



The Oil Downturn

Implications for the Energy Transition

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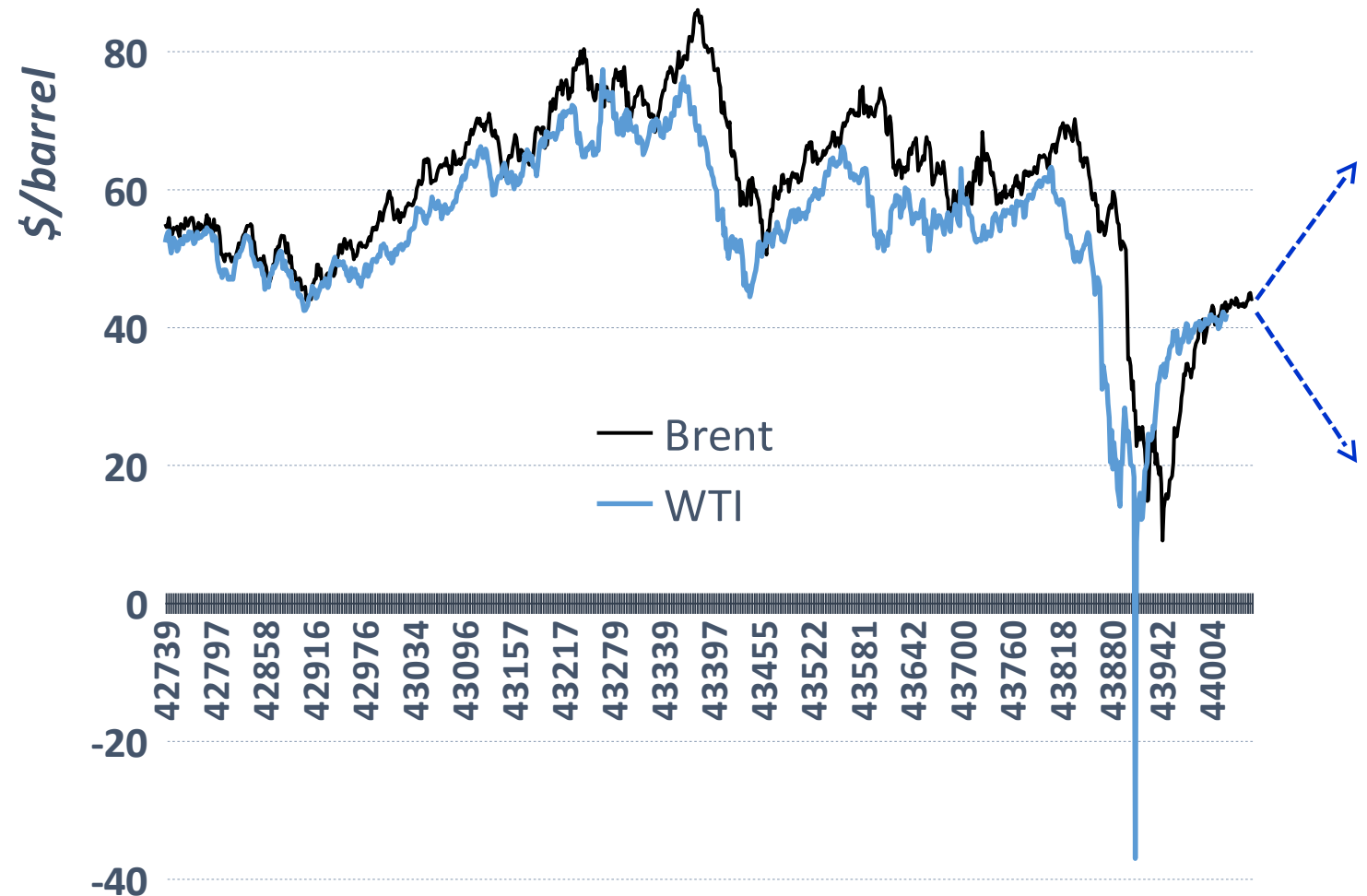
Introductory presentation outline

- Recent oil price trends
- Major drivers of market
- Price prospects for the future
- Energy mix history & future



Recent price developments

- Downside
 - *More COVID waves*
 - *Trade disputes*
 - *OPEC+ raises supply*
 - *Shale & non-OPEC resilience and comeback*
- Upside
 - *COVID contained*
 - *V-shaped economic rebound*
 - *Geopolitical supply disruptions*
 - *OPEC+ cuts maintained*
 - *Lasting non-OPEC shut-ins*



Source: US Energy Information Administration (EIA) Statistics



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Recent price developments

- Downside

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- Upside

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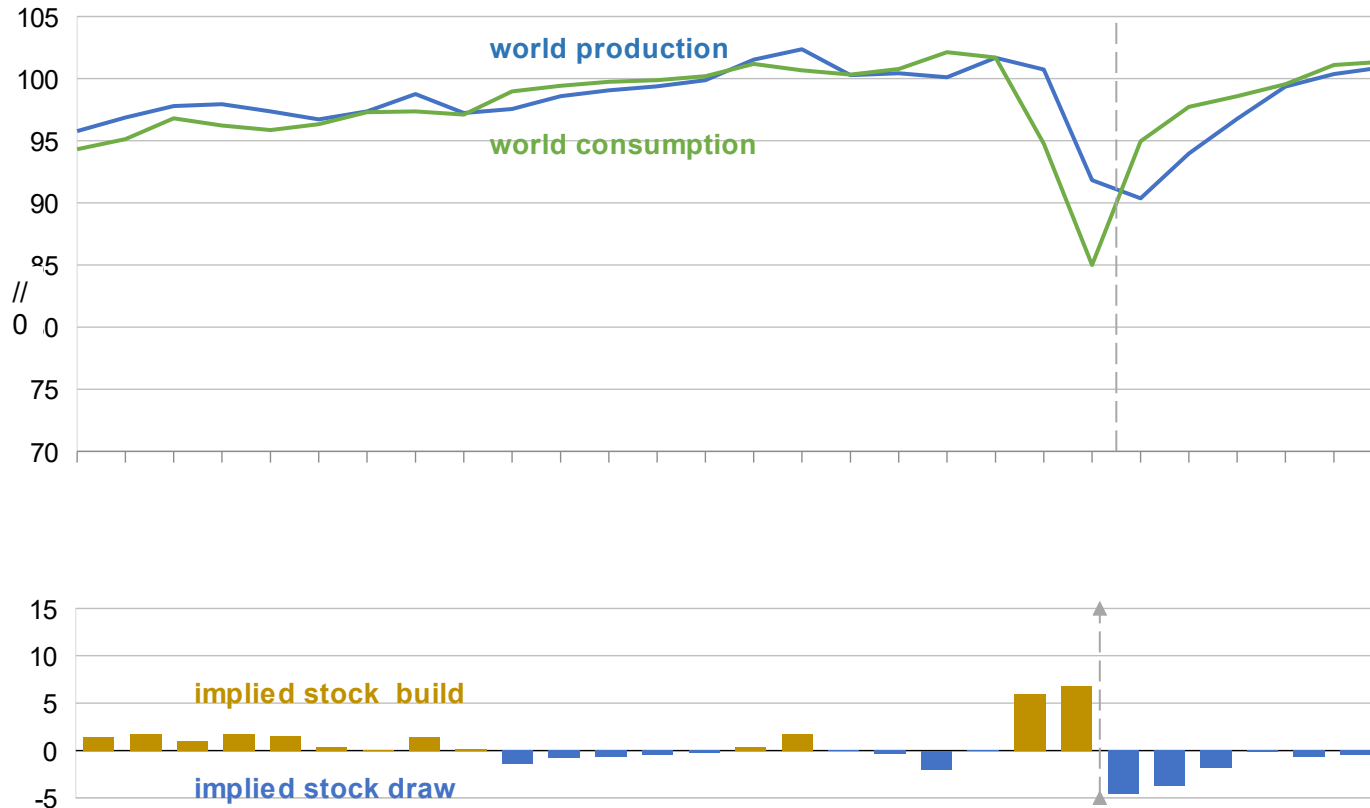
A screenshot of a CNN Business article. The browser address bar shows the URL: <https://edition.cnn.com/2020/06/18/investing/oil-price-spike-jpm...>. The article title is "\$190 oil sounds crazy. But JPMorgan thinks it's possible, even after the pandemic". The author is Matt Egan, CNN Business, and it was updated on June 19, 2020. A red circle highlights the title. To the right of the article is a line chart showing oil price volatility with a blue dashed arrow pointing upwards.

A screenshot of a Financial Times article. The page header includes the Financial Times logo and "myFT". The article title is "CFTC warns on return to negative oil prices", which is circled in red. Below the title is a sub-headline: "US regulator urges market infrastructure providers to brace for future sub-zero drops". The article text mentions: "The CFTC fears a repeat of the chaotic final two trading days in the May oil contract for the US benchmark, which settled at minus \$37.63 a barrel © FT montage". There are social media share buttons for Twitter, Facebook, LinkedIn, and a "Share" button, along with a "Save" button. The author is Gregory Meyer in New York, dated MAY 13 2020. A red circle highlights the title. To the left of the article is a bar chart showing price levels at 0, -20, and -40.



Balances and resulting inventories

World liquid fuels production and consumption balance
million barrels per day

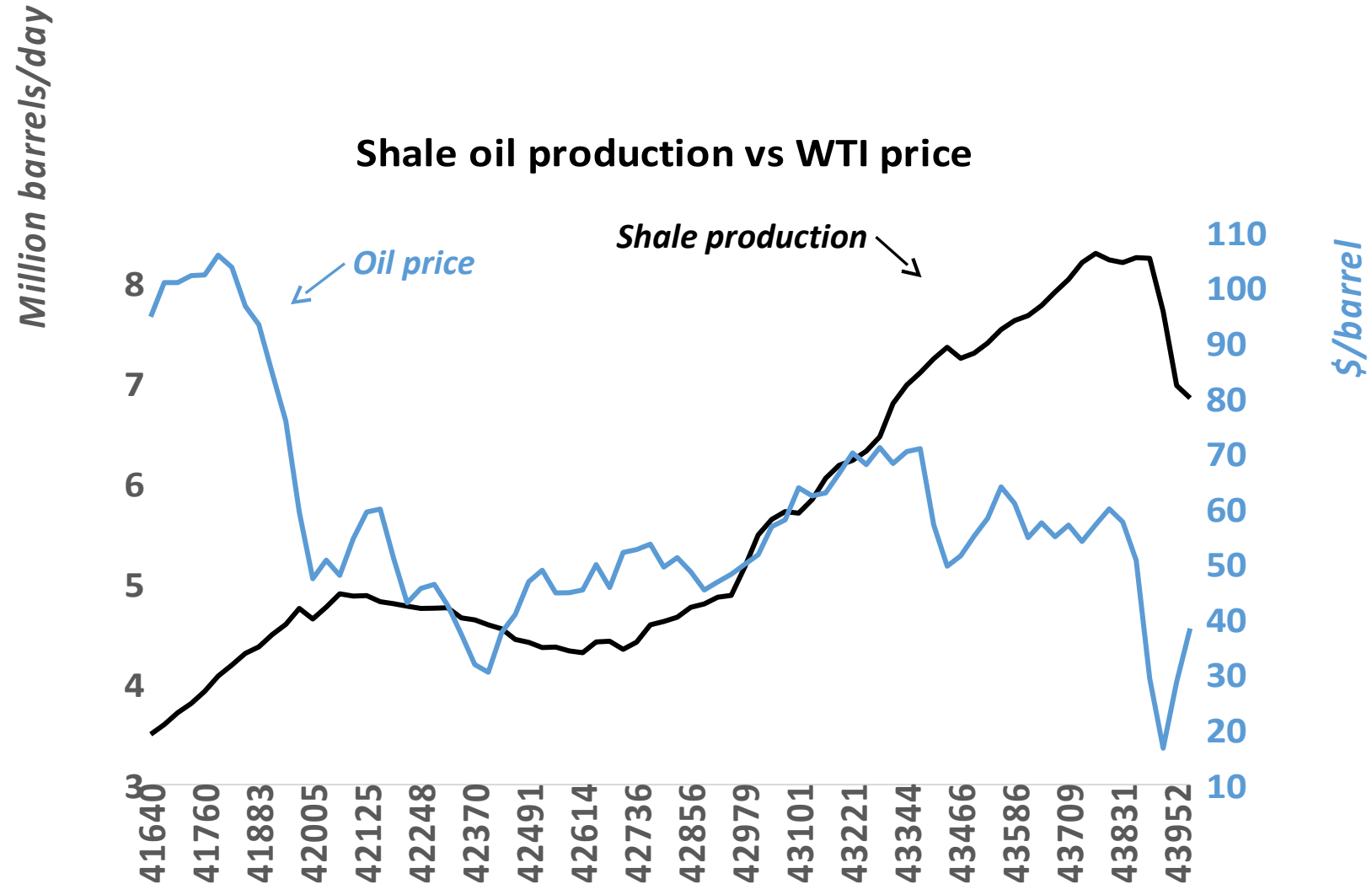


- Oil consumption 2019: 101 mbd
- Forecast 2020: 93 mbd: ↓8%
- IMF GDP 2020 forecast: ↓4.9%
- Production cutbacks & rising consumption 2H20
 - *Inventory draws may suggest moderate price rise ahead*

Source: US EIA Short-term Energy Outlook, August 2020

WTI price vs shale oil production

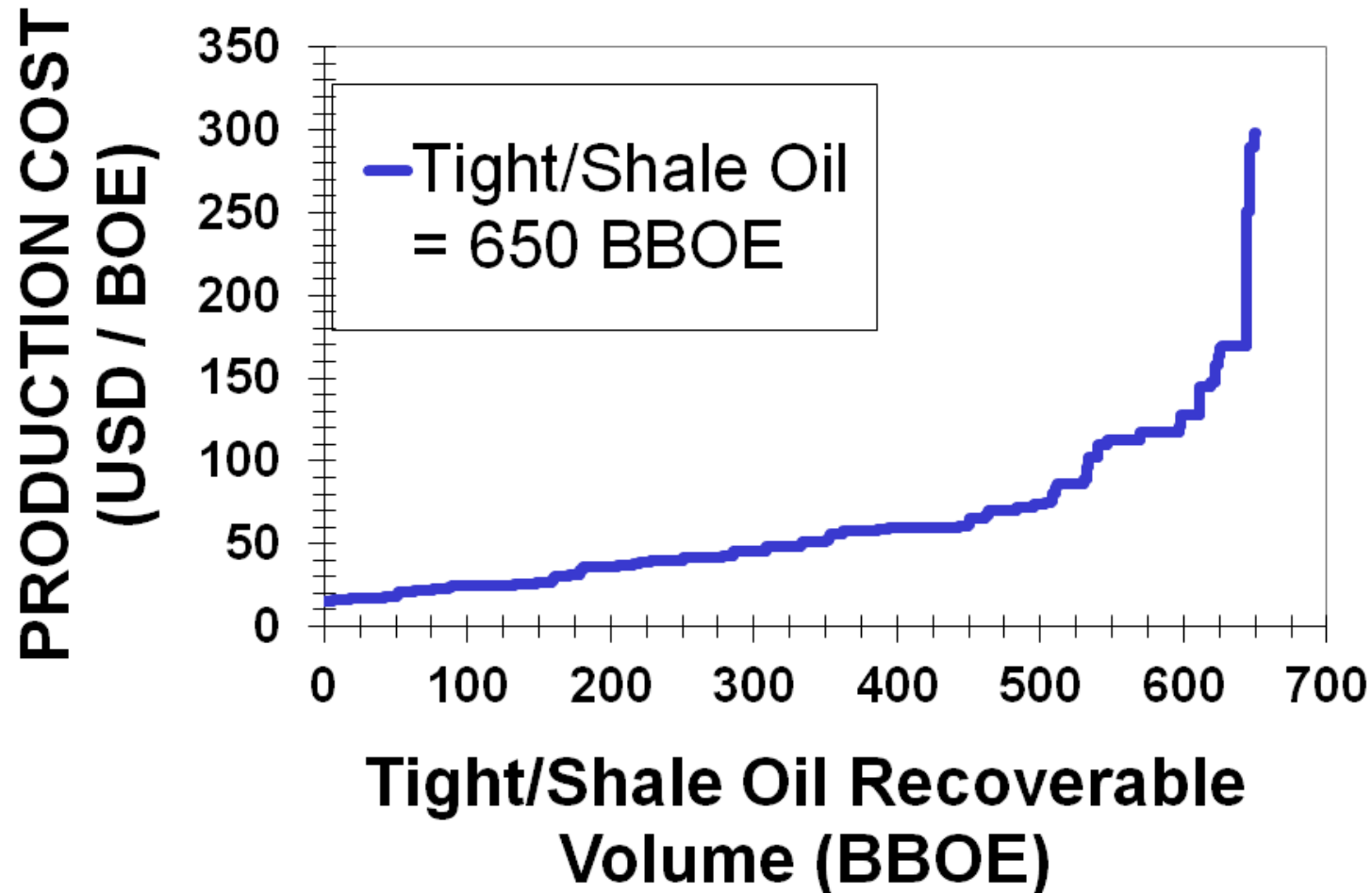
- Shale cycle quick compared with other oil sources
- *Production responds in about 6 months*



Source: US EIA statistics



Long-run supply curve

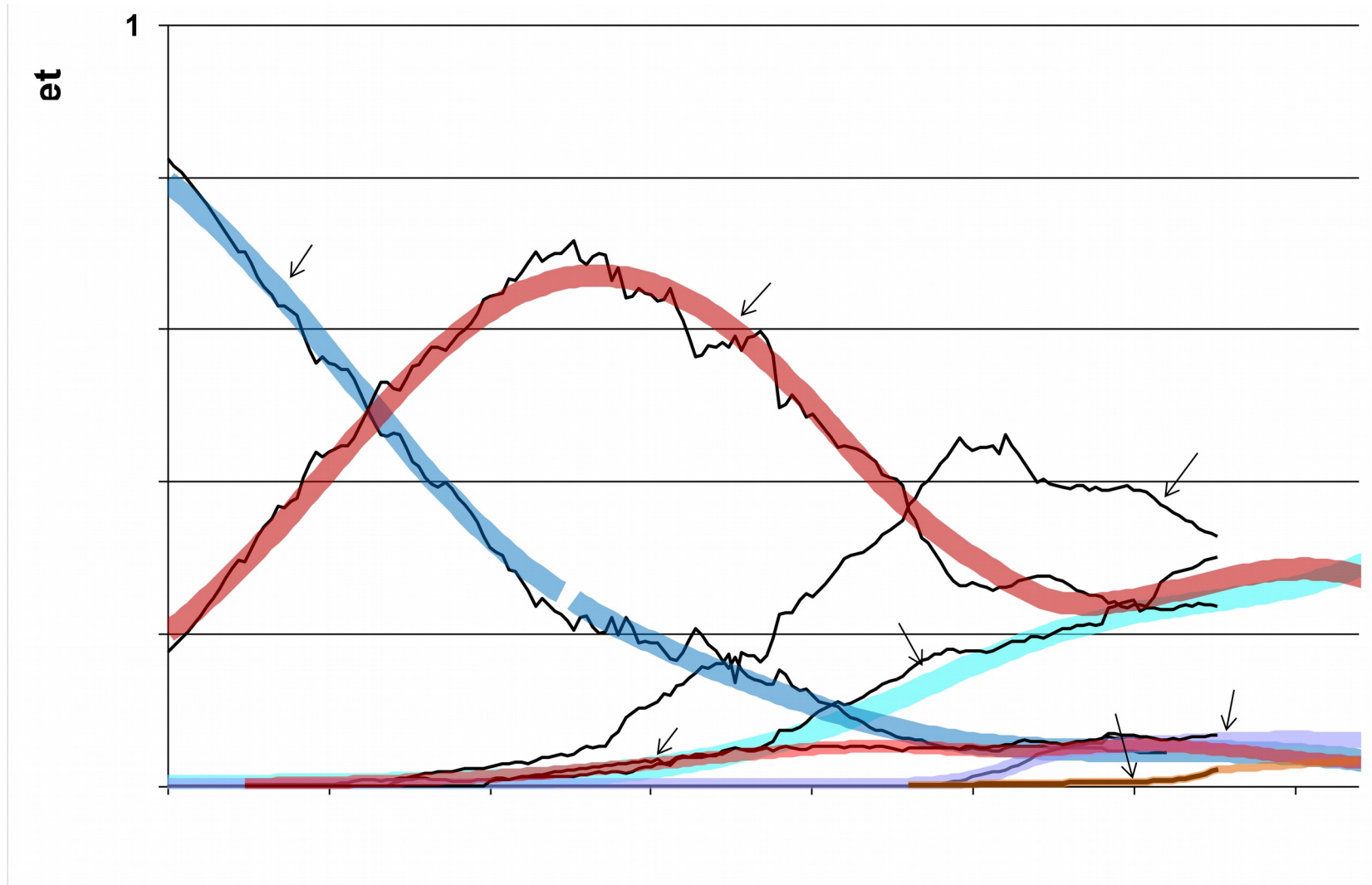


- Large amounts of tight/shale oil available and economically feasible
- Accounts for majority of expected capacity expansion in 2020s
 - *Average production costs of \$40-60/bl*

Source: Aguilera and Aguilera (2019), Mineral Economics

Global energy mix

- Rapid rise for natural gas in energy mix, based on many advantages
- Transition to low carbon future in 2nd half 21st century



Source: Aguilera and Aguilera, *SPE 110215-MS (2007)* and *Mineral Economics (2018)*



Oil consumption

- Oil use growing steadily since 1960
- Forecast compares well with actual data (red points 2007-2019)
- Projected to keep rising in coming decades



WORLD OIL CONSUMPTION, PAST & FORECAST 2030

THOUSAND BPD



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Source: Aguilera and Aguilera, *SPE 110215-MS (2007)* and *Mineral Economics (2018)*

Oil consumption



INVESTMENT | CRUDE OIL | EMISSIONS

Global Oil Demand Likely Peaked in 2019, Energy Consultancy Firm Says

Reuters Wed, 07/01/2020 - 04:00 PM

Global oil demand and CO₂ emissions probably peaked in 2019 as the COVID-19 pandemic will have a lasting impact on both, energy consultancy DNV GL said July 1.

The Norway-based consultancy, which advises both petroleum and renewable energy companies on risk management and technology, said global energy use would be lower in 2050 than previously expected due



WORLD OIL CONSUMPTION, PAST & FORECAST 2030

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Source: Aguilera and Aguilera, *SPE 110215-MS (2007)* and *Mineral Economics (2018)*

Peak Predictions

When big oil companies and the International Energy Agency expect global demand for oil to peak.

BP

In the 2040s

Chevron

Doesn't foresee a peak

Exxon Mobil

Doesn't foresee a peak

Royal Dutch Shell

2025-30

Statoil

2030

Total

As soon as 2040

International Energy Agency

After 2040

Sources: IEA and the companies
THE WALL STREET JOURNAL.

“Peak” demand prospects

- Wide range of views on future pace of oil demand growth
- So far, no large-scale substitute for oil in transport
- Slowing consumption due to oil-saving technology, electric vehicles & climate stabilization efforts



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Conclusions

- Some believe oil downturn accelerates transition to renewables
- Price of \$40-60/barrel in coming decades (*Aguilera & Radetzki, The Price of Oil, 2015*)
- Implications for energy transition to be determined



Thank you



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