

RIYADH, SAUDI ARABIA | JANUARY 2020

UNCONVENTIONAL OIL GROWTH AND IMPACTS ON ENERGY SECURITY

KEY POINTS:

1. Both the IEA and OPEC forecast continued growth in US liquids supply that is attributed mostly to unconventional oil. OPEC forecasts US supply to peak between 2024 and 2026 while IEA forecasts a peak in US supply in 2030. The IEA forecasts US *tight oil* to peak in 2035.
2. The increased influence of unconventional supply with the addition of US tight oil has restructured the traditional energy system.
3. This restructuring has several implications and impacts on global energy security that are characterised by:
 - Reorientation of investment and trade flows due to rising supply
 - Deferred investment in long-cycle conventional production
 - Re-evaluation of risk premiums that affect market reactions
 - Unconventional innovation as it pertains to energy transitions

CONTEXT

The growth of unconventional oil has had a profound impact on world oil supply balances over the last decade and especially in the last five years marked by the downturn of oil prices in 2014. As opposed to conventional oil that is drilled using traditional wells, unconventional oil are onshore resources located in sedimentary basins which require advanced extraction techniques such as hydraulic fracturing. With advancements in innovation and technology over the years, companies have been able to extract oil from these formations with greater ease and precision. Unconventional oil resources include US tight oil, Canadian oilsands, Venezuela's extra-heavy oil, and Brazil's subsalt frontier.

US tight oil, or shale oil, is the most notable unconventional resource given its exponential growth over the past decade and impacts on global energy security. The "shale revolution" in the US, a development partly caused by the spike in oil prices in 2008 and advances in technology combined with favourable market and financing conditions, allowed companies to bring on new supply that was not feasible in the past. Given its accelerated growth trajectory, US shale has reoriented global oil supply/demand fundamentals, altered energy trade and investment flows, and continues to have major implications for global energy security.

ANALYSIS:

US Liquids Production Growth mb/d

	IEA	OPEC
Short-term (2020)	1.11	1.43
Medium-term (2018-2024)	4.08	6.20
Long-term (2018-2040)*	4.30	1.80

Data obtained from IEA World Energy Outlook 2019 and OPEC World Oil Outlook 2019

*The large difference in long-term outlooks is largely due to differing forecasts for US shale for which the IEA is more bullish than OPEC over the long-term while OPEC projects more growth in the medium-term. The disparity can also be attributed to differences in the underlying liquids supply models that the two organisations use. See also the IEF-RFF Introductory Paper: A Comparison of IEA and OPEC Outlooks.

US supply forecasts continue to surprise with record growth at the start of every yearly assessment with most of the growth coming from tight oil in the Permian Basin. The above table is a snapshot of IEA and OPEC short-, medium-, and long-term outlooks and provides assessments of how US supply will grow over short-, medium-, and long-term timeframes.

US liquids production will continue to increase steadily according to IEA and OPEC short-, medium-, and long-term outlooks, with tight oil comprising most of the growth. OPEC is more bullish on US growth in the short- and medium-term which stands in contrast to its long-term forecast. Non-OPEC supply in aggregate is only forecast to grow another two years before peaking in 2026 largely because US supply is projected to peak in the 2024-2026 period. Hence, growth slows down considerably after the medium-term forecast.

The IEA, on the other hand, shows consistent growth over the three outlook periods with growth in the medium- and long-term distributed more evenly. The IEA forecasts US supply to peak in 2030 with tight oil production peaking in 2035 which allows for more gradual growth over the long-term as opposed to a steeper decline. Although production will drop by 1.5 mb/d between 2035-2040, the long-term forecast is still higher given IEA's longer US growth outlook as compared to OPEC.

IMPLICATIONS AND IMPACTS:

The rise of US shale upended the traditional energy order that was in place a decade ago. As a result, the addition of new unconventional supply to the market has had the following notable impacts:

1. **Greater Focus on China and India** – With the advent of growing unconventional supply, weakening short-term demand, and a slowing global economy in an age of energy transitions, focus has shifted from security of supply to security of demand and orderly energy transitions. This reorients investment and trade flows towards non-OECD energy importers such as China and India which will be crucial in bringing balance to the oil market in the long-term.
2. **Deferred Investment in Conventional Oil** – Since the downturn of oil prices in 2014 and the continued growth in unconventional US shale until at least the mid-2020s, global investments in conventional oil recorded a historical low in 2018 comprising only two-thirds of the share of total global upstream investment according to the IEA. The decline in upstream investment creates new uncertainties that can impact investment in affordable clean energy technologies and may lead to more price volatility, energy access issues, and supply-demand imbalances in the future.
3. **Lower Geopolitical Risk Premium** – Geopolitical instability that would traditionally have major repercussions on energy market stability is being partly offset by growing unconventional supplies and rising inventories. A lesser emphasis is being placed on geopolitical risk which is why major incidents and further falling oil exports from Iran, Venezuela, and Libya have not impacted global oil markets excessively in the short-term as they would have in the past. However, continued instability can impact energy security and market stability in the short-, medium-, and long-term as risk premiums are re-evaluated or if imbalances become more entrenched or ease over time.
4. **Unconventional Innovation and Energy Transitions** – Although the downturn of oil prices in 2014 negatively impacted companies involved in unconventional oil extraction, it also provided the impetus for investment in advanced technology and innovation that made extraction more competitive, efficient, and agile. Along with oil, these technologies have also brought more natural gas to markets that offers a viable alternative to coal through increased LNG exports. When export infrastructure constraints and market hurdles are overcome, unconventional innovation will help to accelerate orderly energy transitions in which natural gas plays a pivotal role.

CONCLUSION:

The role of unconventional oil supply is central to the evolution of oil markets in the last decade. Although not a new concept, unconventional supply has gained influence through a sudden and unexpected surge in non-OPEC production. Advancements in technology combined with surging tight oil supply growth have several implications for global energy security. These include but are not limited to the crucial role of non-OECD demand, future investment in upstream conventional projects, market effects of re-evaluating risk premiums, and the interplay between technology advancements and the energy transitions.

As a neutral platform dedicated to global energy dialogue, the International Energy Forum works to enhance dialogue and increase cooperation. The aim is to identify and overcome new and existing issues that affect global energy security as outlined in the IEF Charter which states:

...narrowing the differences among energy producing, consuming and transit Member States on global energy issues and promoting a fuller understanding of their interdependency and the benefits to be gained from cooperation through dialogue among them, as well as between them and energy-related industries.

Section II, Objective 4 - IEF Charter