

# Why Oil Could Be Higher for Longer

Last week Wood Mackenzie released a report estimating that oil and gas companies will spend \$1TN less on finding and developing new reserves through 2020 than was expected to be the case before the 2014-16 oil price collapse. 2016 reductions in capex have been estimated at \$300-400BN, but this is the first credible figure we've seen over a longer period of time. It's likely to be followed by substantial changes in the crude oil market that will benefit U.S. shale producers.

To see why this is the case, consider how the risk profile of a conventional new crude oil project has shifted. Whether it's offshore, or Canadian tar sands, these plays require substantial upfront capital investment with a payoff over many years. If it'll take you five years or more to extract and sell enough crude oil to earn an acceptable IRR, you are simply long crude oil. Exploration and production companies (E&P) routinely hedge only for a couple of years out, because that's all that the liquidity of the futures market will reasonably allow. For example, Pioneer Natural Resources (PXD) shows 85% of this year's crude production hedged but only 55% of next year's. This is fairly typical.

The price collapse of last year, combined with the growth in U.S. shale extraction and enormous cut in capex, reveals the following calculus: evaluating a new conventional project requires assessing some probability of another price collapse to \$30/BBL or lower during the life of the project. Prior large drops in oil, such as in 2007-8 or 2000 coincided with a recession and were the result of a drop in economic activity. While softening global growth bore some responsibility for the most recent drop, it was largely caused by supply increasing faster than demand.

So now imagine the difference in risk assessment facing an E&P company contemplating an investment in a new shale project versus a conventional one. Shale extraction is characterized by large numbers of individual wells completed relatively quickly with high and sharply declining production. Data from the Energy Information Agency shows that the cost of drilling a single well in any of the five most prolific U.S. shale regions has fallen to \$6-7MM. Much has been written about declining production costs, which is why U.S. crude oil production only dropped from 9.5MMBD to around 8.5MMBD even while the rig count fell by 75% 2015-16. That increased efficiency includes better use of drilling rigs, so they're not needed for as long to drill a well. The corresponding fall in costs has also shortened the time to break-even for shale drilling.

By contrast, in Canada the enormous upfront investment required in a tar sands project meant that production has continued to ramp up seemingly impervious to the price of oil. Steam-Assisted Gravity Drainage (SAGD) involves sinking pipes into the bitumen to heat it up for extraction. Shutting down production risks the pipes freezing, causing potential damage to the facility. So Canadian operators have continued production even at prices that fail to cover their operating costs because of the risk to their huge capital investment.

The consequence of a price collapse in the future looks entirely different to these two operators. The U.S. shale operator is nimble and can rely on hedging production because high initial production rates mean more oil is produced sooner. But the shale operator also knows he can respond to lower crude prices by stopping drilling. He has a short response time.

The tar sands operator has to make a long term forecast on crude oil that cannot be hedged. He has no way to mitigate his exposure to prices years out, and his scenario analysis now has to incorporate some possibility of a repeat of 2014-16.

Moreover, the existence of shale oil production raises the risk of a future temporary collapse, precisely because the E&P companies whose collective activity might cause it can so easily respond and protect themselves.

The swing producer is not the lowest cost producer, but rather the producer whose time to break-even is shortest. The risk of a future big drop in oil is why \$1TN in capex has been cut. The market has changed, and it favors the nimble producer who can exploit temporarily high prices and then drop back when prices do. We may have a permanently higher crude oil price over the long run, precisely because the risk of ruin dissuades the big projects whose supply would lower prices. Canada may never see another new tar sands project. The outlook for U.S. shale, with its constantly improving technology, falling break-evens and short time required to recover capital invested, looks very bright indeed.