

## **U.S. Shale Oil Production under Plunging Oil Prices**

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As the substantial plunge in crude oil prices has brought about a new phase in the international energy situation, future oil price trends and various factors affecting these trends are attracting global attention. Undoubtedly, one of the key points in this respect is how plunging oil prices would affect the substantial expansion in U.S. oil output.

While there are various possibilities and uncertainties, oil production is still dominantly expected to increase at least in 2015, even with the benchmark West Texas Intermediate crude price having declined to as low as around \$50/barrel. Given that oil output is expected to increase in Bakken, Eagle Ford and other major shale oil production areas where productivity is higher (with higher resistance to lower prices) and that shale oil producers have covered cash flow with hedging at higher prices than at present, U.S. oil output is expected to avoid any sharp decline despite a decline of more than 20% from a peak in rig operations.

All representative oil production forecasters in their latest short-term outlooks have predicted U.S. oil output to increase this year. The increase in U.S. oil production from 2014 is forecast at 630,000 barrels per day by the International Energy Agency, at 820,000 bpd by the Organization of the Petroleum Exporting Countries and at 920,000 bpd by the U.S. Energy Information Administration. They thus anticipate a U.S. production increase even under the lower price environment, although this year's increase is estimated at far lower levels than last year's expansion of well above 1 million bpd.

How will the medium-term outlook be beyond this year? While greater uncertainties exist about the future course of crude oil prices and other matters over a medium term, the IEA on February 10 released the Medium-Term Oil Market Report 2015 covering future years through 2020, attracting global attention. This is because the IEA is the first one among the three to offer a medium- or long-term outlook on the oil market after the oil price plunge and the outlook is

important as a first reference material on the of impacts of low oil prices on medium-long term perspectives.

Based on the shapes of recent crude oil futures price curves, the latest medium-term outlook assumes the imported crude oil price to slowly rise from \$55/barrel in 2015 to \$62/barrel in 2016 and to \$73/barrel in 2020. The assumption represents sharp downward revisions from \$102/barrel for 2015 and \$87/barrel for 2020 as assumed in the previous IEA medium-term outlook published last June. The IEA report describes U.S. shale oil production as basically being sensitive to oil prices, indicating that the projection of U.S. oil output including shale oil can be reasonably expected to decline.

In fact, the IEA medium-term outlook lowers U.S. shale oil production estimates. Still, the outlook forecasts U.S. shale oil output to continue an upward trend through 2020 with some price recovery taken into account. U.S. shale oil production is projected to increase from 3.6 million bpd in 2014 to 5.2 million bpd in 2020. Coupled with a natural gas liquid output increase, the shale oil output growth will prompt total U.S. oil output to expand from 11.81 million bpd in 2014 to 13.96 million bpd in 2020.

Given that there are many small shale oil producers and developers, the IEA report notes that their financial vulnerability and other problems could become downside risks for the future shale oil output projections. At the same time, however, the report points out that the oil price plunge could trigger cost reduction and streamlining efforts and technological development to improve the productivity of shale oil development, becoming a driver of steady growth in shale oil production. This is an interesting point. The IEA report also gives an analysis indicating that the break-even cost for 63% of U.S. oil output in 2020 could be \$50/barrel or more. Therefore, shale oil production is likely to decline or increase depending on future price changes.

U.S. oil output, including shale oil production featuring relatively lower initial investment and the continuous drilling requirement, is expected to react to oil price changes. Oil prices' rise above some levels could stimulate production expansion to increase supply and ease the supply-demand balance, while their fall below some levels could lead oil output to stagnate to tighten the supply-demand balance. Though falling short of working as a market maker to coordinate supply and demand over a short term, shale oil may serve as a supply-demand balancer over a medium to long term.

As noted above, most global analyses have yet to come out about the oil price plunge's medium to long-term impacts on supply and demand in the oil market. This year may see various forecasters taking up the issue. In what direction will the international oil market will go? What should major market players' roles be like in that process? While there are still a large number of uncertain factors, a deep analysis is required to find out the future direction and market players' roles.

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