Oil outlook 2021
Searching for a new equilibrium

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REUTERS
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Epidemic and lockdowns cut consumption by -20mn b/d (-20%) in Apr.
Oil producers were slow to respond to fall in consumption. Saudi Arabia and Russia conduct volume war when oil demand already declining.
Global market oversupplied every month between Jan and May
Cumulative overproduction of around 1.25 billion barrels

Global production-consumption balance, 2014-2020
million b/d, overproduction (+) and underproduction (-)

Source: U.S. Energy Information Administration  @JKempEnergy
Brent crude prices slumped to lowest level since 1999 in real terms. Enforced output reduction by U.S. shale producers and OPEC.
Brent prices moved to deep contango reflecting record stock build
Intensified pressure for immediate output cuts, incentivized storage

Shape of the futures price curve in Brent crude
Contango (-) or backwardation (+) from months 1 to 7 (US$/bbl)

Price difference Brent month 1 and month 7 (U.S.$/bbl)  
Source: ICE Futures, @JKempEnergy
Contango (-) or backwardation (+)
U.S. oil and gas drilling tumbled in response to lower prices
Active rig count declines -70% between Jan and mid-Aug

Number of rigs drilling for oil and gas in United States
weekly, 1990-2020

Source: Baker Hughes
U.S. oil production fell at fastest rate on record
Drilling slowdown, completion slowdown, wells choked back or shut-in

U.S. crude oil production, 1920-2020
monthly, million b/d

Source: U.S. Energy Information Administration
@JKempEnergy
U.S. oil production pivots from expansion to contraction
From +1.1 million b/d year-on-year growth in Feb to -2.1 million b/d in May

U.S. crude oil production, 2000-2020
Increase compared with prior year, monthly and 3-mth average, 000 b/d

Source: U.S. Energy Information Administration
@JKeppEnergy
Oil price slump forces output cuts from all three top producers
Pressure from prices forces shale output cuts and new OPEC+ agreement

Global crude oil output by top three producers, 2002-2020
million b/d, monthly

United States
Russia
Saudi Arabia

Source: Joint Organisations Data Initiative
@JKempEnergy
Volume war had been launched just as pandemic intensified. The worst possible combination of rising output and falling consumption.
Post-shock adaptation
Searching for a new sustainable balance between production and consumption

Market rebalancing process has five inter-related elements:

➢ Closer balance between production and consumption
➢ Normalisation of crude and product stocks
➢ Forward price curve
➢ Sustainable flat price
➢ Sustainable investment

*Partial progress on each element but the adaptation process still has way to run*
Criterion 1: Closer balance between production and consumption
Production surplus eliminated, at or below consumption through rest of 2020/21

Global oil consumption and production, 2018-2021
million barrels per day, forecast from Aug 2020

Source: U.S. Energy Information Administration  @JKempEnergy
Criterion 2: Normalisation of crude and product stocks
Production deficit to reverse earlier accumulation of inventories

Global production-consumption balance, 2014-2020
million b/d, overproduction (+) and underproduction (-)
forecasts from Aug 2020

Source: U.S. Energy Information Administration
Build up of petroleum inventories halved by end of 2020
Crude market was tight at start of Jan 2020 so could absorb some extra stocks
Criterion 3: Forward price curve
From deep contango to level or even backwardation

Brent calendar spread from month 1 to month 7
Percentiles 1990-2020, US$ per barrel
Contango (-) or backwardation (+)

Source: ICE Futures Europe
Criterion 4: Sustainable flat price
Real prices are still well below long-term averages for last few cycles

![Real oil prices graph](image)

Source: ICE Futures Europe, U.S. Bureau of Labor Statistics

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Criterion 5: Sustainable investment

U.S. oil rig count started to increase since Aug in response to earlier rise in prices

Number of rigs drilling for oil in the United States
Change from prior week and four-week average

Source: Baker Hughes
@JKempEnergy
U.S. oil production expected to remain broadly stable
Crude output around or just below 11 million b/d before climbing in late 2021

@JKempEnergy
U.S. output has already absorbed shock of epidemic and volume war
Shale production has adapted to reduced consumption via price forced adjustment
Global oil and gas drilling has slumped
Active rig count down by -40% from recent cyclical peak in Jul 2019

Rigs drilling for oil and gas outside North America

Source: Baker Hughes
Global exploration and production downturn deepest for decades
More drilling needed just to stabilize output, implying higher cash flow and prices

Rigs drilling for oil and gas outside North America
monthly, percent change from prior year

Source: Baker Hughes
Critical issues for the oil market in 2021

Major sources of uncertainty

Global pandemic evolution
- Vaccine deployment timeline
- Effectiveness and normalization
- Other control measures
- International aviation recovery
- Permanent behavior change

Global business cycle
- Pandemic evolution
- Cyclical unemployment
- Fiscal and monetary responses
- Structural unemployment

U.S. energy diplomacy
- Iran nuclear accord and crude exports
- Venezuela sanctions and enforcement
- Saudi Arabia relationship
- OPEC coordination

U.S./China relations
- Continuity or change
- Destabilization or restabilization
- Economic confrontation
- Energy flows
- Global investment environment

U.S. elections
- Trump or Biden
- Senate majority
- Supreme Court control

U.S. domestic energy production
- Federal government policy
- Investment flows and capital discipline
- Drilling programs and price sensitivity
Three key players: United States, Russia and Saudi Arabia
Learning to live together? Coordination or cohabitation? Menage à trois?

Two key relationships define the oil market
❖ U.S. shale with Saudi Arabia and Russia
❖ Russia and Saudi Arabia with each other

U.S. shale production – the boom bust cycle
❖ Output growth much faster than global consumption
❖ Captured 66-75% of incremental global consumption 2009-2019
❖ Market share doubled from 7-11% in 2009 to 15-19% in 2019
❖ Shale growth trajectory no longer sustainable

Saudi Arabia and Russia – struggling to agree
❖ Divided over response to shale
❖ Protect prices or defend market share
❖ Disagreement was at heart of second volume war
❖ Target of roughly $50 (Russia) or $70 (Saudi Arabia)?

U.S. shale revealed as marginal price setter
❖ Rapid expansion >$65-70
❖ Contraction <$50-55
❖ Disagreements will re-emerge when oil prices rise above $50