as swing producers, publicly-listed shale operators have started cutting capital spending with most reductions averaging 25% to 35% (see Exhibit 2).

Exhibit 2. Capex cuts by shale players in 1Q 2020, USD million.



Worryingly enough, corresponding production cuts are small for those who have disclosed those details suggesting that operators may be trimming drilling but will continue completing their well inventories limiting the supply impact. The last oil price crash was followed by supply cuts that exceeded 1 million bpd over 15 months beginning in late 2014. The shale industry will need to deliver much deeper cuts this time – think around 2 million bpd through 2020 as opposed to growth forecasts of 0.6 to 0.9 million bpd – in order to keep oil prices from falling and staying at marginal cash costs.

What happens now?

ADI has developed three scenarios (see Exhibit 3 and 4) of what may happen going forward.

"Recession" is our most pessimistic outlook where the economy slips into a recession and oil prices test marginal cash costs of $10 to $15.

"Reconciliation" has oil prices in the low $30s in 2020 to low- to mid-$40s by 2022.

"Rebound" is our most optimistic scenario where oil prices attain high $30s in 2020 and rise to $45 to $55 in 2022.

Exhibit 3. ADI crude oil price scenario descriptions.

	I RECESSION *Protracted oil demand slump as economy slips into a recession*	II RECONCILIATION *Pain lasts thru 2Q 2020 driving Russia - OPEC reconciliation*	III REBOUND *COVID-19 resolves quickly driving oil demand rebound*
BRENT OIL PRICE, $/B			
2020	$10 - $15	$30 - $35	$35 - $40
2021	$15 - $20	$35 - $40	$40 - $45
2022	$20 - $25	$40 - $45	$45 - $55
OIL DEMAND			
COVID-19	Expands to a global lockdown thru summer	Limited further precautions and travel with limited improvement	Limited regional lockdowns and virus blows over thru spring
Govt. stimuli	Fails to avoid a recession	Barely avoids a recession	Helps with economic rebound
OIL SUPPLY			
Balance	Oversupply of 4+ mm bpd with inventory >500 mm bbl	Oversupply of 1–2 mm bpd with inventory of 500 mm bbl	Oversupply of <1 mm bpd with inventory of <300 mm bbl
Russia-OPEC deal	Irrelevant	Occurs in the summer	Occurs in early 2Q 2020
Shale supply	Drops 2.5+ mm bpd	Drops 1 mm bpd	Drops <0.5 mm bpd

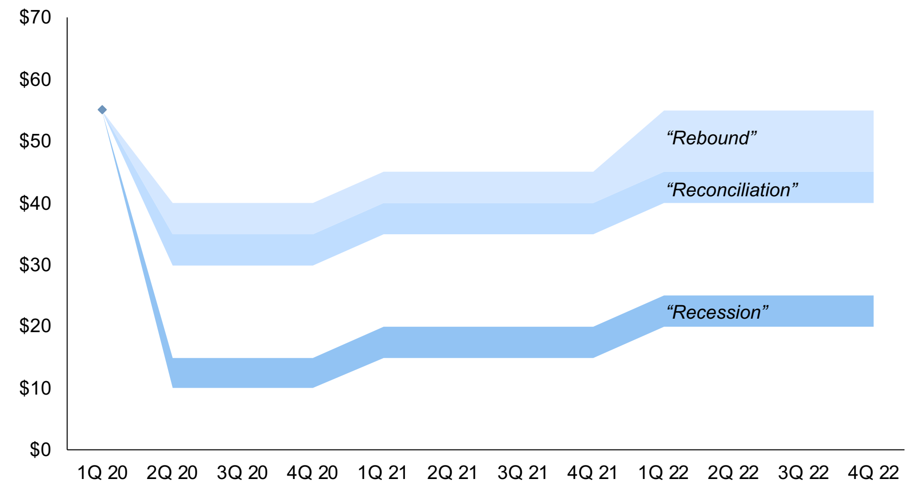
1. **"Recession" is our most pessimistic outlook where oil demand suffers a protracted slump as the global economy slips into a recession as COVID-19 lockdowns spread and persist through the summer of 2020. Oil prices will test new lows and stay close to the marginal cash cost of $10 to $15 a barrel through most of 2020.** They will rise slowly to $25 a barrel in 2022, just barely above the marginal cash costs. There will most likely be government stimuli as well as a deal between Russia and OPEC but they will be irrelevant as the damage will be too severe.

2. **"Reconciliation" is where we forecast a moderate level of pessimism around the global economy, COVID-19, and oil prices, which hover in the low $30s a barrel in 2020 and rise up to low- to mid-$40s by 2022.** In this world, we stay at the current or slightly expanded levels of regional lockdowns, Russia and OPEC don't do a deal until June, and government stimuli help avoid a recession but the world slips into an economic slowdown.

3. **"Rebound" is our most optimistic scenario, given the current situation, where oil prices attain high $30s a barrel in 2020 and rise up to $45 to $55 a barrel in 2022.** A lot of things need to come together for this scenario to pass. The current set of lockdowns do not spread and they and COVID-19 blow over

through the spring, Russia and OPEC come to a deal in the next month or two, and government stimuli prove to be highly effective and support an economic rebound. Even so, the aftershocks from COVID-19 and the Russia-OPEC spat linger through larger oil inventories and lead to low oil prices in the near- to mid-term.

Exhibit 4. ADI crude oil price scenarios, Brent, USD per barrel.



So what?

Several implications recur across our three scenarios, and those could serve as important guidance for the oil and gas industry.

None of these scenarios will come to pass as forecasted. But a number of implications recur across our three scenarios, and the oil and gas industry may consider paying attention to them.

1. Oil and gas companies should prepare for an average oil price of $20 to $30 a barrel for 2020. Modest improvements will come in 2021 with recovery only in 2022.

2. There is limited upside for oil prices through most of 2020 unless Russia and OPEC agree to a deal within the next several weeks. As Saudi Arabia ramps up production, the global oil inventory will surge and any price rise will have to wait until those inventories are depleted. Further, nearly two-thirds of U.S. shale production has been hedged at ~$55 a barrel for 2020 and is unlikely to fall at current prices.

3. Russia and Saudi Arabia both have sufficient financial resources to weather a protracted period of low oil prices. This limits the probability of a deal in the near term.

4. U.S. shale production will fall – only by how much is up for debate. Even if hedges protect U.S. shale operators through 2020, sharp cuts will come in 2021. Unlike the oil price crash of 2014-16, there is limited private equity appetite to buy distressed operators. As a result, operators that are small or hold undifferentiated acreage will face significant distress.

5. North American natural gas producers will be an unlikely beneficiary of this oil price crash. As light tight oil supply falls so will associated gas production, which has driven over 50% of gas supply growth in North America in recent years. This reduction in the growth of gas supply should help Henry Hub pricing.

6. However, some of this will be limited by caps on natural gas demand growth that will come from delays to the second wave of LNG export projects in the U.S.

7. Refiners' have gone from starry dreams of a "golden year" thanks to IMO 2020 to a nightmare scenario of cutting refinery runs as refined product demand grinds to a crushing halt due to COVID-19 lockdowns around the world. Downstream companies with complex refineries, strong linkages to export markets, mature commercial trading teams, and integrated petrochemical assets will weather through these times but other refiners will struggle.

8. Midstream companies will face challenges with product exports, in particular, light tight oil, which will have to be discounted extensively to find overseas buyers. Support for existing and new capital projects will, of course, decline. Finally, we anticipate investor flight to quality based on contract portfolios.

9. Traders and majors with strong commercial organizations will likely benefit across at least two scenarios – "reconciliation" and "rebound" – with limited prospects in the "recession" scenario.

10. Shipping and logistics players with tankers, terminals, product storage tanks, and blending capabilities may benefit in this environment as a contango market drives interest and demand for storage.

ADI is now detailing these scenarios further for granular impacts to shale, offshore, NGLs, gas processing, midstream, LNG, refining, and petchem. Contact us at info@adi-analytics.com to learn more.

Our research and consulting teams at ADI recognize that these are difficult times for the oil and gas industry, and its various segments as they grapple with a broad range of market, economic, and policy uncertainties.

As a result, we are developing in-depth scenarios for each of the various oil and gas industry segments including upstream (onshore shale, onshore conventional, and offshore), midstream (NGLs and gas processing), LNG (small- and large-scale), refining, and petrochemicals and plastics.

These scenarios model various aspects of COVID-19, the oil price crash, and government stimuli and forecast in granular detail price, margin, and competitive implications, risks and challenges, and opportunities. Contact us at info@adi-analytics.com to learn more about ADI's "Oil & Gas in the Perfect Storm" scenarios.

Oil & Gas in the Perfect Storm: Navigating COVID-19 and the Price Crash

Multi-Client Study Prospectus

April 2020

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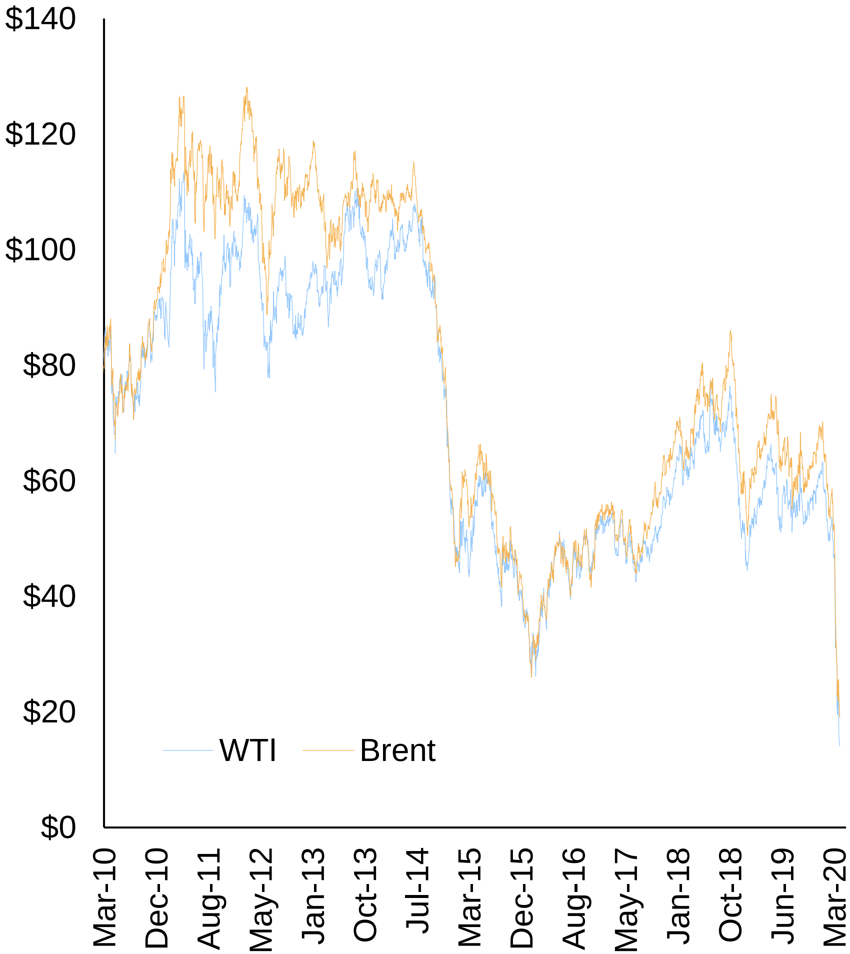
Oil and gas after the price crash is in uncharted waters and the entire industry is grappling with several key questions

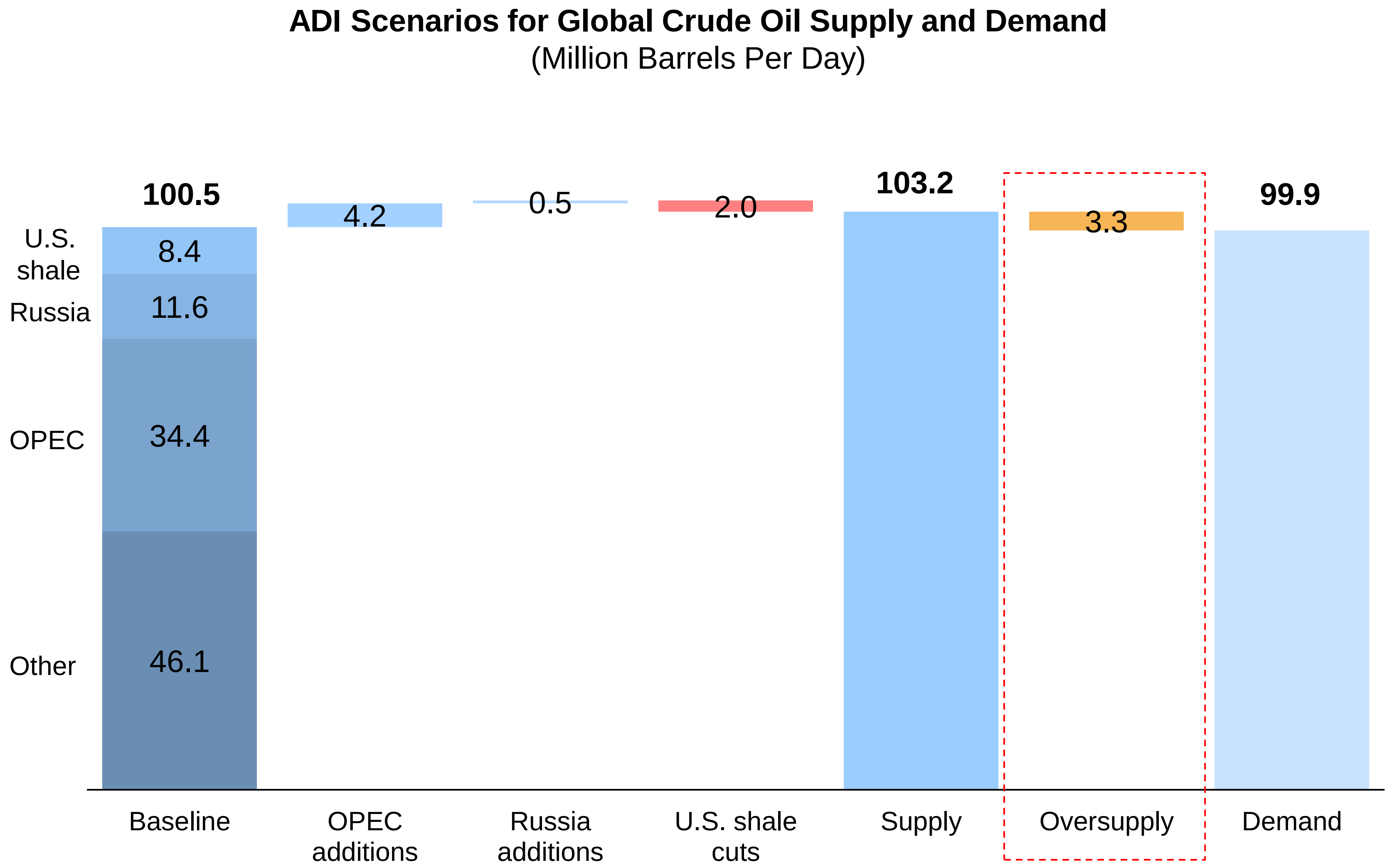
Crude Oil Prices
(U.S. Dollar Per Barrel)



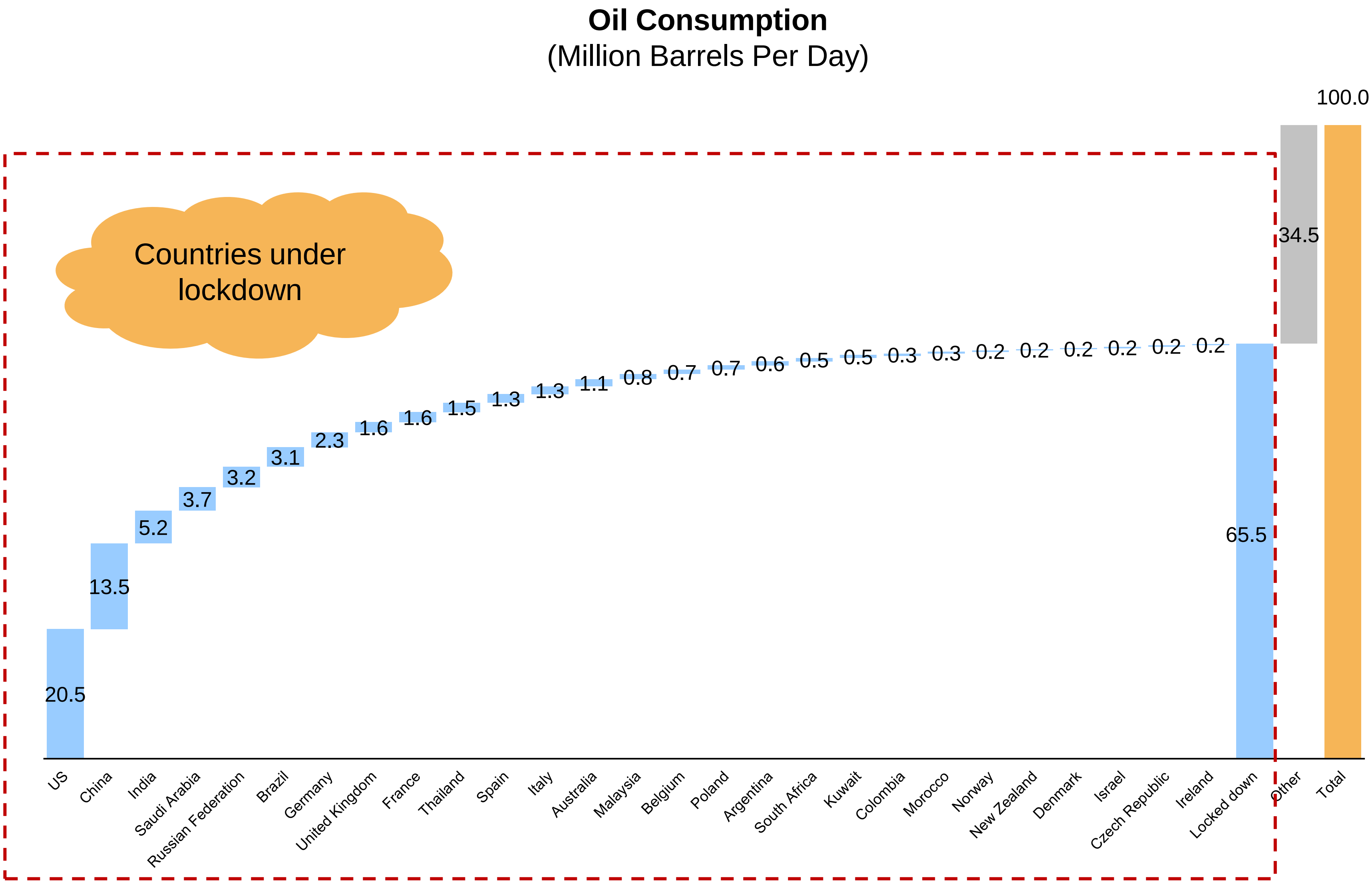
Key Questions

- What is the outlook for oil prices now?
- Will there be a resolution between Russia and Saudi Arabia? How will U.S. intervene?
- Which shale plays will be disrupted? Why?
- Is there a role for offshore in the near future?
- How will midstream and NGLs be impacted?
- What options do refiners have going forward?
- Where will LNG export projects make money?
- Which oilfield service, EPC, OEM, and suppliers survive in this environment?
- Which oil and gas operators are better positioned to survive and who will struggle?
- When will oil demand recover? How soon?
- What is CAPEX and OPEX forecast now?

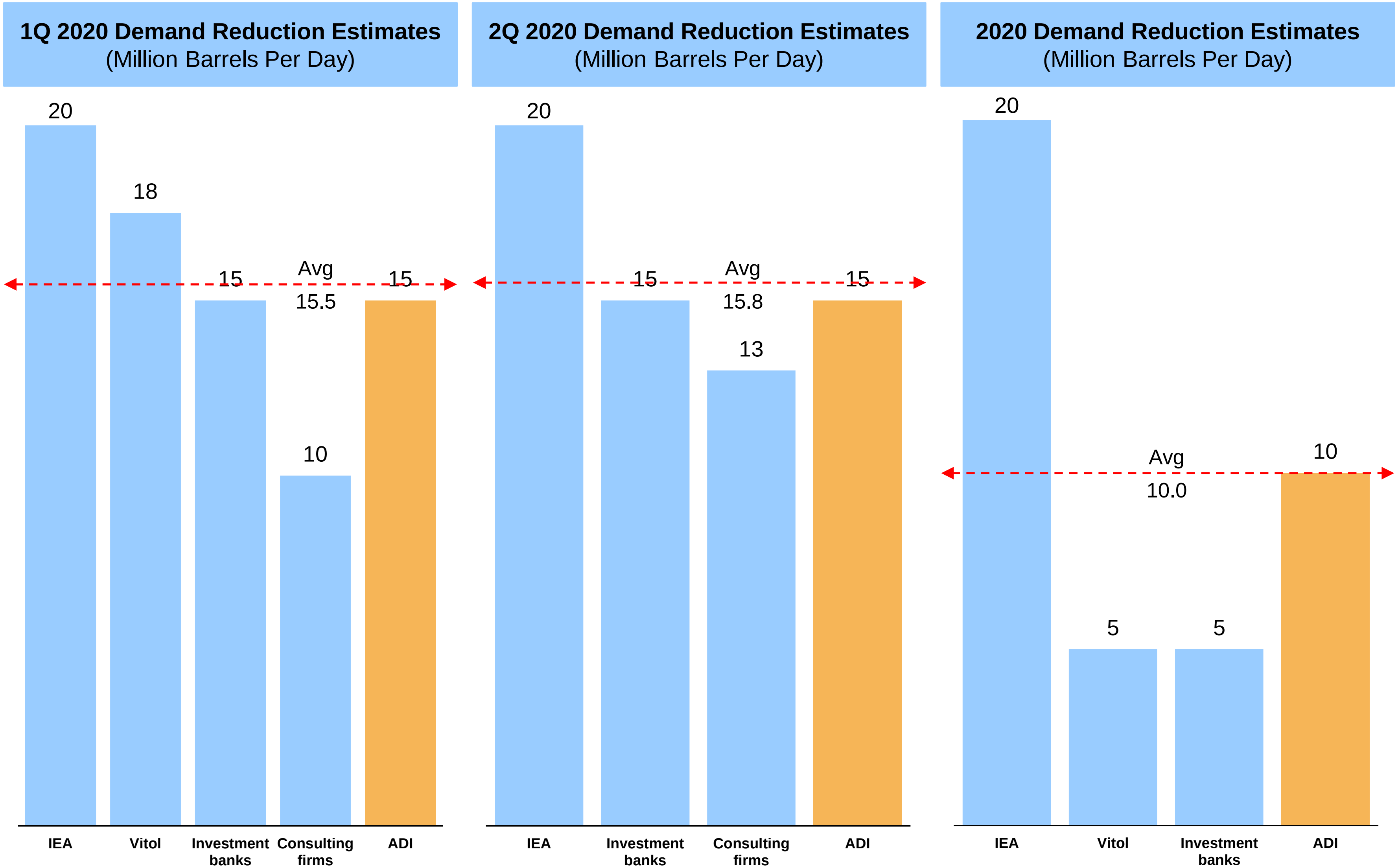
At the same time, ADI anticipates the oil and gas market oversupplied with the extent varying in multiple scenarios



COVID-19 has led to lockdowns in nearly 30 countries collectively impacting two-thirds of oil consumption



Collectively, ADI estimates COVID-19 leading to dramatic oil demand destruction in 1H 2020 and for the entire year as well



ADI research teams are working on a new study to assess impacts of oil price crash and COVID-19 on oil & gas industry

	Research Goals	Select Insights
1	Conduct in-depth review of 2020 oil price crash and COVID-19 on oil & gas industry	▪ Crude oil supply / demand balances ▪ Breakeven prices and marginal costs ▪ Geopolitical drivers and developments ▪ COVID-19 demand destruction impacts
2	Develop scenario planning-based forecasts for oil & gas industry through 2025	▪ Three crude oil price scenarios with … ▪ … Supply/demand balances for each ▪ Signposts and milestones for scenarios
3	Build granular impact assessments for upstream, midstream, refining, and petchem segments and sub-segments	▪ Upstream (conventional, shale, offshore) ▪ Midstream (gas proc, pipelines, NGL, LNG) ▪ Refining ▪ Petrochemicals
4	Synthesize strategic implications for oil & gas operators, suppliers, investors, and other stakeholders	▪ Implications by segment for each scenario ▪ Capital and operating spend impacts ▪ Likely winners and losers ▪ Policy and other implications

Going forward, ADI sees three likely scenarios for oil & gas …

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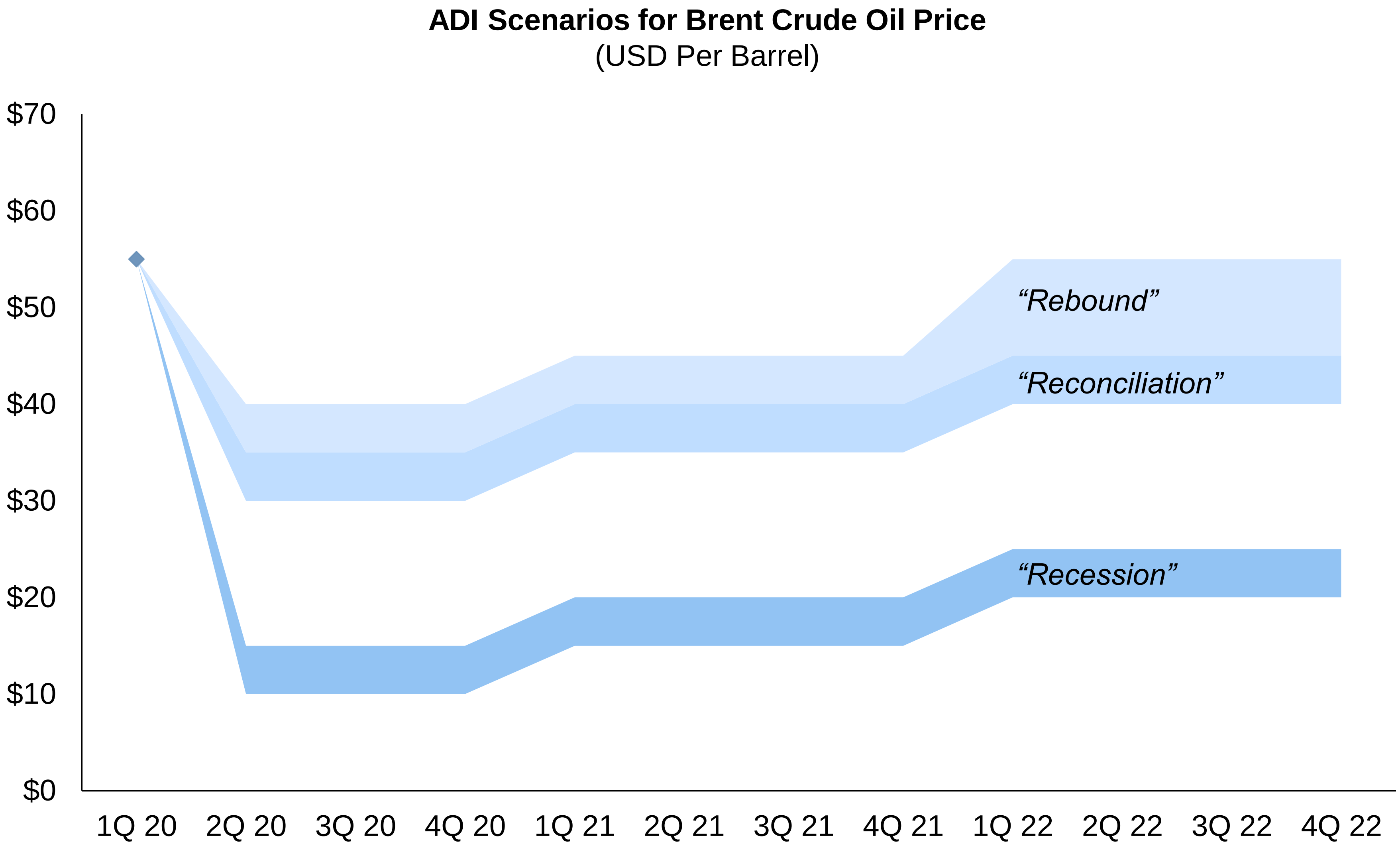
… Each offering a distinct set of oil price implications



The new ADI report's <u>Table of Contents</u> shows the in-depth coverage of issues as oil & gas navigates this "perfect storm"

The study -- available early April 2020 -- includes a report, underlying data, and a review call with client teams

	Deliverable	Format
1	Executive summary	Slide deck
2	Final report	Slide deck
3	Market data and analytics	Spreadsheet
4	Report review workshop	Interactive conference call

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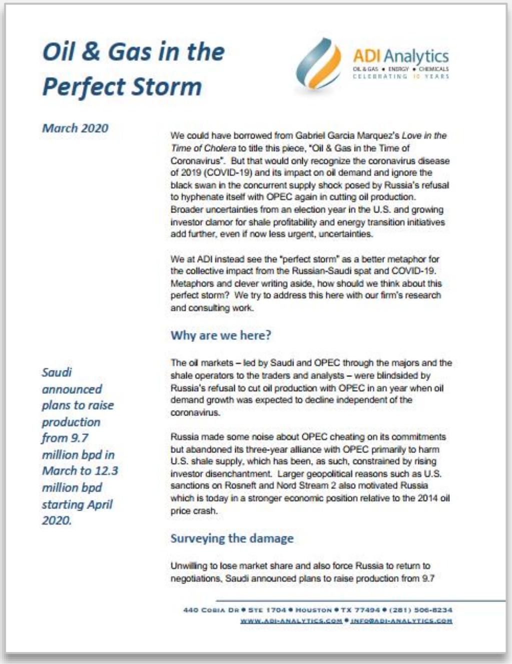
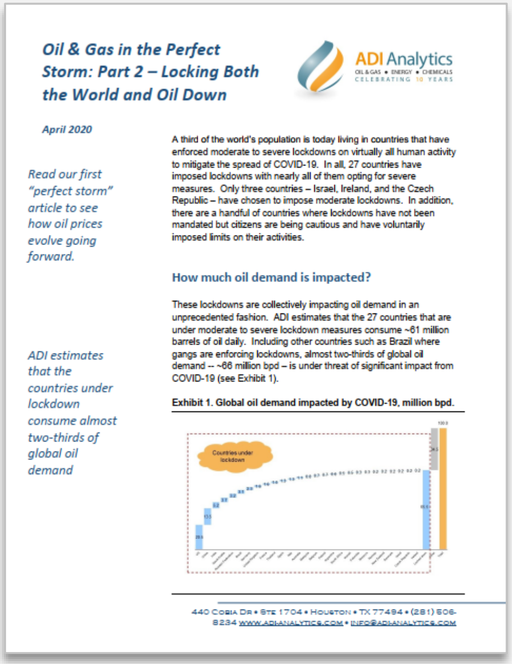
Meanwhile, please download articles based on research for this study from the ADI team

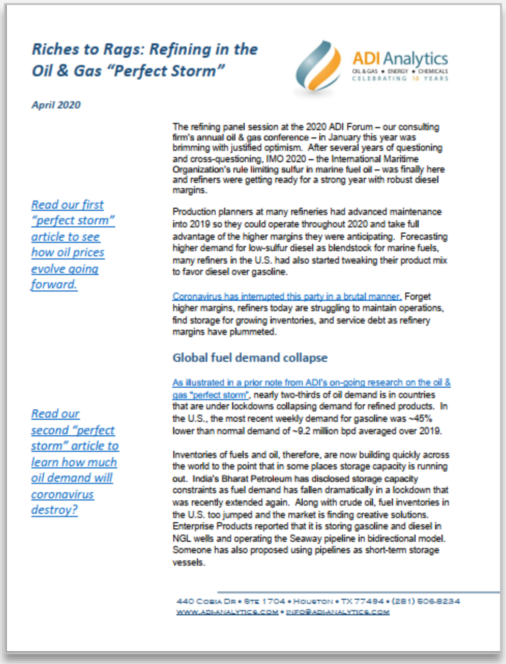
Oil & Gas in the Perfect Storm



Locking Both the World and Oil Down



Riches to Rags: Downstream O&G in Perfect Storm



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